Waiting for Innovation in the Human Resources Department: Godot Implements a Human Resource Information System

—— Ellen Ernst Kossek, Willard Young, ——
Debra C. Gash, and Victor Nichol

The implementation of a new human resource information system (HRIS) represents a major form of planned organizational change for the Human Resource function, yet little research has been conducted on this issue. This article presents a longitudinal case study of the reactions of the Human Resource community in a large energy company to the planned implementation of a new corporate HRIS. Implementing an HRIS to enhance strategic and business decision-making has important organizational development implications. A new HRIS (1) represents an attempt to enable Human Resources to become more of a business partner, (2) changes the nature of HR work to encompass a greater information broker and decision support role, and (3) alters power dynamics and communication patterns involving Human Resources. Varying levels of resistance and ambivalence were found regarding the extent to which human resource information systems skills were valued as a critical competency. While there is a trend, toward attitudinal convergence within the human resource community, over time, the results suggest that user skill level may be more strongly related to variance in attitudes toward the value of a new HRIS than to hierarchical level or business unit affiliation. The study also found that face-to-face seminars were a significantly more effective intervention than was written communication in influencing favorable intention to use the HRIS. © 1994 by John Wiley & Sons, Inc.

INTRODUCTION

Among the most important developments in the human resource management field over the past few decades has been the rapid influx of computers ranging from large-scale mainframes to microcomputers to comprise human resource information systems (HRIS) (Bulletin to Management, 1989). Broderick and Boudreau (1992) define human resource information systems as "the composite of data bases, computer applications, and hardware and software that are used to collect/record, store, manage, deliver, present, and manipulate data for Human Resources (HR)" (p. 17) Although investment in information technology has the potential to improve human resource decision-making and enhance effi-

ciency and the achievement of competitive objectives, many HRIS are still focused mainly on administrative tasks such as record-keeping and payroll (Broderick & Boudreau, 1992).

The underutilization of HRIS's capabilities may be attributed in part to a lack of knowledge of the organizational development (OD) implications of Human Resource Information Systems. Research on HRIS has generally been cross-sectional, despite the fact that a new corporate HRIS can take years to implement. Also, resistance to change is likely to wax and wane over time. Although an HRIS represents a critical element in transforming human resources into an effective business partner, organizational change issues are rarely empirically examined, and the perspectives of diverse user groups often are overlooked. An important challenge with long-term projects such as an HRIS is to maintain the support of users during implementation. Like Samuel Beckett's classic play, "Waiting for Godot," in which, after a long wait, Godot never does appear, there is the potential danger that the organizational strategy of investing in information technology to enhance human resource (HR) effectiveness may never fully succeed unless users' views of the HRIS and its implementation process are carefully managed.

Yet little or no work has been conducted on how users respond to new human resource information systems (an exception is Broderick and Boudreau, 1992). However, considerable research on users' reactions to information systems in many other settings effectively documents that the perceptions of employees who are expected to use a new information technology can have a critical impact on the degree to which an implementation effort succeeds (cf Knights and Murray, 1992; Parsons, Liden, O'Connor, & Nagao, 1991; Gattiker, and Hlavka, 1991; Davis, Bagozzi and Warshaw, 1989; Majchrzak, Change, Barfield, Eberts, & Salvendy, 1987). Perceptions toward a proposed technology are important for organizational diagnosis since they influence behavior and reflect the organizational conditions under which implementation occurs (Hackett, Mirvis, & Sales, 1991).

This paper presents a longitudinal case study of Opco's (a pseudonym) experience in managing the reactions of members of its human resource function to new corporate HRIS. Opco's organizational context, level of top management involvement, level of user participation, role of system designers, planning and training approach are discussed, since failures in systems implementation have been attributed to these factors (Majchrzak et al., 1987). The study makes several contributions. It advances our knowledge by emphasizing some organizational development implications of HRIS. The study also analyzes how key employee groups may respond to a HRIS over time. Specifically, we examine the degree of homogeneity in attitudes toward the HRIS held by employee groups such as managers and nonmanagers, skilled and beginning users, and corporate and field units. Over time, it is believed that differences in the perceived value of the HRIS that occurred between the

corporate and the field business units at the initiation of the technologi-
cal change will start to converge as the organization develops a common
socially constructed institutional view of the technological change—the
new HRIS. Third, it shares one firm's strategy for managing expecta-
tions toward the HRIS. The study also assesses the effectiveness of a
naturally occurring experiment involving two training/communication
interventions. Individuals who received information in a face-to-face
seminar are expected to have greater intention to use the HRIS than
those who received only written information.

ORGANIZATIONAL DEVELOPMENT
IMPLICATIONS OF HRIS

Barry (1989) observes that information technology often changes the
nature of managerial and professional work, alters communication pat-
terns and power dynamics, and reorients organizational structures. Use
of advanced HRIS applications has the potential to *change the nature of
work performed by human resource managers and professionals from an adminis-
trative to a strategic support role*. Automation enhances their ability to
manage complexity, to make more and faster decisions to better cope
with the external environment, and to automate routine work thereby
enabling headcount and time savings (cf. Walton, 1982). These changes
free up staff to be involved in business planning and decision support.
By allowing greater access to and increased integration of employee
data, an HRIS also has the potential to reshape HR jobs by developing
more generalists, thereby lowering the need for extreme specialization.
Such changes enable HR to serve a growing organizational role of *infor-
mation broker* by altering the type of information that HR provides to line
management. HR now can provide not only administrative data, but
also data to support strategic and cost-based decision-making. A corpo-
rate HRIS can practically and symbolically represent *the transformation of
human resources into a strategic business partner*.

An advanced HRIS represents the rationalization of personnel work
and a fundamental change in the values, goals, and focus of the func-
tion. Historically HR outcomes have been characterized as difficult to
measure in terms of contributing to the bottom line (Gutterridge, 1988).
Human Resources has traditionally viewed itself as a people-oriented
and "high touch field" (Phillips, 1993). An HRIS enables HR to cost and
demonstrate the valued added from its activities to management, and
shift from a reactive to a proactive stance (cf Kavanagh, Gueutal, &
Tannenbaum, 1990). It facilitates HR's conversing in the language of
business—numbers and guides decision-making to be more impersonal
and bottom line oriented.

These reshaped roles may *alter communication patterns and power dy-
namics between HR and line management*. The increased ability to provide

management with business data has the potential to elevate HR's status. Increased information-sharing is fostered and communication patterns are changed to enhance the intermingling of work and alter boundaries between HR and management. Applying Mintzberg's (1979) model of organizational structure, Barry (1989) notes that while Mintzberg assumed that technology would be mainly used in the operating core for production, *information technology* can blur structural divisions by automating other organizational elements such as the support staff and technostructures. These latter locations typically include HR staff.

A corporate HRIS may also *heighten power dynamics and alter communication patterns within the human resource function* itself. Typically the users of HRIS are an exceedingly diverse group ranging from functional specialists to executives to clerical staff operating in unique business unit contexts. In large corporations, it is not uncommon for various subunits of HR such as labor relations, international HR, staffing, training, compensation, or headquarters, and field units to operate in a very segmented fashion. An HRIS may foster increased information-sharing between HR subunits, between corporate and field units, and across hierarchical levels from clericals to managers. Since information is power, the new HRIS has the potential to heighten power dynamics and/or shift the balance of power between these groups. Reactions to the new HRIS will vary for key groups within the HR community, depending on their location in the organizational system, and their values, cognitions and schemata regarding the meaning of the new technology for their group. This last implication suggests a great need to manage expectations and varying levels of resistance to change within HR.

Values toward and use of a new corporatewide HRIS will shift over time as HR groups move at a differing pace through change processes. When a major change in HRIS is introduced, commitment is likely to vary according to an individual's *hierarchical level, business unit context,* and *computer skill or user level.*

Hierarchical level has been found to be negatively related to the use and acceptance of information systems (Aydin & Rice, 1989). The higher the position in HR, the more negative the attitudes toward the HRIS since its use will be viewed as a clerical activity that will do little to enhance HR's reputation. Variation in commitment to a corporate HRIS use may also occur across *business units* due to differences in mission and contexts and the need for corporate HRIS support. Over time as members of the HR community develop a common social view of the HRIS, differences in HRIS values will converge regardless of one's level or business unit. The growing integration of personal computers in the workplace as a decision support tool for other business functions such as finance and marketing will encourage the HR community to jump on the corporate bandwagon. Using HRIS will *represent becoming a business partner.*

User level, an indication of computer knowledge, is likely to be a more

resilient predictor of differences in commitment toward HRIS advances over time. Since a corporate HRIS can take years to implement, it is likely to have some technological outdatedness once it is operating. The more skilled the HRIS user, the less favorable the attitudes toward a corporate HRIS since skilled users are more likely to be aware of new developments and using newer systems.

In summary, it is expected that implementing an HRIS for not only administrative but also for strategic and business decision-making purposes is likely to have many organizational change implications. It will change the nature of HR work to encompass a greater information broker and decision support role. It will influence HR and line management dynamics by enabling HR to become more of business partner. It will alter power dynamics and communication patterns within the human resource function. Three individual factors that are likely to predict initial commitment to a major HRIS change include: hierarchical position, business unit (i.e., field versus corporate), and user level. Little previous research has documented these OD implications or suggested effective intervention for managing HRIS. The following case study of Opco will highlight these issues.

A CASE STUDY OF OPCO'S NEW HRIS

Method

An inductive case study approach was followed to discover resistances to and attitudes toward the implementation of an HRIS. Data were collected over several years to track the HR user community's reactions to implementing a new HRIS at a worldwide integrated petroleum and chemical company (Opco). Surveys, interviews, and review of company documents are used to tell the story of HRIS implementation at Opco. At time 1, which was when the new HRIS's implementation effort was announced, a mail survey was distributed to users, 110 were returned for a 78% response rate. National focus groups ($n = 150$) and individual interviews were also held through Opco. One year later, after the corporation had established an HRIS project oversight committee and had conducted companywide communication efforts, a shortened version of the questionnaire was administered by telephone. At time 2, data were collected from 73 of the 110 potential respondents for a 67% response rate.

Sample

The sample consisted of survey respondents who participated at both time 1 and 2. One fourth (26%) were from corporate, and 74% were from

field locations. About one fourth (23%) were managers, while three-fourths (77%) were human resource professionals or staff. Nearly three-fourths (72%) of the respondents were experienced (moderate or expert) users.

Communication/Training Intervention

Opco used two methods to orient members about the status of the HRIS project between time 1 and time 2: a written report (in the form of communication booklets) and face-to-face "road show" presentations. About half the sample (49%) attended a seminar with the remainder (51%) receiving only a booklet. This provided a naturally occurring experiment. Specifically, did the two communication/training strategies [written (book) versus verbal (seminar)] differ in their impact on the perceptions of the HRIS? t Tests of the two subsamples (written versus oral) revealed no significant differences by business, hierarchical, or computer skill level.

Data Analysis Strategy

The group and individual interviews were transcribed. Salient quotes were organized by themes to illustrate (1) the shared belief held by Opco members that the various subsidiaries had diverse HRIS cultures and (2) the organizational development implications of the new HRIS.

Confirmatory factor analysis was used to develop four 7-point Likert-type scales assessing attitudes toward the HRIS over time (See Appendix for survey measures). *Use of New HRIS* assessed the degree to which respondents planned on using the new corporate HRIS for activities ranging from compensation to recruitment (time 1 alpha = .92, time 2 = .84). *Expected Capabilities* assessed the expected capabilities of the new HRIS (time 1 alpha = .81, time 2 = .74). *Appropriateness of HRIS* measured the perceived appropriateness of the time status for implementing the HRIS; (time 1 alpha = .80, time 2 = .86). *Expected Value of the New HRIS* measured the perceived financial, political, and overall value of the project to HR and its members (time 1 alpha = .90, time 2 = .84). *Hierarchical level* was measured using a dichotomous variable (manager, nonmanager), *computer skills* were measured using a dichotomous variable (moderate/expert, beginners). *Subsidiaries-* Respondents belonged to four *subsidiaries* and either only received a booklet or only attended the oral seminar.

The Organizational Context and the Innovation: HRIS Star Wars

Opco was selected for this study at the time it was initiating a new Human Resource Systems Development Initiative (HRSDI) (colloquially

nicknamed HR Star Wars, as part of its acronym mirrored the United States' Military's Strategic Defense Initiative). The armed forces imagery is relevant to the notion that the new HRIS represented an organizational change to help forcefully transform Opco into a new order of HR line management strategic partnering. The HRIS also spurred revolutionary cooperation among decentralized business units each steeped with its own HRIS culture and a new ownership by HR of its information technology.

Like many companies, Opco's early approach to HRIS was payroll-driven. It used HRIS more for administrative purposes than for decision support. Multiple decentralized systems had been developed over the past several decades that were not well-integrated or user friendly. Historically, these systems had been owned and controlled by the finance and information systems departments to a far greater extent than by HR.

In the early to mid-80's Opco launched its first Corporatewide Human Resource Information Systems project (CHRIS), which had four phases that were to be implemented sequentially:

- Part I : a new employee database and data input functions (completed in mid-1987),
- Part II : a modernized payroll system,
- Part III: a new HR reporting environment to take advantage of the new and expanded database,
- Part IV: an interface between the existing benefits systems and the new employee database.

By late 1988 after business requirements and estimates were completed for the later phases, the CHRIS project was scrapped before Parts II, III and IV could be completed due to the rising cost estimates. An Oversight Committee consisting of senior management representing Human Resources, Information Services, and the Controller decided that the estimate that the project would take an additional 4–5 years to complete and cost $20–30 million (of which $5 million had already been spent) required Opco to reexamine its HRIS approach. Hence, the Human Resource Systems Development Initiative (HR-SDI) was initiated.

Historically, HR had not been very interested in Information Systems issues and was happy to allow HRIS to be considered part of the Personnel Records Center (PRC) in the Controller's Department. The clerical functions of record-keeping and payroll were not viewed as adding to HR's prominence and were reminiscent of the days when these roles were the predominant duties of HR. Consequently, Opco HR may have been reluctant to claim accountability for HRIS, since the HRIS may not have been perceived as enhancing HR's role. The advent of a new HRIS for purposes of strategic decision support served as an additional impetus for HR's seeking to redefine its role with management.

At the same time, other dramatic changes were taking place in the

stature of the human resource function. In the late 1980's the Vice President–Human Resources began to report directly to the Chairman, and HR issues were also beginning to be a major portion of strategic business plans for the first time in Opco's history. The new HRIS (HR-SDI) was initiated as part of a deliberate corporate approach to help HR to become more of a strategic partner. It was started when it had become apparent to Opco's management that the sequential approach to developing CHRIS was not suited to the rapidly changing business and regulatory environment which influenced management's growing need for information to make business decisions regarding Opco's workforce.

Opco identified four business issues (shown in Table I) that drove or impacted their growing information need. The HR regulatory environment was becoming increasingly volatile. Constant legal changes in tax laws affecting benefits, EEO, labor, social security, and health care were occurring. Recruitment of employees who possessed Opco's requisite skills was also becoming more competitive due to a shrinking labor pool. A growing demand for HR information for decision support purposes necessitated the development of a fully integrated human resource information system where employee data was shared by all business applications with common access. Unfortunately, many new decision support applications could not be met under the existing Corporate Human Resource Information System (CHRIS) because its current system's ar-

Table I.   Business Drivers of Opco's New Corporate HRIS (HR-SDI).

Management's Need for Information is the Principal Driving Force:
*Regulatory Environment
   Tax laws
   Nondiscrimination tests
   EEO, labor and health care laws
*Competitive Labor Market Environment
   Shrinking labor pool
   Growth in individually-designed benefits for recruitment and retention
   Full flexible benefits
   Multiple investment options: savings plan, leveraged ESOP, pre-tax plans
*Decision Support
   Easy access, complete and accurate data
   Management decisions
   Workforce models, personal computers
*Systems Issues
   Aging and payroll driven
   Complex, inflexible and expensive
   Limited reporting capability
   Lack of integration

Source: Human Resource Systems Development Initiative. Communication Package. Human Resources Department. Opco, 1989.

chitecture was payroll-driven, and its subsystems were not well integrated or easy to modify. Data integrity from the old HRIS was questionable due to the complexity of designing interfaces that passed data among the various systems.

Another problem with the old HRIS stemmed from its totally in-house custom design. Custom development carried a high level of financial risk, due to the high potential for continually adding requirements and increasing the scope of the project. It also made Opco responsible for all design and programming changes in response to external environmental changes (HR-SDI Booklet, 1989). As new demands were constantly added, CHRIS had grown into what some professionals referred to as "an ugly monster."

Hence, a multiproject, five-year effort to create a new corporate HRIS, the Human Resource Systems Development Initiative (HR-SDI) was identified as the umbrella under which individual systems projects would be defined, integrated, and implemented. A full time staff of about 40 persons, a fourth of which were from Human Resources, was pulled together to support the new HRIS. Having Human Resource members permanently assigned to plan the new HRIS represented the first time HR was involved actively in initial design of the HRIS. In the past, users at Opco had complained that information that was communicated on HRIS had been too technical and operationally focused, a typical problem when systems are designed with limited user involvement (Majchrzak et al., 1987). By devoting sufficient HR resources in terms of staff and top management attention, Opco was taking the necessary steps to ensure HR-SDI would be designed in a user-sensitive fashion, and that users and systems developers would engage in the necessary amount of joint problem-solving critical to success (cf. Bostrom & Heinen, 1977).

Another key organizational change in the systems development approach to the new HRIS involved the use of an outside HR-oriented vendor, as opposed to internal information systems personnel, who were likely to have less understanding of the HR community's strategic needs. For the first time in Opco's HRIS history, a leading outside vendor, Tesseract, a San Francisco-based company specializing in human resource system software development, would be used to crease a "HR database driven" architecture. At the time Opco signed an agreement with Tesseract, the vendor had over one hundred clients among the Fortune 500 companies.

The new HRIS cost between $21 and 34 million. All expenditures for this highly visible project, which was the largest investment in HR in Opco's history, were approved by Opco's Senior Management Corporate Salary Committee. For the first time, senior HR management was involved intimately with HRIS design issues. Four subsidiaries were required to pay several million dollars annually to fund the initiative and cooperate in developing HRIS requirements.

The Users: Espoused Diverse HRIS Cultures

Using an outside vendor to develop a coordinated HRIS system from scratch raised another important organizational development issue: It required coordinated collaboration across business units that were quite diverse and historically operated relatively independently from each other. Regarding human resource information data, the customization of business unit data to meet local management's preference with "all the bells and whistles" made the firm particularly susceptible to increasing requirements. As Table II shows, each of the units had a unique culture and stated values toward HRIS. Four HRIS typologies emerged: Computer Jock Phophia, Gradual Automators, Corporate HRIS Resistors, and Information Brokers.

Traditionally, developing ones own HRIS skills has not been valued strongly by Corporate's HR professionals whose culture reflected "Computer Jock Phobia." Development of computer skills earmarked one as a "techie" who was not likely to be valued for mainstream HR skills. Some corporate members referred to taking a job involving the old Corporate HRIS as a "death sentence" and "going into a black hole" or "the vanishing place." Corporate's values may reflect a belief that heavy use of computers dehumanizes HR work. Members' views may also be influenced by their physical closeness to more senior managers who are less likely to directly use HRIS and the fact they are able to rely on the field and internal HRIS techies" for HRIS data. There was a tendency not to see the need to personally develop HRIS skills:

> We're HR professionals . . . we're not computer jocks. We don't want to be computer jocks.

> I don't think having computer skills is really where the direction of HR is going . . . to have our HR reps involved in computers is just not wise. We should have a way of getting reports done, but done by other people.

> (HRIS) turns a lot of HR professionals into clerks . . .

Refining processes and markets oil worldwide. Its values typify *Gradual Automators*, where the main value of HRIS stems from timesavings achieved by automating repetitive clerical tasks.

> (The new HRIS) will "enhance my credibility with managers because I wouldn't have to waste so much time looking for information manually.

The automation values stem from Refining's operating needs. It is responsible for managing credit card transactions and for the operation of gas stations. These tasks require constant processing, quick customer response, and a focus on meeting short-term profit goals. Unlike other units, Refining has a large union population, and consequently there

Table II. Examples of Interview Statements Reflecting Diverse Espoused HRIS Cultures across Business Units.

Typology	Bus. Unit	Examples from Interviews
Computer Jock Phobia	Corporate	1. We're HR professionals . . . we're not computer jocks. We don't want to be computer jocks. 2. I don't think having computer skills is really where the direction of HR is going. I think we want to have different types of skills and to have our HR reps involved in computers is just not wise. We should have a way of getting reports done, but done by other people. 3. (HRIS) turns a lot of HR professionals into clerks and I think it backfire(s) in that sense. It intends to give you lots of advantages—having local control, better access, more accurate information, but what people see is they are spending a lot more time on clerical and administrative work than they did in the past. 4. I came from Exploration to Corp. and it was amazing to me how so many people didn't use it at all . . . it's sort of like the missionary bringing the BIC lighter to the natives, you know. If you can produce a computer report, you can razzle dazzle people, but the down side of that is then you get know as a techie and not for other kinds of things. 5. You get pigeon-holed, they say, 'Oh well, he's a computer jock and that's where you stay. You can't get out.' . . . There's no obvious career path out there for them (skilled HRIS users) right now.
Gradual Automators	Refining	1. (The new corp. system) will enhance my credibility with managers because I wouldn't have to waste so much time looking for information manually. 2. The new HRIS will be just a little help, (with) reports here and there, keeping track of payroll—things that have been done in business for a hundred years. 3. I've never gone to a meeting where somebody said, 'you know if we had a better HR system, we would really be able to do a better job of (HR) planning and taking care of our HR needs.' 4. (Refining has) some HRIS expertise, albeit limited somewhat in part because union contracts have often dictated how most of employee population will be managed; as a result there's a limited need to plan for the future. 5. HR in general at Refining could use some courses in computer technology.

Table II. *(Continued)*

Typology	Bus. Unit	Examples from Interviews
Corporate HRIS resisters	Chemical	1. We are just seeing the need for them (mainframe computers) and slowly are getting geared up to where we should have been years ago. 2. Chemical is having a hard time evolving into (a strategic partner with line management) only because of . . . this computerization issue . . . because of a lack of computer skills. 3. The least sophisticated person in (HRIS) at Exploration would look like a star at Chemical. 4. (We were) ignorant of what the HRIS could do. 5. We have grown so fast that the (Corp. HRIS) has not kept up with our growth. 6. Chemical is . . . independent in a lost of their systems . . . In fact they even run their own payroll and they are the only subsidiary to do that . . . we're trying to pull them back into the corporate system now.
Information brokers	Exploration	1. We're information brokers in HR. 2. (Using HRIS) enhances your ability not only to conduct analysis that's meaningful, but also (your ability) to be asked to do it. 3. Everyone here thinks it is extremely valuable . . . we couldn't do our jobs without it. 4. Psychologically HR (in Exploration) knows more and more of (its) business depends on computing. 5. (Exploration) is the most able to build their own systems and do things their own way . . . they probably have trained four or five hundred people in HR to conduct (user generated HRIS reports) . . . Exploration doesn't understand why the new system will regress to the mean level of user needs as opposed to their level. 6. Exploration out of all the subsidiaries (is) the one that has the most users . . . their management wanted a lot of the things the system could give them, so they were the ones dedicating the most people to (HRIS) and getting a lot of information they wanted and the other subsidiaries didn't use it or didn't go as far as Exploration did. 7. Exploration as a whole is a more sophisticated user of systems and computer technology and I think its because that's the nature of their business. There's a high level of professional employees, a lot of whom have system and computer and science backgrounds . . . It's just by nature a more sophisticated clientele . . . in the Refining company, I never felt the urgency (for HRIS data) from the clients.

may not be as much pressure from line management to use HRIS data for HR planning because many policies are delineated in the union contract or in oil industry patterns.

Chemical produces and markets industrial chemical products for industries ranging from textiles to recreational equipment and electronics. Its rapidly growing operations are geographically dispersed and quite diverse, and the HR function is very lean. As a result, Chemical HR staff is spread thin and generally lacks Corporate HRIS skills. In fact, earlier Corporate HRIS did not include all of Chemical's employees, a significant portion of which were overseas. *Chemical's* values might be classified as *Corporate Mainframe HRIS Resisters:*

> We are just seeing the need for them (mainframe computers) and slowly are getting geared up to where we should have been years ago. . I think we are way behind

> (We were) ignorant of what the HRIS could do.

To keep up with Chemical's growth, some Chemical members were developing an appreciation of locally owned microcomputer applications to help them accommodate their fast-paced business environment, independent nature, and diverse operations. Its management prides itself in doing things differently than the traditional way of doing business in the oil industry. Hence, Chemical is the only subsidiary that maintains its own payroll system and has plans to develop its own locally maintained system, *in addition* to the new HRIS.

Exploration's mission is to explore for oil and gas, a risky process that can take years to reach successful completion. Exploration's highly technical employee population includes the greatest number of scientists, geologists, geophysicists, and engineers in Opco. Many of these professionals are heavy users of sophisticated information systems for seismic data analysis, leading to a high dependence on computer analysis and a penchant to "quantify everything." This appreciation of computers by line management coupled with the fact that employees are generally located in several large locations enabled the HR function to conduct planning across large employee groups. Exploration members viewed themselves as *information brokers* and had a heavy appreciation of the HRIS:

> [Using HRIS] enhances your ability not only to conduct analysis that's meaningful but also (your ability) to be asked to do it.

> Everybody here thinks it is extremely valuable. I don't think we could do out jobs within it.

> Psychologically HR . . . knows more and more of their business (from clients) depends on computing.

Thus Opco had diverse HRIS cultures in each business unit. The uneven progress of HRIS at Opco across units mirrored HRIS's irregular historical development across industry and government. As late as the 1970s HRIS were more heavily used by government agencies who developed elaborate personnel inventory systems for defense personnel than by the private sector (Walker, 1982). Exploration, like the early defense firms, had a greater number of engineers and scientists located in one place (than did the rest of Opco) fostering greater workforce planning and had greater access to mainframes and more line users who valued computer-based data than did other units. When the study was initiated, Exploration appeared to have developed a greater and earlier appreciation of HRIS skills. By requiring cooperation and coordination across units that had a history of very decentralized approaches, the new HRIS was an important organizational change.

RESULTS

Examples of Organizational Development Implications of HRIS

From the interviews, four main organizational development themes of the HRIS were found: (1) strategic partner posturing, (2) enhancement of HR roles, (3) altered power dynamics and communication patterns for HR, and (4) real HR managers don't directly use HRIS. Turning to the *first theme*, the new HRIS symbolized Human Resources' wish to become more of a strategic business partner. It was believed the HRIS would enable HR to better speak the language of business, to become more analytical, and to develop into a partner with line management:

> I think (the new HRIS) will help change the image of HR. You are becoming an HR analyst now just like each business unit has a business analyst that analyzes projected versus actual sales . . . we're not integrated into that . . . we are becoming the business analysts for the HR dept. So that now we can talk to the vice presidents about . . . what kinds of people and positions they should be making 10–20 years down the road, so you are doing more long term planning instead of doing it day to day.

A *second major theme* is that the new HRIS will enable HR to perform new or enhanced roles of information brokers and decision enablers. These roles are spawned through HRIS's provision of centralized decision support and increased automation of routine HR work. The HRIS enables increased integration of HR subfunctions:

> [We need the Corporate HRIS to support] the whole process of how you handle people from the time you recruit them until the time they come into the selection process to the time they become evaluated to the time they get a performance appraisal . . . so that all these systems can be inte-

grated towards an overall goal of or objective of producing a well developed employee who can in fact meet the succession planning objectives of this company for the future. Or who can perform their jobs to the very best possible so we remain a superior competitor for the year 2000 and beyond.

A *third theme* is that the new HRIS is a catalyst for altering power dynamics and communication patterns between HR and other management functions, such as Information Systems and Finance, and within the human resource community itself. The new HRIS raises issues of control and ownership and reflects the old historical HR/management conflict over the delineation of HR's responsibilities versus those of other management groups. Designing a new HRIS was also viewed as being more complicated than was designing other information systems because of the greater number of user groups that need information from the system. This trend suggests that HRIS will help HR increasingly serve as a consultant to many managers:

> [HRIS] is more complicated, because of the multiple clients, and the number of clients and organizations that you're going through. You're dealing with systems that have a strong financial tie and that have strong HR tie . . . you are never going to one person for an answer . . . it has to be a committee decision. It's the Controllers and HR trying to . . . run with or not run it together and it seems . . . they are pushing it (ownership of the HRIS) back and forth . . . I think HR is beginning to see that it's more theirs than anyone else's.

Within the HR community itself, the new HRIS is a important vehicle of change due to its need to promote coordination and commonality in a company that historically has had a very decentralized approach. In particular, the HRIS promoted discussions of control between corporate and the field. Some field personnel resented corporate mandating support of the new HRIS:

> They are creating another monster (the new HRIS). . . . Now what they are trying to do is make us all have the same systems and we all don't do the same thing . . . I don't see how it is feasible, because Refining doesn't do the same thing that Exploration does and we darn sure don't do the same thing Chemical does. We don't need the same kinds of information.

> I think some folks at Corporate don't understand the clients out in the locations . . . out in the field. Their focus in on that huge conglomerate data base and that's their first priority. . . . and very ancillary to that is the effect of the Corporate HRIS on the people (in the field) who have to use the data to do their day to day work and get the payroll out.

A *fourth theme* is the subtle view that "real" HR managers don't directly use HRIS. Or they don't view HRIS use as a critical competency for career success. This theme might more commonly be referred to as resistance to change:

Within HR they keep talking with more and more emphasis on soft skills (like employee involvement and communication type programs where we're asking input from employees) . . and getting away from computer skills . . . so within HR if I became more skilled and was more comfortable using the computer system I don't know that it would do much personally for my career . . . It seems as though we're moving away from that.

In terms of the corporate HR culture I don't think it's [HRIS skills] valued . . . [HRIS skills] are not valued the same way that other skills are valued . . . it's not one of the HR core competencies.

Survey and Communication Intervention

Table III shows highlights of mean and standard results ($p \leq .05$) from the two surveys. (Cross-lagged correlation matrix can be obtained from the first author.) No significant differences were found between groups regarding *expected capabilities of the new HRIS* over time. Expectations remained very high regarding the new system's features, as the sample mean was 5.5 at time 2, up from 5.3. Yet ironically, over time, the mean intention to *use the new HRIS* significantly decreased from 5.08 to 3.97. Employees who had only received the written intervention (3.68 versus 4.52 for those who attended the seminar) and who were nonmanagers (3.78 versus 4.82 for managers) had the greatest drop in their intention to use the new HRIS.

A factor in the significant drop in the intention to use the HRIS may be linked to views that the system was taking too long to implement as measured by the *time appropriateness* scale. While there was a favorable

Table III. Highlights of Descriptive Statistics and T tests for Survey Results.[a]

	Mean Time 1	Mean Time 2	Intervention Time 2		Hier. Time 2		Skill Time 2	
			writ.	oral	Mgr.	Non.	Exp.	Beg.
1. Use of New HRIS	5.08*	3.97*	3.68*	4.52*	4.82*	3.78*		
2. Time Approp. of new HRIS	3.28*	3.76*					3.46*	4.58*
3. Expect. Capabil.	5.33	5.50						
4. Value of New HRIS	4.13*	4.81*					4.63*	5.28*

[a]Scale response range = 1 (low) to 7 (high).
Only means that are significantly different from one another are shown by intervention, hierarchical, or user level status.
Significant differences by business unit are not indicated, since none held up at time 2.

increase in the samples' attitudes toward the *time appropriateness* of the process of implementing the HRIS, as the mean increased from 3.28 to 3.76, it was still leaning on the unfavorable side of 7-point scale. No significant differences were found in views of time appropriateness by unit, hierarchical level, or intervention at time 2. However, expert and moderate users held significantly lower attitudes (3.46) regarding time appropriateness than did beginning users (4.58).

Regarding the *expected value of the new HRIS*, the degree to which it was valued by the HR community over time, there was a significant increase in perceived value (4.81, up from 4.13). Evidence that the subsidiaries were beginning to develop a commonly held and socially constructed view of the innovation is provided by the fact that although Exploration, the most advanced unit on the old corporate HRIS, was significantly less favorable than other groups at time 1, these differences faded out by time 2. All groups including Exploration increased their views of the expected value of the new HRIS over time. The only difference in expected value that held up over time was based on user level. Expert and moderate level users (time 1: 3.89; time 2, 4.63) remained significantly less favorable regarding expected value than did beginning users at both time periods (time 1, 4.78; time 2, 5.28).

DISCUSSION

This study has shown that implementing an HRIS not only for administrative but also for strategic and business decision-making purposes symbolized Human Resources attempt to become more of a business partner. It also changed the nature of HR work to encompass a greater information broker and decision support role. The advent of corporate HRIS for decision-making purposes reflects an increasing attempt to link HR activities to the firm's efforts to meet competitive pressures as well as to meet financial and strategic objectives.

Perhaps the most critical finding of the study is that implementing a Corporate HRIS for strategic decision support is a major organizational change. Several implications for organizational development interventions are suggested. Conducting careful diagnosis of varying levels of user resistance to change at the individual, group, and cultural levels, fostering new frames or ways of thinking about the HRIS, encouraging early user involvement in planning and implementation, and designing interventions to increase computer knowledge, skills, and applications in a face to face manner are main recommendations.

Diagnostic Issues

The employee background characteristics of hierarchical position, user level, and business unit were useful in diagnosing initial individual

commitment to the HRIS. Over time our results also showed a trend toward attitudinal convergence within the human resource community toward the new HRIS. With the exception of skill level, where assessment of the HRIS's capabilities is probably less suspect to social influences than in the case of business unit or hierarchical level, over time members of these latter groups had converged their views into a commonly held, socially constructed view as Burkhardt (1990) also found. User skill level may be more strongly related to long term variance in attitudes toward the value of a new HRIS than to hierarchical level or business unit affiliation. The more skilled the user, the less favorable the attitudes toward delays in systems implementation time and the expected value of a corporate HRIS. Skilled users' are likely to be much less dependent on the corporate HRIS for information support. They may already be developing and supporting their own business unit via local systems and see less value in supporting the mainstream corporate system. Yet if new HRIS initiatives are to be successful, it is critical to have experienced users show strong support. Indeed, our results showed that expectations toward the new HRIS remained high across all groups, and change agents could have more effectively built upon these to their advantage.

The case study also found the existence of ambivalence and differing views within the human resource community over the extent to which developing skills in using human resource information systems was a critical competency for HR professionals. For many years Opco did not have a key HR person involved in the development of its HRIS; it did not even formally view the HRIS as part of its function. It is likely that HR had not actively sought ownership of HRIS or valued developing HRIS skills because HRIS carried the historical baggage of being symbolically linked to HR's early and mainly clerical roles. Due to the large amount of organizational resources needed to transform Opco's Corporate HRIS into systems that are designed to support decision-making for HR's growing role of strategic business partner, the new HRIS project was an agenda-setting intervention. HR began to renegotiate its roles with management. Corporate HR and field units also mediated new roles and expectations. Our results highlight the importance of diagnosing and managing power dynamics and communication between the HR and other managerial functions and within the HR function itself.

Changing the Culture to Develop New HRIS Frames

Implementing a new HRIS requires new frames or socially constructed views and ways of thinking. Unlike some new HR programs such as a new performance appraisal form, a new HRIS cannot just be slotted into the existing HR systems. The development of new techno-

logical frames regarding the use of computers to conduct personnel work requires at least a second order change (a new way of thinking about HRIS that differs from the status quo) (Moch & Bartunek, 1987). It involves a transformed view toward the role of information technology in HR (Gash & Orlinkowski, 1991). Viewing HRIS as serving strategic support roles pertaining to vital business issues as opposed to mainly supporting functional HR roles such as payroll and EEO reporting requires new ways of thinking about how one uses HRIS to support HR work. Values need to be altered regarding the importance of HRIS to organizational effectiveness. Thus, for effective organizational change to occur, there must be congruence between an innovation's capabilities and employees' ideals and beliefs regarding the change (Armenakis, Bedeian, Niebuhr, 1979). If the HR community does not value HRIS skills or does not comprehend the potential significance of the new HRIS, little change will occur, and most HRIS will remain focused on administrative over strategic decision support.

Encouraging Early User Involvement

Given the potential importance of HRIS as a change vehicle for transforming the HR function, this study has shown that implementing a long term project such as a new corporate HRIS must be strategically managed. Choosing new corporate HR technologies involves risky decisions given the rapidity of change in the computer and HR fields. In the case of information systems in particular, most are functionally and technically obsolete by the time they are up and running. It is critical to involve line management and field units in the decision choices before large amounts of resources are invested. Effective implementation programs involve users in the design process to promote effective communication between designers and users (Majchrzak et al., 1987). Management information systems plans must be linked with the corporate strategy and backed by top management in order to ensure that the computer-based information system will be seen as valid and important (Franz & Robey, 1984). As Kossek (1989) has found, many innovations in human resource management fail to live up to their potential because top management tends to support innovation in human resources to a greater extent symbolically or rhetorically than through tangible actions.

Individuals' enthusiasm is likely to wax and wane over the life of a corporate HRIS project, which is likely to take years to complete. The longer the course of development, the greater the challenge to maintain interest in and support for the process of implementation. As Parsons et al. (1991) has found, involving individuals in the planning stage of systems implementation, does have a significant positive impact on resistance to change variables and implementation process outcomes. The communication intervention highlighted the importance of managing

the public relations implications of the HRIS, since it ensured continued interest in the system is maintained (Hiltz & Turoff, 1979).

Designing Effective Communication Interventions

Our research showed that face-to-face seminars were significantly more effective than written communication in influencing favorable intention to use the HRIS. The seminars may have reduced uncertainty by providing realistic information about the project to a "captive audience" and furnishing employees with a basis for action (other than rumors).

Gutek, Winter, and Chudoba (1992) apply a voting analogy to computer use that is relevant for the design of HRIS training interventions. They point out the correlation between favorable attitudes and computer use is not the same as holding favorable attitudes and voting. Unlike naively pulling a lever in a voting booth, some computer literacy is needed to follow through on one's intention. In large organizations, members can state the politically correct view that they will use the new highly visible HRIS system, knowing they have the option of turning around and ask technical specialists to retrieve the information. Organizations attempting to increase the use of computers in employees' jobs should focus on improving attitudes toward computers for those employees who *have freedom of choice in using their computers* and *those with the knowledge to use them* (Gutek et al., 1992). Thus, increasing computer knowledge is essential to enhancing use. Merely having a favorable attitude toward a computer is not enough to use it, as some level of knowledge is required. The results suggest that in organizations or departments where workers are not particularly computer literate, efforts should be focused on increasing employees' computer knowledge, before trying to improve attitudes (Gutek et al., 1992).

Consequently, communication interventions generally should not only orient employees, but should also provide specific training in HRIS technology. This approach would also have important implications for systems design since as Hiltz and Turoff (1984) note, users tend not to be able to tell system developers what they need prior to using the technology. Perhaps a centralized mainframe system was implemented over smaller distributed systems because the most skilled users tended to be nonmanagers who had lesser input into early systems design decisions.

CONCLUSIONS

Future research should replicate the organizational development issues highlighted in this study and the variance by computer skill level groups' reactions to the HRIS. Clearly, more research is needed about cultural norms and institutional pressures fostering adoption of HRIS.

Despite the fact that many firms have devoted large resources to adopt HRIS for the stated purposes of providing strategic data support capabilities, the fact remains that most HRIS are still largely focused on automation (Broderick & Boudreau, 1992). Future interventions should be tailored (1) to change the perception that computer use is not a core HR skill, (2) to give rewards for using computers in HR decision-making, and most importantly (3) to change the frames or notion of the role of information technology for supporting HR work. Otherwise organizations risk spending millions to adopt new human resource information systems with a result of less than optimal payoff.

Ellen Ernst Kossek is an associate professor of human resource management and organizational behavior at the School of Labor and Industrial Relations at Michigan State University. Prior to joining MSU in 1987, Ellen worked on human resource issues for IBM, GTE, and Hitachi in Europe, the U.S., and Japan. Her articles on human resource innovation, work/family initiatives, and work force diversity have appeared in a number of journals and she has consulted to many Fortune firms. Recently, she edited a book entitled Child care challenges for employers *and is the author of* The acceptance of human resource innovation: Lessons for managers *(Quorum Books). Ellen has a Ph.D. from Yale University in organizational behavior, an M.B.A. from the University of Michigan, and an A.B. cum laude in psychology from Mount Holyoke in South Hadley, Massachusetts.*

Willard Young is an organizational development consultant at Ford Motor Company and a Ph.D. candidate at the School of Labor and Industrial Relations at Michigan State University.

Debra C. Gash is an organizational development consultant in industry. She was formerly an assistant professor at Michigan State.

Victor Nichol is a Ph. D. candidate at the School of Labor and Industrial Relations at Michigan State University.

APPENDIX

Items Included in Scales (Confirmatory Factor Analysis)

USE OF NEW HRIS   Alpha: T1 = .94; T2 = .83

How much do you anticipate using the new corporate system for these activities?

```
1    2    3    4    5    6    7              8
Not at all        Moderately   Extensive    Doesn't Apply
```

1 2 3 4 5 6 7 8   Compensation and benefits
1 2 3 4 5 6 7 8   Recruitment and selection
1 2 3 4 5 6 7 8   Affirmative action and EEO
1 2 3 4 5 6 7 8   Performance appraisal and career planning
1 2 3 4 5 6 7 8   Payroll operations
1 2 3 4 5 6 7 8   Strategic HR and HR planning
1 2 3 4 5 6 7 8   Employee/labor relations
1 2 3 4 5 6 7 8   Productivity monitoring (e.g., absence, turnover, & labor costs)
1 2 3 4 5 6 7 8   Personnel research (e.g., surveys) & organization development
1 2 3 4 5 6 7 8   Training and development

EXPECTED CAPABILITIES   Alpha: T1 = .79; T2 = .69

For the next set of questions please think about the **new corporate system.**

What are your current general expectations of the system?

```
1          2          3          4          5          6          7
I expect              I expect a              I expect
very little         moderate amount           a lot
from the system     from the system       from the system
```

*** I think that the data from the new corporate system will be:

```
1          2          3          4          5          6          7
Always                Sometimes              Never
on time               on time               on time
```

*** I think that the data from the new corporate system will be:

```
1          2          3          4          5          6          7
Very                  Moderately             Very
Accurate              Accurate              Accurate
```

*** I think that the new corporate system will be:

1	2	3	4	5	6	7
Very easy to use			Neither easy nor difficult to use			Very difficult to use

***

1	2	3	4	5	6	7
Very easy to customize to my needs						Very difficult to customize to my needs

TIME APPROPRIATENESS   Alpha: T1 = .77; T2 = .85

*** How quickly do you believe the Corporate HRSDI project is proceeding?

1	2	3	4	5	6	7
Very quickly			Moderate progress			Very slowly

The progress on the Corporate HRSDI project to date is:

1	2	3	4	5	6	7
Too slow			At a reasonable pace			Too fast

Please indicate the extent to which you agree or disagree with the following statements using this scale:

1	2	3	4	5	6	7
Strongly agree						Strongly disagree

*** 1 2 3 4 5 6 7   I am very satisfied with the *progress* of the new corporate system development

Given all factors beyond project management's control (vendors, technical glitches, etc.), the time frame of the project development is:

***

1	2	3	4	5	6	7
Outstanding						Totally Unacceptable

In regards to the progress of the Corporate HRSDI, I currently feel:

1	2	3	4	5	6	7
Extremely frustrated			Somewhat frustrated			Not at all frustrated

***Recoded Item(s)

EXPECTED VALUE OF THE NEW HRIS   Alpha: T1 = .81; T2 = .82

1	2	3	4	5	6	7
Strongly agree						Strongly disagree

*** 1 2 3 4 5 6 7   The new corporate system will enhance the credibility of the Human Resources function at Opco.

*** 1 2 3 4 5 6 7   Supporting or working on the Corporate HRSDI can enhance my career.

APPENDIX (Continued)

***	1 2 3 4 5 6 7	I see the value in having a new corporate-wide HRIS.
***	1 2 3 4 5 6 7	Field needs will be met by a new corporate system.

What do you believe is the likelihood that the benefits of project will outweigh the costs?

1	2	3	4	5	6	7
***Extremely likely					Extremely unlikely	

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