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OVERVIEW

This year marks the 25th anniversary of *Research in Personnel and Human Resources Management*. This series has been a valuable resource for human resource management (HRM) researchers thanks to the fine work of the contributors each year since the series' inception. Volume 25 continues with the tradition of publishing papers that contain an eclectic mix of ideas from economics, psychology, and sociology written to illuminate our understanding of the HRM field and to capture the multidisciplinary spirit of the field. This volume contains eight interesting papers on important HRM topics, such as the structure of labor markets, business strategy and teamwork, leadership in the HR profession, and selection of information technology (IT) workers.

In the first paper, Dencker points out that some scholars have argued that changes in the U.S. corporate economy in recent decades transformed labor market institutions in revolutionary ways while others suggest that labor market change in this period was more gradual. He synthesizes research from multiple disciplines to assess whether the transformation of two main labor market structures – closed employment relationships associated with internal labor markets (ILMs), and job structures within these ILMs – was revolutionary or evolutionary in recent decades. Dencker then specifies implications of the labor market transformation process for HRM, and concludes by suggesting avenues for future research.

In the second paper, Jackson, Chuang, Harden, and Jiang draw from the resource-based view of the firm and complex systems theory to argue that the effective utilization of knowledge-intensive teamwork (KITwork) can be a source of sustained competitive advantage for firms that pursue a variety of strategies and compete in a variety of industries. They maintain that KITwork is a multidimensional, multilevel social process that promotes knowledge flows within and between organizations. Through KITwork, the knowledge resources of individual employees are transformed into a capability that contributes to the effectiveness of knowledge-based organizations. After introducing and explaining the concept of KITwork, Jackson and colleagues explore the challenges that organizations must address in order to design HRM systems that support and facilitate KITwork.

In the third paper, Alge, Greenberg, and Brinsfield present a model of organizational monitoring that integrates organizational justice and information privacy. They adopt the position that the formation of invasiveness and unfairness attitudes is a goal-driven process, and employ cybernetic control theory and identity theory to describe how monitoring systems affect one's ability to maintain a positive self-concept. Monitoring provides a particularly powerful cue that directs attention to self-awareness. People draw on fairness and privacy relevant cues inherent in monitoring systems and embedded in monitoring environments (e.g., justice climate) to evaluate their identities. Discrepancies between actual and desired personal and social identities create distress, motivating employees to engage in behavioral self-regulation to counteract potentially threatening monitoring systems. Organizational threats to personal identity goals lead to increased invasiveness attitudes and a commitment to protect and enhance the self. Threats to social identity lead to increased unfairness attitudes and lowered commitment to one's organization. Implications for theory and research on monitoring, justice and privacy are discussed along with practical implications.

In the fourth paper, Hallock investigates six main issues related to layoffs: timing of layoffs, reasons for layoffs, the actual execution of layoffs, international workers, labor unions, and the types of workers by occupation and compensation categories. The paper draws on literature from many fields to help further understand these issues as well as data on over 4,600 layoff announcements in the U.S., covering each firm that ever existed in the Fortune 500 between 1970 and 2000, along with 40 interviews of senior managers in 2001 and 2002.

In the fifth paper, Webster and Staples maintain that a growing literature may be found about virtual (i.e., geographically dispersed) teams; however, few summaries of this knowledge are available. They help fill this gap by reviewing empirical research that addresses the effectiveness of virtual versus traditional (i.e., co-located) teams. Based on the typical input-process-output model of team effectiveness, Webster and Staples classified almost 200 empirical studies on virtual teams. They developed propositions to address neglected research areas regarding the differences between virtual and traditional teams.

In the sixth paper, Lepak, Liao, Chung, and Harden tell us that a distinguishing feature of strategic HRM research is an emphasis on human resource (HR) systems, rather than individual HR practices, as a driver of individual and organizational performance. Yet, there remains a lack of agreement regarding what these systems are, which practices comprise these systems, how these systems operate, and how they should be studied.

The authors take a step toward identifying and addressing several conceptual and methodological issues regarding HR systems. Conceptually, they argue that HR systems should be targeted toward some strategic objective and operate by influencing: (1) employee knowledge, skills, and abilities, (2) employee motivation and effort, and (3) opportunities for employees to contribute. Methodologically, they explore issues related to the relationships among policies and practices, sampling issues, identifying the appropriate referent group(s), and who should serve as key informants for HR system studies.

In the seventh paper, Avolio and Walumbwa remind us that exercising HR leadership has always been difficult in challenging times, but the unique stressors facing organizations throughout the world today call for a new approach to HR leadership and its development. The authors propose a multifaceted model that redefines the role of strategic HR leadership and for understanding connections between authentic HR leadership and sustainable organizational performance. They argue that to build enduring organizations and motivate employees to provide superior customer service and create sustainable value for their organizations, we need HR leaders who know themselves, who lead with integrity and demand conformance to higher ethical values.

In the last paper, Anderson Snyder, Rupp, and Thornton III point out evidence that organizations face special challenges when designing and validating selection procedures for IT workers. The history of the IT industry, the nature of IT work, and characteristics of IT workers converge to make the selection of IT workers uniquely challenging. The authors identify these challenges and suggest means of addressing them. They show the advantages offered by the modern view of validation that endorses a wide spectrum of probative information relevant to establishing the job relatedness and business necessity of IT selection procedures. Finally, the authors conclude their paper with implications of these issues for industrial/organizational psychologists, HR managers, and managers of IT workers.

I believe that the authors have shared enlightening perspectives on many important topics in the HRM field. Altogether, I hope these papers lead you to think differently about the topics represented in this volume.

Joseph J. Martocchio
Series Editor

REVOLUTIONARY OR EVOLUTIONARY CHANGE? A TALE OF TWO LABOR MARKET STRUCTURES

John C. Dencker

ABSTRACT

Scholars have argued that changes in the U.S. corporate economy in recent decades transformed labor market institutions in revolutionary ways. Although there is a fair amount of evidence in support of these claims, other studies suggest that labor market change in this period was more gradual. This paper synthesizes research from multiple disciplines to assess whether the transformation of two main labor market structures – closed employment relationships associated with internal labor markets (ILMs), and job structures within these ILMs – was revolutionary or evolutionary in recent decades. It then specifies implications of the labor market transformation process for human resource management (HRM), and concludes by suggesting avenues for future research.

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INTRODUCTION

In recent decades, corporate reorganizations and reductions in force (RIF) have been a significant component of what has been termed a Modern Industrial Revolution (IR) (Jensen, 1993). This transformation process has had a significant impact on the employment relationship, with firms no longer buffering employees from market forces to the extent they did in the past (DiPrete, 1993), employment systems becoming much less stable (Cappelli et al., 1997; Erikson & Goldthorpe, 1992; Grusky, 1994; Kerckhoff, 1995), and job hierarchies being flattened (DiMaggio, 2001). As a result, scholars have argued that many structural features of labor markets have been eliminated (cf. Sørensen, 1996, 2000).

The notion of a revolutionary change in labor markets is surprising since structure – “the enduring, orderly, and patterned relationships between elements of a society” (Abercrombie, Hill, & Turner, 1988, p. 228) – has long been resilient in the face of pressures to change. The notion of revolutionary change is also inconsistent with findings from studies showing that common measures of labor market stability have been relatively stable in recent decades (cf. Neumark, 2000), as too have many labor market institutions (Goldthorpe, 2000). For instance, the flattening of job hierarchies has not been universal among large bureaucratic firms, and in instances where job levels have been eliminated, the new job systems often retain features of the systems they replaced. In sum, there is a fair amount of ambiguity surrounding the extent and nature of structural change in labor markets, with some scholars arguing that changes were revolutionary, and others providing evidence that change was more evolutionary and limited in scope.

In order to assess whether structural change in U.S. labor markets in recent decades was revolutionary or evolutionary, it is important to focus on stylized facts, and to be cognizant of the possibility that perceptions of past practices and systems were biased (Hambrick, 2005). These suggestions are often not heeded. For example, widespread debates about the efficiency and fairness of the labor market transformation process have hindered discussion about the extent and nature of this process because scholars on both sides of this argument at least implicitly assume that fundamental change transpired. On one side of this debate, agency theorists argue that the change process increased the efficiency of organizations, for example through leveraged buyouts (LBOs) that forced managers to sell off parts of their organizations and reorganize others (Jensen, 1989). On the other side, scholars have attacked many elements of agency theory (Ghoshal, 2005), for instance by arguing that LBOs merely transferred wealth from employees

and other stakeholders to firms' owners (Shleifer & Summers, 1988), yet these scholars do not gainsay that labor market transformation was dramatic.

In this article, I assess the nature and extent of the labor market transformation process by focusing on two labor market structures common to large bureaucratic organizations in the post-WWII period – closed employment contracts associated with internal labor markets (ILMs), and job structures located within these ILMs. Because the transformation process has important implications for hiring, retention, performance management, and development, I consider implications of my findings for human resource management (HRM), and thereby hopefully add to the growing literature on the role that the HRM function should play in dynamic work environments (cf. Blank, 2002; Cappelli, 2002; Jacoby, 2002; Neumark, 2002; Osterman, Kochan, Locke, & Piore, 2001; Potter, 2002; Raynor, 2002).

The remainder of this article is organized as follows. I begin by briefly defining the notions of revolutionary and evolutionary change in labor markets, and reviewing the forces impinging on labor market structures in recent decades. I then consider the degree to which RIF reduced the stability of closed employment relationships structures, relying on evidence about job stability and job security, studies of employee perceptions of job loss, and evidence about the layoff process from several firms. I next consider the change process within firms' job structures, describing their key characteristics in large bureaucratic organizations, and examining how they were transformed through corporate restructuring. After highlighting the implications of changes in both types of labor market structures for HRM, I conclude by discussing avenues for future research.

LABOR MARKET CHANGE IN HISTORICAL CONTEXT

In this section, I assess whether structural change in labor markets has been revolutionary or evolutionary in recent decades. I begin by defining these two change notions, and then consider the forces driving the transformation process.

Revolutionary and Evolutionary Labor Change

The notion of revolutionary change has been defined in many different ways. In many definitions of this term, the idea of change as being sudden,

radical, drastic, complete, and/or fundamental is often emphasized. For example, *Encyclopedia Britannica* defines the IR as involving a radical and profound change in economic relationships and technological conditions. In literal terms, a revolution refers to a complete turn around, suggesting that what precedes the change process will be little recognized in what follows. By contrast, evolutionary change typically refers to a gradual movement in a certain direction. The evolutionary change process is continuous, and typically involves the transmission of many elements of a form or type over long periods of time. In effect, in evolutionary change, forms or types do change, yet many of the basic elements are likely to be recognizable in adjacent generations, indicative of an iterative rather than a fundamental change process.

Determinants of Labor Market Change

Jensen (1993) argues that the oils shocks of the early 1970s motivated firms to increase efficiency so to minimize costs, leading to a Modern IR (Jensen, 1993). In particular, the increase in oil prices – coupled with forces such as technological change, organizational innovation, macro-economic policies, trade globalization, and a revolution in political economy – led to excess capacity in many industries, and ultimately generated strong pressures on firms to seek optimal exit strategies through corporate restructuring and RIF.

In some instances, forces driving excess capacity and the need to exit influenced industries differentially. For instance, Carter administration deregulation policies led to excess capacity in trucking, airlines, and banking industries, whereas the end of the Cold War led to excess capacity in the defense industry. Exit pressures on firms in industries that had excess capacity were often enormous. For example, William Anders, the CEO of General Dynamics, a leading defense industry firm, believed that following the Cold War several firms in this sector would eventually go bankrupt due to overproduction tracing to declining product demand. Based on those beliefs, Anders decided on a strategy in which General Dynamics would sell off products that they developed and produced (e.g. missiles, submarines) if these products were not among the most profitable products in the defense sector. As a result, General Dynamics spun off a number of business units, and laid off many employees (Murphy & Dial, 1993).

In other instances, forces creating excess capacity did so across industries. Capacity-expanding technological change, such as telecommunications and

computer processing, had a large influence on industry output. For example, teleconferencing allowed firms to conduct meetings with little worries about geographic distance, resulting in savings in time and travel costs that also had ramifications for the airlines industry. Similarly, improvements in organizational practices and management technology (e.g. just in time inventory systems) often diffused across industries. In some industries, such as in the steel and automobiles, new management techniques resulted from increased global competition, which often came in two forms: quality and cost. For example, Japanese auto manufacturing firms typically competed on quality, forcing their U.S. competitors to change organizational and management practices to meet new standards. By contrast, Mexican firms competed on the basis of low labor costs, leading U.S firms to outsource to these low wage countries in order to reduce their wage bills.

In sum, an important outcome of the Modern IR for labor markets is that the forces leading to excess capacity created incentives for efficient exit, often through corporate RIF and organizational restructuring. Although some firms resisted these changes, pressures from capital markets, the legal/political/regulatory system, product and factor markets, and firm internal control systems helped ensure that change was a constant throughout the 1980s and 1990s (Jensen, 1993) as institutional investors pushed for corporate change (Useem, 1996), and as widespread merger and acquisition (M&A) altered many industries and firms (Bower, 2001). In the following sections, I examine how these corporate reengineering efforts directly impinged upon labor market structures.

THE TRANSFORMATION OF CLOSED EMPLOYMENT RELATIONSHIPS

Prior to the 1980s, the employment relationship was seen as “closed” (Sørensen, 1977; Sørensen & Kalleberg, 1981), with labor market institutions such as unions and “shared rules” protecting employees from the vicissitudes of the market (Freeman & Medoff, 1984; Osterman, 1999; Pfeffer & Salancik, 1979; Thompson, 1967). In effect, features of ILMs in the post-WWII created an environment wherein both firms and employees desired to remain attached, with relationships between them closed to outsiders except in the case of entry-level positions. For example, notions of firm-specific capital (Becker, 1964; Mincer, 1962) and bonded contract schemes (Lazear, 1979) created incentives for employees to remain with firms for long periods of time – in large measure because of promised wages

and/or output in the future. These long-term relationships were often guaranteed by a firm's reputation, in that contract default generated negative consequences for firms engaging in these practices.

Despite the resistance to change inherent in closed employment relationships, ties between firms and employees were transformed in many ways in recent decades. For example, the well-known sharp decline in unionization rates reduced job security for many employees. Perhaps the main driver of labor market transformation was corporate RIF, which began in the 1980s, and continued to grow in size and scope throughout the 1990s (Cascio, 1993). During this period, groups that were protected from layoffs in the past, such as white collar employees, were disproportionately targeted by RIF (Cappelli, 1992; Farber, 2003; Jensen, 1993; Useem, 1996). Moreover, these layoffs were often permanent, in contrast to previous layoffs that often involved recall. As a result, for many scholars lifetime employment relationships were being replaced by other forms of organization–employee relationships (cf. Shore et al., 2004). In other words, as Sørensen (1996, 2000) argues, RIF destroyed the “closed” or structural character of the employment relationship, thereby “opening” subsequent relationships in the sense that supply and demand forces governed the employment contract to a much greater extent than they previously did.

As noted, accounts highlighting the revolutionary nature of labor market structural change are not always consistent with available evidence found in a number of studies, may have overstated the stability of the employment relationship in the post-WWII period, and/or may have overstated the extent of change, in that, for example, employees in the manufacturing sector were disproportionately influenced by RIF (Baumol, Blinder, & Wolff, 2003). In order to address these inconsistencies, I consider the degree to which closed employment relationships became more open (i.e. less structured) in recent decades from a multi-disciplinary, multi-level framework. I examine three key outcomes in this regard. First, I consider evidence on broad trends in employment relationship stability in the post-WWII period to the present. Second, I consider changes in employee perceptions of the stability of the employment relationship. Third, I consider evidence from firm-level studies to assess potential inter-group variation in the influence of RIF on employment relationships.

Broad Trends in Employee Tenure Patterns

Perhaps the strongest evidence suggesting that the change in employment relationship structure was evolutionary rather than revolutionary comes

from studies of employee job tenure patterns. These studies examine tenure in terms of either job stability or job security, and seem to indicate at a broad level that, although there has been a clear weakening of the bonds between employees and firms, the magnitude of change suggests that these relationships have not been broken (Neumark, 2000).

Job Stability

Jaeger and Stevens (1999) analyzed job stability data from the Panel Study of Income Dynamics (PSID) and the Current Population Surveys (CPS). They demonstrate that the share of employees with less than 18 months of tenure on a job increased from the 1970s to 1983s, but did not rise afterwards. By contrast, the percentage of men with less than 10 years of tenure began to increase in the late 1980s. Neumark, Polsky, and Hansen (1999) also analyzed CPS data, and found that from the 1980s to the 1990s, there was a weakened tendency for managerial and professional employees to remain in a long-term job (defined as tenure of eight years or longer).

Evidence on job stability was largely consistent across broad-based samples. For example, Gottschalk and Moffitt (1999) examined one-year job separation rates for employees in the Survey of Income and Program Participation (SIPP) from 1983 to 1995, and found similar results to Jaeger and Stevens (1999). However, in analyses of data on young, white males, job stability was found to be much lower in the 1980s and 1990s compared to the 1960s and 1970s. In particular, Bernhardt, Morris, Handcock, and Scott (1999) examined job stability using cohort data on young, white males from the National Longitudinal Surveys of Young Men (NLSYM) for the period 1966–1981, and the National Longitudinal Survey of Youth (NLSY) for the period 1979–1994. They looked at changes in two-year separation rates, and found that separation rates in the NLSY cohort were much higher than for the earlier NLSY cohort, a finding that held across tenure and education groups.

In sum, job stability patterns appear to be consistent with the notion that labor market structural change in the 1980s and 1990s was more gradual than many scholars claimed, the main exception being the strong declines for young, white males.

Job Security

Research on job security in the 1980s and 1990s may provide more relevant evidence on the extent and nature of changes in closed employment relationships than research on job stability does. That is, in contrast to job stability, which does not distinguish between voluntary and involuntary

departures, a decline in job security “refers specifically to a decline in job durations attributable to increased involuntary job loss, an unambiguous ‘bad’ from the perspective of workers” (Neumark, 2000, p. 10).

Research on job security stems primarily from PSID and CPS data. Valletta (1997) studied job security using the PSID for the 1976–1992 period. He found that although tenure was negatively associated with dismissal, there was a strong positive trend over time in the probability of dismissal, particularly for higher tenure employees. He also uncovered a downward trend in quit probabilities for lower-tenured employees and for skilled white-collar females. Stewart (2000) studied job security using data from the CPS from 1967 to 1997. He found that the rate of transition from employment to unemployment increased in the 1980s relative to the 1970s, but did not increase in the 1990s. He did find, however, that the 1990 recession had a more negative effect on job security for highly educated men, white-collar employees, and employees with more than 20 years of experience, when compared to the recession of 1982.

In sum, as Neumark (2000) notes, there is a fair amount of evidence that job security did decline in recent decades, albeit with questions about the timing of the decline and of whether there is a discernible trend in the 1990s. Moreover, the findings suggest that the resulting change in employment contract was not complete, in that these relationships appear to remain closed for some employee groups. Yet, as Neumark (2000) notes, these data are viewed in different ways by different scholars. Thus, it can plausibly be argued that change in the employment contract was dramatic, in that, for example, the strong increase in termination rates for more senior employees indicates a large reduction in the buffering of these employees from market forces (cf. DiPrete, 1993, for similar findings from different data sources).

Employee Perceptions of Job Security

Studies of employee perceptions of job security provide some sense of the extent to which RIF eliminated structural barriers between firms and employees. For example, Brockner and his colleagues (1987, 1992) examined how layoffs influenced the reactions of employees who remained in a firm following a RIF. They found that survivors reacted negatively to layoffs, particularly when they identified with the employees who were laid off, and that many survivors responded with decreased work effort.

More recent studies have confirmed notions that perceptions of job security have been reduced as a result of broad economic and social changes,

and that employee loyalty to an organization is significantly lower than it previously was (Roehling, Cavanaugh, Moynihan, & Boswell, 2000). In addition, evidence suggests that the employment relationship has been changed as organizations shift to less clear (more permeable) boundaries (Rubery, Marchington, Coopke, & Vincent, 2002). These and other changes to the employment relationship, such as a movement away from the “traditional” contract, have motivated scholars to consider characteristics of the “new” psychological contract (Shore et al., 2004; Sparrow, 2000).

Economists, such as Schmidt (1999) have also studied the issue of job security from the employees’ perspective, using data from the General Social Survey for the period 1977–1996. She found a decline in employee perceptions of job security over time, in that employees were generally more pessimistic about their jobs following the 1990 recession compared to earlier periods, a finding that is consistent with observed job security patterns.

In sum, a number of studies have documented a strong decline in perceptions of job security for many employees in recent decades, a finding that would be expected if the employment contract shifted from being closed to being open. Although this evidence is not necessarily indicative of a fundamental transformation in employment relationships that many employees believe that their work contracts are at-will rather than long term and guaranteed suggests that changes in the relationship over time may have been dramatic.

Tenure Patterns across Employee Groups

Although studies of job stability and job security suggest that layoffs may have been pervasive for many employees, an important question with regard to the elimination of closed employment relationships is whether RIF influenced all employees. I seek to answer this question by examining the stability of the employment relationship in firms within and across industries.

The broadest evidence of the influence of firms’ practices on the employment relationship stems from research on job displacement. Kletzer (1998) and Farber (2003) examined evidence from the Displaced Worker Surveys (DWS) – a supplement to the CPS. Consistent with studies of job stability and job security, Kletzer found that job displacement rates increased significantly during the recessions of 1982–1990. She also found that in contrast to the recovery in the 1980s, the sustained expansion from 1993 to 1995 exhibited job displacement rates that were the highest of the 1980–1995 period, with about 15 percent of employees displaced at some time during

1993–1995. In particular, the job loss rate in the mid-1990s was higher than what might have been expected given the strong labor market during that period (Farber, 2003).

Consistent with Farber (2003), Kletzer also shows that for employees with a college degree, a larger percentage of jobs were lost in the 1990s relative to the 1980s, particularly during the 1993–1995 period. In addition, Kletzer sought to disentangle job losses by reasons listed in the DWS, finding that job loss due to the abolishment of a position was more prevalent in the 1990s than in the 1980s – albeit with most of the observed job losses tracing to the “other” category listed in the DWS.

Research by Baumol and colleagues (2003) also documents the increasing rate of job loss due to RIF, yet several of their findings challenge prevailing views in the literature. For example, in a statistical analysis of a sample of newspaper articles on “downsizing,” they found that over 50 percent of announced “downsizings” did not reduce employment in a company, with many of the firms in their sample ending up with workforces that were larger in size than those that they had prior to the announcement (Baumol et al., 2003, p. 25). In addition, using the Enterprise Statistics database from the U.S. Department of Commerce, they found that RIF were largely restricted to the manufacturing sector, with other industries generally increasing the size of their workforces. Moreover, they established that although employment in manufacturing firms contracted from 1987 to 1992, this pattern had been occurring in that industry since 1967 – a full six years before the start of the Modern IR, and 20 years before the start of the “downsizing period” (Baumol et al., 2003, p. 25).

Other firm level studies have considered the influence of RIF on job security and stability using personnel files from individual organizations. Allen, Clark, and Schieber (1999) studied job stability using data on 51 firms from Watson Wyatt Worldwide consultants for the 1990s. Many of the firms in their sample had engaged in RIF, with retention rates lower than in firms that downsized than in those that did not. However, they also found that the average tenure of employees increased over the 1990s, and documented that mid-career employees were not singled out in RIF decisions. These findings suggest that firms followed a first-in first-out RIF strategy, with less senior employees laid off, and more senior employees induced to leave through early retirement schemes. This latter outcome has two important ramifications for our understanding of the extent of change in labor market structure in the 1980s and 1990s. First, it provides additional evidence for the differential effect of RIF on employees, with older and younger employees being targeted disproportionately. Second, it suggests

that although the employment relationship has been changed, it has not been destroyed. In particular, although firms' use of early retirement options and other incentives to motivate older employees to exit may represent a significant change in the relationship, the change arguably reflects evolution in the employment contract to meet changing circumstances – with many elements of the relationship remaining unchanged – instead of the destruction of the contract.

Dencker (2005) examined the nature of RIF on the employment relationship at a more refined level than Allen and colleagues. Using detailed longitudinal files from one large manufacturing firm, Dencker demonstrated that labor market structures provided significant protection to employees even in the face of two RIF in the firm (which occurred in the mid-1980s and early 1990s). In particular, he found that layoffs were largely restricted to employees in levels below the upper salary grade levels (SGL), with the small number of upper-level employees who did leave during RIF opting to accept early retirement offers. In addition, of the employees in middle and lower levels who did leave the firm during RIF periods, many were coded as being “voluntary,” in that these individuals decided to accept the firm's offer of severance in exchange for ending the contract. Nevertheless, some actions by the firm suggest that the employee expectations about the employment relationship were significantly altered following the firm's RIF. First, many employees who did leave voluntarily may have done so only because they feared that they would be laid off involuntarily in the future, a notion confirmed in interviews with HR managers in the firm. Second, these fears of termination arguably increased over subsequent RIF in the firm. Third, interviews with managers and documentation from the firm indicate that the firm made changes to the nature of the employment relation, in that its employee handbook eliminated any reference to lifetime employment, and made sure to emphasize that the contract was at-will.

In sum, evidence from studies examining the employment relationship within firms for the most part runs counter to the notion of revolutionary labor market change. In particular, although findings indicate that the employment relationships were altered in significant ways, particularly for employees in the manufacturing sector, the contract was little different along many dimensions from earlier forms. One caveat is that for many employees, guarantees of lifetime employment were a thing of the past. For example, Cisco Systems, like IBM, had highly visible policies that layoffs would be undertaken only in extreme circumstances, if at all. Nevertheless, both firms eventually succumbed to external pressures to

conduct RIF, thereby likely generating negative reactions among many of its employees.

Summary

Overall, the nature and extent of changes to closed employment relationships in recent decades appear to be closer to evolutionary change notions rather than to revolutionary change notions. Evidence from broad surveys and studies of employee perceptions of job security offer some support to the notion that closed employment relationships have been transformed significantly, particularly for more senior employees. Moreover, temporal patterns in this regard are indicative of an increasing shift to open employment contracts, as job displacement rates were higher during market downturns in the 1990s as opposed to the 1980s, and increased during recovery periods in the mid-1990s. Yet, evidence from firm-based studies of RIF indicates that RIF were largely restricted to the manufacturing sector, and that many of the employees who experienced the greatest increase in job security in the broad surveys were also most likely to be offered remuneration in exchange for terminating the employment relationship.

In sum, the employment relationship in large firms at present does not resemble the spot market contracts suggested by price theory, even though it is also evident that market forces are impinging on the employment relationship to a greater extent than in the past. In other words, the employment contract arguably is more open than in the past, but its closed structure has not been destroyed.

THE TRANSFORMATION OF ORGANIZATIONAL JOB STRUCTURES

In theory, jobs in bureaucratic organizations are created independently of the employees occupying them, are linked hierarchically to other jobs, and are governed by rules covering authority and reporting relationships. In recent decades, corporate restructuring has transformed jobs and the structures they comprise, although the extent of change is in dispute. I argue that contrasting conceptions of structural change in jobs trace to the level at which a job is analyzed. I highlight the validity of this claim by examining the nature (and stability) of jobs and job structures in the post-WWII period, and then demonstrating how they have been transformed in the 1980s and 1990s.

Firm Internal Job Structures

Jobs have been an important structural feature of the employment relationship for many decades (cf. Weber, 1922 [1969]). For example, White's (1970) pioneering work on vacancy chains indicates that a departure of an individual from a position does not eliminate that position. Rather it creates a vacancy typically filled by transferring an individual from another position to fill the vacancy. More broadly, jobs can be seen as a significant component of ILMs (Althauser, 1989; Dunlop, 1966; Doeringer & Piore, 1971), with common entry portals, and movement upward through a job ladder based on promotions from lower level to higher-level jobs (Lazear & Rosen, 1981; Rosenbaum, 1979; Sørensen, 1977; Stinchcombe, 1974) that brought about progressive increases in skill and knowledge (Althauser & Kalleberg, 1981). Employees often found that upward mobility was difficult in upper levels, and thus might choose to switch job ladders in order to avoid long tenures in "ceiling" levels. Over a person's tenure in a firm, discernible career lines could be observed (Spilerman, 1977).

Despite the high degree of formality portrayed in research on jobs and job ladders, evidence suggests that these structures were not always stable. For example, Miner (1987) shows that even in highly formalized organizational systems, a significant percentage of idiosyncratic jobs exists (i.e. jobs that are created around individuals rather than for a group of employees). DiPrete (1987) shows that career trajectories were less influenced by job structures than commonly thought. In addition, many unique job titles exist (Baron & Bielby, 1986), with over 5,000 unique titles for professional, technical, and managerial employees found in one large U.S. manufacturing firm over a 25-year period (Dencker, 2005). Taken together, these findings suggest that jobs in the post-WWII period are likely less stable than the ILM literature assumes. In the following subsection, I assess whether job the stability of job structures in this period.

Salary Grade Level Systems

Perhaps because of the wide variety of unique job titles in bureaucratic organizations, many researchers tend to group jobs into broad categories when analyzing employment outcomes such as intra-firm mobility. For example, Baker, Gibbs, and Holmström (1994a, 1994b) studied a large service firm, and adduced the hierarchical job structure by examining typical career paths of employees through jobs, while Lazear (1992) relied in part on salary information for certain jobs in a large firm in order to rank them in a hierarchy. A more common method of grouping jobs into levels is to rely on

information from firms. In particular, many large bureaucratic organizations organize jobs into SGL. Jobs in SGL were evaluated based on skills, knowledge, and ability needed to perform effectively within them, with similar jobs grouped into a single SGL (Gerhart & Rynes, 2003).

Grade levels have salary ranges attached to them, which are based in part on the value of the job in the firm, as well as on wages paid in the external market. Thus, there is a strong structural component to the assignment of wages to jobs. For example, there are many clearly specified rules and procedures about allocating rewards to employees within a job. Managers are often prohibited from providing a salary to an employee in a job that is either above the maximum for that job, or below the minimum. In addition, a new entrant in a job typically receives a salary that is near the minimum of the salary range for that job, with wage increases over time based largely on employee performance and seniority in the job.

The relationships between jobs in different grade levels typically are clearly specified. For example, questions regarding authority are minimized since supervisor–subordinate relationships normally involve differently ranked positions. This outcome accords with Weber’s notion that firms benefit from using rules to minimize the uncertainty that may stem from informal relationships. In addition, SGL systems apply in theory to all employees in an organization, with the exception of the top managers, who are often “above” the grade level system. Career ladders contained within SGL systems can, however, vary across employee groups. For example, administrative employees are often grouped into relatively lower-level grades, whereas relatively higher grades may involve cross-functional job ladders. Nevertheless, SGL systems have been fairly stable in terms of number of levels over time, as has been shown in several firm-level studies (cf. Dencker, 2005; Petersen, Spilerman, & Dahl, 1989).

In sum, a key structural characteristic of job systems is the separation of the person from the position, with fixed, well-defined roles for the individuals occupying these jobs. Although job titles in these systems were not always stable prior to the onset of corporate reorganization in the 1980s and 1990s, job structures in large bureaucratic organizations were formal, particularly with respect to SGL systems.

Corporate Restructuring and Firm Internal Job Structures

The single biggest factor transforming job structures in recent decades arguably has been corporate restructuring. For example, during the RIF

process, legal requirements often forced firms to eliminate job titles, and firms often did away with grade levels and/or combined adjacent levels into job bands. This flattening of the corporate hierarchy was driven in large part by flexibility and efficiency rationales. By collapsing levels and jobs into smaller categories (cf. Gerhart & Milkovich, 1992; Heneman, Ledford, & Gresham, 2000), firms in theory could increase labor market flexibility to better meet the challenges posed by dynamic events in the external environment. For example, HR managers indicate that a problem with the SGL system was that it was difficult to reward employees who were nearing the top of the salary range for a given level. Combining levels into bands created broader salary ranges than were common in SGL structures, thereby allowing for greater wage growth within a level, and less risk of having employees who were in a career level reaching the top of the salary range for that level.

The varied nature of job structure change by level of analysis over historical time can be seen in findings from a large manufacturer that undertook two large-scale RIF and one major reorganization episode from the mid-1980s to the early 1990s (Dencker, 2005). In many ways, evidence from this firm suggests that structural change at a broad level was minimal in that the firm maintained a constant number of SGL throughout the restructuring period. However, it eliminated many job titles, and had combined existing grade levels into job bands by the mid-1990s. Such changes were common in many manufacturing firms. For example, Pratt and Whitney consolidated 11 pay grades and 3,000 job descriptions into 6 pay bands and several-hundred job descriptions (Gerhart & Rynes, 2003, p. 112). In addition, Whirlpool is currently collapsing its 37 grade levels into 8 career bands.

Despite the elimination of job levels in some firms, it appears that change has not been fundamental at a broad level of analysis. For example, some firms such as John Deere have resisted pressures to conform, and instead maintain their SGL systems. Moreover, the shift from SGL systems to job band systems does not mean that a firm's job structure is fully eliminated. As in movement from one grade level to a higher-grade level, movement from one band to a higher band is still considered to involve a promotion, albeit one that occurs at a slower rate than in SGL systems. In addition, firms have maintained formal rules and procedures for allocating employees in bands, with organizational charts clearly documenting the reporting relationships among jobs. In effect, broad level job structures in firms that have reorganized seem to have been replaced by other structural forms, rather than being eliminated entirely. As a result, bureaucratic rules governing band systems work in much the same way as they did the SGL

systems. In addition, both job bands and SGL, and presumably to a lesser extent the job itself, still exist independently of the persons occupying them.

Overall, the move toward less-structured job systems within firms may be limited in that the bureaucratic corporation, as we know may be too useful to disappear, or to change all that much (Kraakman, 2001). As Weber argued, bureaucracy is a stable solution to the uncertainties caused by social relations in organizations that are not governed by formal rules and policies. If anything, uncertainties within organizations are high in restructured organizations, suggesting that jobs and job structures will be fairly stable career forms for some time to come.

Summary

A number of patterns emerge from the review of jobs and job structures in the post-WWII period. Perhaps the most important pattern is that the stability of firm internal structures is heavily dependent on the level of analysis chosen. Once one accounts for this factor, the weight of the evidence of the influence of corporate restructuring on job structures strongly supports evolutionary notions of change. For example, some forms of structure are being replaced with other forms of structure, such as the shift from SGL systems to band-based systems. At a more refined level of analysis, such as the job title, instability seems to be a constant. For example, the idiosyncratic nature of jobs suggests that the creation of titles for individuals is not a new phenomenon.

In effect, although what a job represents has been transformed as firms replace specific skill requirements with role requirements, and increasingly rely on teams comprised of employees from different functions and job levels, the formality of specific jobs in earlier periods may have been much less than commonly thought. In this context, informal networks of relationships may be more important for many career outcomes than they were in the past. If so, scholars will need to increase knowledge of the dynamics of these networks, and to consider in detail the potential difficulties created from the reduction of formalization that Weber argued was crucial to organizational effectiveness.

IMPLICATIONS OF LABOR MARKET STRUCTURAL CHANGE FOR HUMAN RESOURCE MANAGEMENT

This article argues that labor market structural change in recent decades has been more gradual than radical. Thus, if HRM practices and systems in

restructured firms are based on the assumption that change was revolutionary, HR's role will need to be modified. A key factor in this regard is for HR managers to better understand how firms' strategic decisions influence employment relationships, in light of labor market structural changes that have occurred. In particular, the role of HRM in managing changes to labor market structures will be driven in part by the strategies employed by firms that restructure (Aguilera & Dencker, 2004; Bower, 2000), suggesting the need for a solid understanding of firms' rationales for restructuring.

As noted, agency accounts of the restructuring process tend to focus on efficiency rationales, with the desire to eliminate excess capacity in many industries being an overriding goal (Jensen, 1993). These and other accounts have had a strong influence on the nature of the reorganization process (Baumol et al., 2003), yet they are quite broad in outlook, with surprisingly few empirical studies examining specific strategic determinants of RIF (Cappelli, 2000). Spurred by these gaps in the literature, a number of recent studies have explored a number of possible RIF determinants (Baumol et al., 2003; Dencker, 2005). Baumol and colleagues assessed six potential causes of RIF: (1) technological change that favors smaller firms; (2) faster innovation that leads to greater churning in labor markets; (3) desires to trim "fat"; (4) the substitution of capital by labor; (5) the breakdown in the social contract between firms and employees; and (6) the "blue-collarization" of white-collar employees. Using a variety of broad-based data sources, Baumol and colleagues find limited support for the notion that technological change drives downsizing (causes one and two above), and substantial support for the notion that firms sought to trim fat. In addition, they find no support for the notion that firms substitute labor for capital, and tangential support for the notion that downsizing was driven by the breakdown of the social contract.

Dencker (2005) looked at determinant of RIF using longitudinal data from a large U.S. manufacturing firm. He extended notions of rent-seeking (Sørensen, 1996, 2000) to consider whether firms undertook RIF in order to motivate surviving employees by laying off low-performing employees (trimming the fat), or in order to transfer wealth from employees to the firm's shareholders (the breakdown of the social contract). Similar to Baumol and colleagues, he found strong support for the trimming the fat account, and less support for the breakdown of the social contract account. Overall, the weight of the evidence on RIF strategies seems to support the trimming the fat view. In the following section, I examine what this strategy implies for the role of HRM in restructured firms, given the evolutionary changes in labor market structures documented in this article.

The Role of HRM in Restructured Firms

Although there has not been a complete elimination of closed employment relationships, the shift toward at-will contracts by many firms, coupled with trimming the fat strategies, suggests that two key HR factors will be important in restructured firms: hiring and retention. There is some indication that firms have responded to these challenges by relying on market rates to a greater extent than internal equity in allocating pay (Weber & Rynes, 1991), while maintaining some flexibility to set pay internally (Gerhart & Rynes, 2003). In some instances, the result has been an increased emphasis on laying off low-performing employees, or modifying early retirement plans to encourage employees to depart. For example, in GE the stability of the employment relationship was often conditional on performance, with the lowest performing 10 percent of the workforce in a year being terminated. In other instances, these practices have been designed to help firms retain their best performing employees, for instance through use of golden handcuffs and vested options.

In many cases, market forces are intertwined with changes in job structures. For instance, by shifting from SGL structures to job band systems, firms were able to reduce constraints on their ability to reward high performers. That is, in SGL systems, high performers were often punished by salary grade ceilings in that rules prevented firms from paying salaries that were above the maximum for a given level. Salary increases for high performers who were near the ceiling thus were often lower in percentage terms than their performance would have dictated were they in the middle of the salary range for that level, an outcome that motivated many high performers to end their employment relationships (Zenger, 1992). By shifting from SGL to job band systems, firms could increase their reliance on market forces to retain talented employees. For instance, one HR manager noted that her firm's shift to band systems made it easier to provide monetary incentives to employees who spent long periods of time in a level. As such, some of the difficulties attributed to the Peter Principle (i.e. promoting an individual to his or her level of incompetence), could be resolved by eliminating some of the disincentives from being passed over for promotion (Gibbs, 1995).

Although job band systems may minimize problems inherent in SGL systems, these systems have their own unique problems. For example, promoting employees into the lower salary range of the next higher band – as occurred in one manufacturing firm – was met by resistance from fast-trackers who felt they should be promoted into at least the middle of the

salary range of a given job band. Similarly, the relatively fewer number of promotions available in job band systems relative to the SGL system may create difficulties in motivating employees. Thus, although the increasing use of market forces to govern the employment relationship makes the role of HR somewhat easier than in the past, the need to retain valued employees in the face of increasingly at-will employment contracts creates new challenges for HR managers.

In sum, the tension between using market forces and structures to manage employees has created numerous challenges for HRM. Some of these challenges may simply have been inherited from the past as new systems have evolved from older ones, with many structural features preserved in current forms. Yet, many new problems are emergent in the restructured context. Perhaps the greatest challenge for HRM is in dealing with the uncertainty stemming not only from the shift from closed to more open employment relationships, but also from the increased use of teams and informal work systems. For example, in boundaryless careers (Arthur & Rousseau, 1996), networking is important for employees who need to negotiate boundaries through their skills and reputation. However, this also means that employees who are not well connected may not be able to effectively manage their careers. In order to manage employees effectively, managers will need to facilitate the building of effective networks among employees in a way that does not formalize these relationships, perhaps by ensuring that employees are exposed to a variety of other employees on teams, such as cross-level and cross-functional teams. A challenge in this regard is that the desire for certainty and stability leads firms to create new rules and procedures. However, by doing so, they may reduce the effectiveness that more flexible (i.e. less structured and formalized) labor markets ostensibly provide.

CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

Although ongoing structural change in labor markets has been occurring for several decades, this transformation has been much less significant than suggested in many press and scholarly accounts. Despite some erosion around the edges, the closed employment relationship has not been altered fundamentally by corporate restructuring. Moreover, it seems that some new job structures have simply evolved from previous ones, with many structural elements being passed along intact. Although job systems have

become somewhat less structured, they are still highly relevant for many career outcomes. In addition, the gradual transformation in closed employment relationships has had a lasting impact on the behavior and attitudes of employees as market forces impinge on employment, thereby generating a number of questions for scholars to examine.

Future Research

Many important questions remain unanswered in the realm of labor market structural change, not only for researchers, but also for HR practitioners. In part, these questions stem from a lack of information on the transition from SGL systems to job band systems. It is unclear, for example, the degree to which pay that is attached to jobs in band system is consistent with the market wage (Gerhart, Milkovich, & Murray, 1992). A related question is whether jobs – as opposed to characteristics of individuals – are becoming less important in determining an employee’s salary (Heneman et al., 2000). Thus, a fruitful avenue for future research would be to assess how job structures in restructured firms differ from previous forms, how jobs are assigned to bands, and how stable (e.g. idiosyncratic) they are.

Research would also benefit by providing a better understanding of whether careers differ in band systems relative to SGL systems along a number of dimensions. For example, do employees attach more importance to promotions in job band systems relative to SGL systems? Given that promotions are rarer in job band systems, how important are social aspects of movements upward in job ladders in these evolved systems? Is relative status more important for employees in restructured firms, or less important? Have firms made a trade off between promotion-based rewards and market-based rewards in restructured firms? Finally, how common are bands across industries? A potential way to answer many of these questions would be to follow changes to these organizational features in one firm over a longtime frame. Such ethnographies of firms (Petersen & Saporta, 2004) are becoming more common, and have the potential to provide critical information for the development of theory, as was the case in firm-level studies that led to the creation of the ILM literature.

Another possible avenue for future research on ILMs and job structures would be comparative studies, which might provide useful counterfactuals. Many countries differ on the changes organizations within them made to their labor market structures. For example, organizations in Continental European countries such as France and Germany made relatively fewer

changes to their labor market systems and practices in the 1980s and 1990s than did organizations in the United States. This research could provide information on whether Weberian bureaucratic organizations were inefficient in changing environmental contexts as some scholars maintain, or whether the structures within them provided needed stability among employees to effectively perform their jobs.

Another important issue is to examine how networks of relationships tie in to more formal labor market structures, and to do so in a way that takes into account dynamics of these interactions. For example, research could assess whether the way in which networks matter for getting ahead in firms has changed along with formal structures. A drawback in this area is that evidence on structural change in networked forms of relationships is difficult to obtain. For example, in order to assess how these relationships have been altered, it is important to have longitudinal information on these relationships, which is difficult to obtain for a full population of employees in a firm at a given point in time (Marsden, 1990), let alone over time. One possibility suggested by Burt (1997) is to examine top managers in firms as the population of interest. A benefit of this approach is that the top management teams were likely to be relatively less affected by reorganization and RIF than lower-level employees, and therefore provide a more stable population to study over time. However, the relative stability calls into question whether findings with regard to these employees would be generalizable to other employee groups. Another possibility would be exploring stability of raters of performance over time in 360-degree performance management systems, wherein information on employee performance is gathered from peers, superiors, subordinates, and clients. Examining the relationships among raters and the focal employee in different periods could provide some indication of whether the peers, subordinates, and supervisors with whom an employee works are stable over time.

In sum, this article has reviewed what is known and unknown about the effects of corporate restructuring on common labor market structures. In doing so, it has raised or highlighted a number of important questions, such as whether new forms of structure – and for that matter new forms of organization – are effective and for whom.

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TOWARD DEVELOPING HUMAN RESOURCE MANAGEMENT SYSTEMS FOR KNOWLEDGE-INTENSIVE TEAMWORK

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ABSTRACT

Building on the resource-based view of the firm and complex systems theory, we argue that the effective utilization of knowledge-intensive teamwork (KITwork) can be a source of sustained competitive advantage for firms that pursue a variety of strategies and compete in a variety of industries. KITwork is a multi-dimensional, multi-level social process that promotes knowledge flows within and between organizations. Through KITwork, the knowledge resources of individual employees are transformed into a capability that contributes to the effectiveness of knowledge-based organizations. After introducing and explaining the concept of KITwork, we explore the challenges that organizations must address in order to design HRM systems that support and facilitate KITwork.

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INTRODUCTION

The competitive landscape of the twenty-first century features challenges firms to continually change and adapt to myriad external forces, including globalization, new technologies, new rivals, and unpredictable and ever-changing political conditions. Firms can succeed in this environment by pursuing a variety of competitive strategies. For example, they can seek to create unique new products, produce the highest quality products, offer services at very low cost, build unsurpassable brand loyalty, and so on (e.g., see Campbell-Hunt, 2000; Desarbo, Di Benedetto, Song, & Sinha, 2005; Dess, Lumpkin, & Covin, 1997). To successfully implement these various strategies, firms must build strategic capabilities (systems and processes), which the firm uses to transform its resources and create value.

Of the many strategic capabilities that a firm might use to successfully implement its competitive strategy, the development of systems and processes for managing knowledge-based resources has been recognized as among the most important for creating a sustainable competitive advantage. Indeed, some scholars have argued that the need to effectively manage knowledge-based resources – e.g., skills, abilities, expertise, and learning capacity – is a priority that transcends a firm's choice of competitive strategy (e.g., see Grant, 1996; Nonaka, 1994; DeCarolis & Deeds, 1999).

In this paper, we argue that systems of human resource management (HRM) practices can be powerful tools for improving the effectiveness of organizations that compete on the basis of knowledge. Building on prior work, we integrate concepts from the resource-based view, the knowledge-based view, and complex system theory to argue that knowledge-intensive teamwork (KITwork) is a capability that organizations can use to leverage the knowledge of employees and gain competitive advantage. After introducing and defining the construct of KITwork, we briefly explain our rationale for asserting that a broad range of organizations can use a KITwork capability to create value. Finally, we discuss several issues that organizations must address as they seek to develop HRM systems that facilitate KITwork, and through this suggest new directions for future research.

WHAT IS KNOWLEDGE-INTENSIVE TEAMWORK?

Knowledge-intensive teamwork refers to the collaborative process through which people use their unique and their shared knowledge to achieve a

common outcome. KITwork can describe the activities of traditional work teams as well as activities that occur within communities of practice, task forces, consortia, joint ventures, and so on. In fact, KITwork occurs in many forms throughout firms that deploy knowledge to create market value (e.g., see Swart & Kinnie, 2003). Here, we explain the construct of KITwork in some detail.

Knowledge

Dictionary definitions of knowledge include phrases such as *have direct cognition of*, *have a practical understanding of*, and *have experience with*. Whereas information is primarily descriptive and somewhat objective, knowledge is anchored in experience and more subjective. Individuals hold and create knowledge as they identify problems and work through solutions to those problems. Consistent with other scholars working on issues of knowledge management, we use the term *knowledge* to refer to a person's subjectively constructed view of information, which accrues as a result of learning through action and reflects the justified beliefs and commitments of its holder (see Nonaka, Toyama, & Byosière, 2003).

We consider knowledge to be, fundamentally, an individual-level construct. When two or more individuals interact to move and transform knowledge, they are engaging in the knowledge-centered activities that comprise KITwork.

We assume that KITwork is one of the central processes through which organizations transform the knowledge held by individuals into something of value to the organizations. Organizations create value from the knowledge of individuals when they develop or adopt organizational processes and routines that reflect and incorporate individual knowledge. For example, quality circles are a technique for ensuring that the knowledge held by individual production workers is transferred to the organization by using it to improve production processes. Quality circles are one example of KITwork.

Teamwork

Teamwork refers to the activities of a group of people working toward a shared objective that requires communication, collaboration, and coordination; it is a process that involves interaction between people who share some common interests. Although teamwork is closely related to the

concept of a team, the two terms are not interchangeable. Teams are just one of several vehicles that organizations use to promote interdependence (Campion, Medsker, & Higgs, 1993). Shared tasks, shared goals, and shared outcomes can all foster repeated interactions among people in an organization, even when they are not members of a designated team or other clearly defined stable work unit (cf., Gully, Incalcaterra, Joshi, & Beaubien, 2002; Saavedra, Earley, & Van Dyne, 1993; Shea & Guzzo, 1987). In many instances, interdependent employees are more accurately described as participants in a network of collaboration. For some of the collaborators, a given project may be their only responsibility, requiring 100 percent of their time and effort. For others, that same project may be one of several responsibilities. Our use of the term “teamwork” is intended to acknowledge and include the many forms of interdependence found in modern organizations.

Knowledge-Centered Activities

KITwork does not denote a distinct category of teamwork. Some collaborators engage in relatively little KITwork, and others engage in a great deal of it. What differentiates KITwork from other types of collaboration and teamwork is the extent to which knowledge-centered activities dominate the interactions. Knowledge-centered activities include the following: knowledge acquisition, knowledge sharing, knowledge combination, knowledge creation, knowledge application, and knowledge revision. Auto manufacturing teams, construction crews, sports teams, and musical orchestras all involve teamwork, but the importance of knowledge-centered activities is fairly low for these tasks. By comparison, KITwork is central to scientists and engineers engaged in new product development, experts from various backgrounds who work together to service customer-focused accounts, multi-functional sales teams, managers charged with planning and implementing a merger, and so on.

As we describe knowledge-centered activities in more detail, below, notice that these activities can characterize interactions among individuals as well as interactions at higher levels of analysis. We address the levels-of-analysis issue later in the paper.

Knowledge Acquisition

Knowledge acquisition includes locating knowledge and incorporating it into one’s own repertoire. It occurs when an individual, group, or organization gains explicit or tacit knowledge it did not previously have.

Social collectives such as teams, communities of practice, and organizations (hereafter referred to simply as “collectives”) acquire knowledge by reading, listening, observing, imitating, trial-and-error learning, and so on. Collectives acquire knowledge to the extent that their members engage in these behaviors.

Collectives can also acquire knowledge by acquiring new members. Groups can acquire knowledge by involving new people in their collaboration, leveraging their ties to other organizational units (Hansen, 1999), and drawing on experts who reside beyond these boundaries (Bouty, 2000). Communities of practice can acquire knowledge by expanding their memberships. Firms can acquire knowledge by buying other firms and forming strategic alliances, as well as by recruiting new employees (see Deeds, 2003, for an extended discussion).

Knowledge Sharing

Knowledge sharing refers to activities aimed at transmitting knowledge to others. Transferring knowledge from an individual to other parts of the organization can contribute to the organization’s performance. However, transferability of knowledge also can threaten competitiveness, for the issue of knowledge inimitability lies at the heart of the analysis of competitive advantage and its sustainability (Spender & Grant, 1996). A challenge for organizations is deriving competitive advantage from internal knowledge transfers, while preventing knowledge from leaking out to their competitors (Argote & Ingram, 2000).

Although knowledge acquisition and knowledge sharing are closely related, they are not merely opposite views of the same process. Indeed, one approach to gaining a competitive advantage may be to maximize knowledge acquisition while minimizing knowledge sharing. In international joint ventures, for example, a firm’s ability to keep an appropriate balance between its own knowledge acquisition (e.g., an improved understanding of the market) and knowledge sharing (e.g., technological and management know-how) can be a major determinant of success (Tsang, 2002).

The importance of knowledge sharing has been stressed in many discussions of knowledge-based competition and innovation (e.g., Hargadon & Sutton, 2000). One benefit of effective knowledge sharing is efficiency. No individual knows everything, and no individual can keep up with all of the relevant new knowledge continually being created. Knowledge sharing among employees conserves resources and frees up time for people to actually use the knowledge they have. Moreover, knowledge sharing promotes knowledge application. As employees attempt to share knowledge, they are

forced to articulate what they know; this makes it possible to evaluate the knowledge and apply it to solve problems or create new products (Von Krogh, Ichijo, & Nonaka, 2000).

Knowledge Combination

Combination refers to the process of (a) bringing together elements that previously were unconnected, or (b) bringing together in new ways elements that previously were associated (Nahapiet & Ghoshal, 1998). That is, knowledge combination involves bringing together and perhaps merging bits of knowledge that previously were considered separate and perhaps were viewed as unrelated.

Reaping the anticipated benefits of knowledge combination is often a major reason for using teamwork in organizations. For example, a consumer products company might charge a group of employees to combine the firm's knowledge about its consumer markets with knowledge about its work force and the labor market to develop a new marketing and sales strategy. Teamwork may also be motivated by the belief that knowledge combination is likely to result in knowledge creation. As individuals or work units with different knowledge stocks collaborate, the continual (re)combination of their knowledge serves as the basis for incremental change (Noe, Colquitt, Simmering, & Alvarez, 2003), and occasionally it leads to significant new ideas, products, or procedures. For example, at Gillette, representatives with various areas of expertise formed a cross-functional team, where they combined their tacit knowledge to invent the first battery-operated razor.

Knowledge Creation

Knowledge creation involves producing knowledge that is new, or that is considered new by those using it. Ideas are considered creative if they are novel and have potential usefulness to the organization's growth or effectiveness (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Oldham, 2003). Likewise, knowledge creation occurs when something new is discovered or brought into existence. Generally, knowledge creation requires the acquisition and combination of existing knowledge (Kogut & Zander, 1992).

The creation of new knowledge usually starts from an idea (or ideas) generated by one or more individuals. Most creative ideas do not contribute to an organization's success unless they are available to others in the organization (Oldham, 2003). Bringing together individuals facilitates the combining of ideas that leads to the creation of new knowledge. Until it becomes widely available, new knowledge is rare and unique. By having

exclusive access to such knowledge (and being able to use it effectively), firms can gain a competitive advantage (Barney, 1986).

Knowledge Application

Knowledge application refers to the use of existing knowledge for a specific, practical purpose. Applying existing knowledge to the production of goods and services is a primary responsibility of firms (Grant, 1996). Appropriate and profitable use of knowledge requires recognizing when the knowledge is relevant and then making decisions, solving problems, designing new products, improving current procedures, and so on. Applying knowledge to new tasks and in new situations increases the return on investments that were made to gain that knowledge. Applying knowledge also accelerates the process of knowledge articulation, which may reveal more opportunities for application of the knowledge (Chakravarthy, McEvily, Doz, & Rau, 2003).

Until it is applied, knowledge is of little value to a firm, yet research shows that people often fail to apply their knowledge to problems they face (Thompson, Levine, & Messick, 1999). HR practices such as one-on-one coaching, use of realistic training simulations, and electronic knowledge directories may influence the extent to which employees are able to apply what they know to the work situations they experience (e.g., see Noe et al., 2003).

Knowledge Revision

Knowledge revision occurs when existing knowledge is updated, revalidated, or retired. In rapidly changing environments, knowledge quickly becomes obsolete so continuous updating is essential. Failure to update and revalidate knowledge may result in reliance on knowledge that has decayed and outlived its usefulness (Davis, 1998). Failure to discard useless knowledge leads to knowledge overload and obstructs an organization's ability to act on new information (Anand, Manz, & Glick, 1998). Failure to discard entrenched dominant logics is one of the main reasons organizations fail to respond to changes in their environment (Bettis, 1991; Miller, 1994). In effective organizations, forgetting goes hand-in-hand with knowledge acquisition and creation (Martin de Holan & Phillips, 2003, 2004).

Knowledge-Intensive Teamwork

Following from the above discussion, we use *knowledge-intensive teamwork* to describe people collaborating on tasks that involve knowledge-centered

activities – that is, activities related to acquiring, sharing, combining, creating, applying, and revising knowledge. Brainstorming processes illustrate the type of interactions comprising KITwork. In their study of a product development firm’s brainstorming activities, Sutton and Hargadon (1996) found that complex problems were addressed by engaging numerous people in the process. The solutions that were eventually developed were born of teamwork; they were not simply the ideas offered by a particular individual. Across a wide variety of firms pursuing various strategies, examples of the importance of KITwork abound. Here we offer just a few examples to illustrate the role of KITwork in a variety of companies and industries.

Wal-Mart

The importance of information management at Wal-Mart is well-known, but some people may be surprised that KITwork plays a role in Wal-Mart’s bid to be the lowest-cost provider of just about everything. Effectively implementing a cost leadership strategy typically requires unyielding pursuit of cost reductions and minimal investment in basic research or new product development (Miles & Snow, 1984; Miller, 1986; Porter, 1980). Wal-Mart and other firms pursuing cost leadership strategies benefit from knowledge that contributes to continual cost reductions. Wal-Mart’s innovative and highly developed radio frequency identification (RFID) system eliminates the need for line-of-sight access to conventional bar codes. It speeds the movement of goods through the supply chain, improves inventory management, and ultimately reduces labor costs.

A knowledge-intensive development team directly contributed to the creation of Wal-Mart’s RFID system, and KITwork has been at the heart of the firm’s efforts to leverage the system. As data from the RFID began to flow into the firm, Wal-Mart’s IT directors donated staff members to a seven-month project to determine the best use of the information being captured. Wal-Mart also supports knowledge-intensive collaborations with suppliers and competitors in an effort to ensure that a single RFID technology emerges as the agreed-upon platform for the entire industry (eWeek, 2004; Manufacturing Business Technology, 2005).

Bang & Olufsen

At Bang & Olufsen, providing high-quality products takes priority over reducing costs. KITwork plays a significant role in Bang & Olufsen’s ability to develop high-end home electronics. Product development occurs in a team consisting of a team leader, a designer, a psychologist, a member from “Idealand,” a software developer, a narrator, and an integrator. Each

member brings an unique perspective and a distinct functional expertise to the endeavor. The team leader's role is to be a product champion. The leader ensures that key constituents in the organization (concept manager, technical product manager, etc.) are in agreement about the worth of the product being developed and that the product is in line with the organization's strategy and objectives. Ultimately, the synthesis of team members' diverse perspectives and knowledge results in the production of technical products that advance the field in design, sound, picture, user interaction, and sound integration (Baerentsen & Slavensky, 1999).

Gillette

As it pursues a strategy of differentiation, Gillette relies heavily on innovation. The company's battery-operated M3Power razor captured 35 percent of the United States razor market in seven months, despite costing 50 percent more than the company's previous high-end razor. The product was created by a cross-functional team that included representatives from three of Proctor & Gamble's brands: Gillette (who understood razors), Duracell Battery (who understood battery operated products), and Braun (who understood small appliances). By transferring and combining tacit knowledge from each brand, the team created the first battery-operated razor (Byrnes, Berner, Zeller, & Symonds, 2005).

Roche Group

Pharmaceutical and healthcare firms provide some of the most familiar examples of KITwork. Roche's pharmaceutical division discovers and develops medicines targeted to treat and monitor diseases in all major therapeutic areas. Innovation is essential to the firm's survival. As medicines come off patents and reach maturity, new products must be introduced to offset declining sales. As of 2005, a significant portion of Roche's products had reached maturity. To offset declining sales, Roche was expected to introduce seven new medicines within three years (Datamonitor, 2005). To speed up its new product development processes, Roche dismantled its highly competitive departmental teams and moved toward greater reliance on KITwork. They started with "corridor meetings" between employees from genomics and oncology and then expanded to include collaborators from numerous countries and various educational backgrounds. Although the diversity added new challenges, team members found ways to bridge the gaps and capitalize on each person's expertise (Anders, 2002).

KITWORK AS A SOURCE OF COMPETITIVE ADVANTAGE

The resource-based view of the firm asserts that resources and capabilities become sources of sustainable competitive advantage when they are rare, valuable, hard to imitate, and difficult to replace with substitutes (Barney, 1991). KITwork is a capability that enables firms to effectively use knowledge resources to design, produce, distribute, and sell goods and services (cf., Grant, 1996). Whereas some capabilities are particularly relevant to specific competitive strategies, knowledge-based capabilities like KITwork have broader relevance to firms. Low-cost providers like Wal-Mart, high-quality providers like Bang & Olufsen, and innovators like Gillette and Roche all use KITwork to meet the challenges of competition in their markets.

Complex systems theory provides a perspective for understanding how particular resources and capabilities contribute to a sustainable competitive advantage (Colbert, 2004); it views organizations as creative and adaptable entities characterized by self-organization and partially random change (Colbert, 2004). Like other complex systems, organizations evolve as the result of repeated interactions among their elements. Over time, the consistent structures, patterns, and properties that emerge define the system. Because the emergent features of a system arise out of a partially random process, they tend to be both unique and difficult for others to imitate. KITwork is an example of a process that brings elements of a system into repeated contact and creates partially random change.

KITwork adds Value

For complex organizations, KITwork is the primary vehicle for knowledge creation and learning, which are needed to solve problems and perform effectively in rapidly changing competitive environments (Nonaka & Takeuchi, 1995; Takeuchi & Nonaka, 1986). As a collaborative process, KITwork is likely to add value by contributing to faster product development (Brown & Eisenhardt, 1995; Hoegl, Weinkauff, & Gemuenden, 2004), more successful marketing (Millson & Wilemon, 2002), better relationships with customers and suppliers, and the ability to reorganize as needed.

A recent study of top management teams and knowledge workers provides support for our argument that knowledge-based activities are central to creating outcomes such as these. Data from a sample of top management teams and knowledge workers revealed that knowledge creation was a

function of the knowledge of employees, their networks, and their organization's climate for teamwork and risk-taking (Smith, Collins, & Clark, 2005).

Employees engaged in KITwork promote an organization's adaptive responses to the external environment and contribute to its long-term survival. Through KITwork activities, organizational members cross internal and external organization boundaries, making them more permeable and thereby reducing organizational rigidity. Thus, a study of 234 manufacturers found that information sharing between a firm and its suppliers was an effective means for developing the management capabilities needed to implement a quality-driven differentiation strategy (McEvily & Marcus, 2005). At the same time, KITwork broadens the knowledge and skill sets of organizational members, which improves individual versatility and provides a foundation for individual adaptive behavior.

Effective KITwork is Rare

Besides adding value, we believe that KITwork capabilities are somewhat rare – at least they are rare at this point in time. Many firms may realize the potential value of effective KITwork, and some are experimenting with using it to improve their performance. Nevertheless, relatively few firms have developed management practices that fully support KITwork as a means to leverage knowledge resources, so heterogeneity is present among firms. As KITwork becomes more prevalent and our understanding of it improves, new techniques for managing it – including new HR practices or systems – may be developed and widely implemented. Currently, however, this is not the situation. Indeed, our review of the academic literature suggests that HRM scholars know relatively little about how HR practices can best be used to promote effective KITwork.

KITwork is Inimitable

A third condition for KITwork to be a source of sustained competitive advantage is inimitability. Complex behavioral systems within organizations often meet this criterion because they are difficult for other firms to observe, and even more difficult to replicate (Kozlowski & Bell, 2003). KITwork establishes a network of intra- and inter-organization linkages and communication paths (Hansen, 1999; Bouty, 2000). It is inherently complex and characterized by disequilibrium, path dependency, and causal ambiguity.

As knowledge moves through a network of collaborators, the organizational system becomes more dynamic and moves further away from equilibrium. Strong norms and a culture that supports cooperation and trust help govern such dynamic systems and prevent them from tipping into chaos. The development of these norms and culture takes time and depends on the unique history of the organization.

Whether employees are involved in the creative process of brainstorming, acquiring knowledge, sharing knowledge, applying what they know to new problems, or debating what they know, KITwork requires repeated transaction-specific interactions. These repeated interactions strengthen the organization's connective social tissue. Over time, unique cultures and norms that are rooted in the organization's particular history develop; these are impossible for competitors to replicate.

There are no Substitutes for KITwork

Finally, to be a source of sustained competitive advantage KITwork must not have substitutes. Competitors must not be able to implement their strategies and create the value added through KITwork using other means (Barney, 1991). Even if KITwork is valuable, rare, and inimitable, to the extent that it can be substituted, it is not a source of sustained competitive advantage. Although it may be possible to conceive of substitutes for KITwork, we believe that the knowledge-centered activities that comprise KITwork are essential to effective knowledge-based competition.

To summarize, KITwork is a capability that serves as a source of sustained competitive advantage for firms pursuing a variety of different competitive strategies. It is a complex and somewhat unpredictable social process that enables firms to achieve the specific imperatives of their competitive strategies and adapt to their ever-changing environments. Next we present a framework for understanding how the elements of human resource management systems can influence KITwork.

A MODEL OF HRM FOR KNOWLEDGE-BASED COMPETITION

The resource-based view of competition among firms suggests that HR practices can contribute to achieving a sustained competitive advantage by attracting and retaining knowledge resources and ensuring that those

resources are bundled and managed in ways that create strategic capabilities. That is, the HRM system can be used to build resources and to transform those resources into capabilities that contribute to firm performance. Fig. 1 illustrates our framework for understanding how HR practices can be used to build knowledge resources and, by supporting KITwork, also ensure that the firm's knowledge resources add value. Building on prior work (see Jackson, Hitt, & DeNisi, 2003; Jackson & Schuler, 2001, 2002; Schuler, Jackson, & Storey, 2001), the framework shown in Fig. 1 includes three components: (1) the systems (2) knowledge resources, and (3) KITwork capabilities.

The HRM System

Shown near the top of Fig. 1 are components of an HRM system. We assume that firms use a full array of HR practices to create an HRM system that accomplishes the four central HRM tasks, namely: identifying needed activities, managing competencies, managing motivation, and managing opportunities. As described elsewhere, in an effective HRM system, the full set of HR practices used in an organization are aligned to support all four of these major tasks (see Jackson et al., 2003; Jackson & Schuler, 2001, 2002; Schuler et al., 2001). For organizations that compete on the basis of knowledge, elements of the HRM system should be aligned to support the development of both knowledge resources and KITwork capability.

Knowledge Resources

Following work by Amit and Schoemaker (1993), resources are characterized as *stocks* of accessible organizational elements, which are at least partially controlled and sometimes owned by the organization. The stock of knowledge held by a firm's employees is a resource of potential value to most firms.

Knowledge stocks include explicit knowledge and tacit knowledge (Polanyi, 1967). Explicit knowledge is more easily codified and recorded. It can be formulated into sentences and equations, which are easily and reliably shared through written documents and oral presentations. Due to these characteristics, explicit knowledge can usually be obtained by competing firms. Thus, explicit knowledge is not likely to serve as the basis for a sustainable competitive advantage (DeNisi, Hitt, & Jackson, 2003).

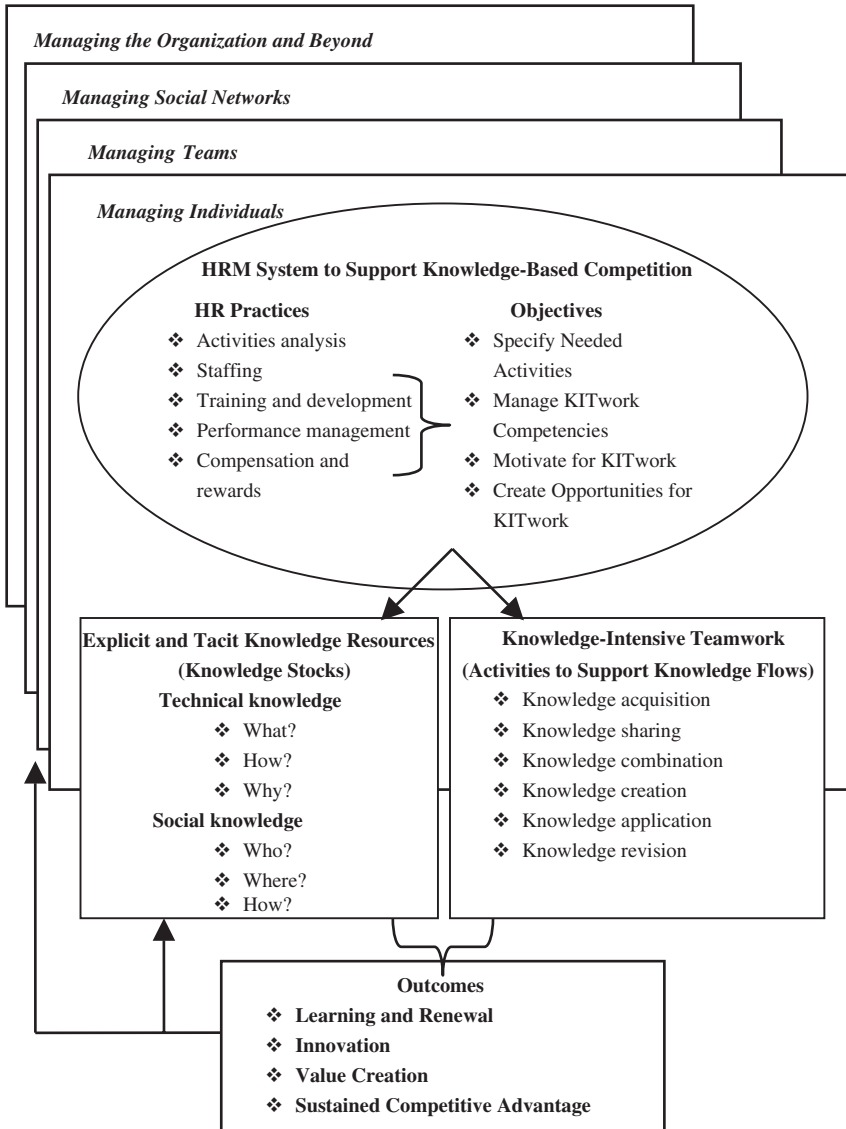


Fig. 1. A Model of HRM for Knowledge-Based Competition.

In contrast to explicit knowledge, tacit knowledge is complex and ambiguous, which makes it difficult to codify and transmit. People accumulate tacit knowledge through observation, imitation, and repeated interactions, which produce actionable skills or “know how.” Compared to explicit knowledge, tacit knowledge is sticky – that is, it cannot be easily transferred from one person to another (see [Von Hippel, 1994](#)). In order for people to share tacit knowledge, they must be willing to participate in more extensive and perhaps more intimate relationships. When individuals share tacit knowledge, they often do so during casual interactions ([Lubit, 2001](#)) that unfold within a relationship characterized by high levels of trust. The stickiness of tacit knowledge makes it potentially more valuable than explicit knowledge as a source of competitive advantage.

HR practices are widely recognized as the primary means through which organizations develop the depth and content of their knowledge stocks. For example, job analysis and competency modeling identify the content and depth of knowledge needed by the organization; selection identifies individuals who have the content and depth of knowledge needed; training seeks to further enhance the depth and content of knowledge available, and compensation may be used to motivate employees to develop new or deeper knowledge.

[Fig. 1](#) recognizes that developing knowledge stocks is one means through which HR practices can be used to promote organizational effectiveness. However, HRM systems that focus exclusively on managing the knowledge stocks of individual employees are likely to be ineffective in organizations that compete on the basis of knowledge. Especially in knowledge-based firms, HRM systems must also effectively manage the social system, for the social system is the conduit of knowledge flows.

KITwork: A Knowledge Capability

In contrast to the emphasis on knowledge stocks that is found in the HRM literature, the strategic management literature has emphasized the importance of managing knowledge flows. [Dierickx and Cool \(1989\)](#) likened knowledge flows to the movement of water coming into and leaking out of a bathtub. In a bathtub, the water level is a result of how much water has flowed in minus the amount that has flowed out. In a firm, the knowledge stock is the cumulative result of inward and outward knowledge flows. The bathtub metaphor points out that managing knowledge stocks

requires managing knowledge flows; stocks and flows are related but distinct constructs.

Likening knowledge to water emphasizes the power of knowledge aggregation and knowledge in motion. A single molecule of standing water has far less power to transform a landscape than does a river of moving water. Combining dispersed knowledge and facilitating the movement of knowledge through an organization makes it possible to exploit lessons that have already been learned, solve technical problems more effectively, and develop creative solutions (cf., [Fiol, 2003](#); [Hass & Hansen, 2005](#)).

To date, most efforts to develop knowledge resources and KITwork processes have focused on electronic information technologies – not HRM technologies. The hope was that information technologies would enhance an organization's ability to store, sort, distribute, and (perhaps) analyze the vast array of knowledge hidden within the many nooks and crannies of organizational life. Experienced users of electronic knowledge management systems now realize that IT-based knowledge management systems are ineffective unless they are integrated into a total management approach for creating new knowledge and sustaining continuous learning ([Thomas, Kellogg, & Erickson, 2001](#)). By addressing the challenge of using HR practices that encourage and support KITwork, we seek to expand the work of HR scholars to include research that analyzes how HRM systems influence social dynamics throughout an organization.

Consistent with the constructivist perspective ([Blackler, 1995](#)), we assume that knowing is grounded in action, and therefore, managing knowledge involves managing activity (cf., [Cook & Brown, 1999](#); [Vera & Crossan, 2003](#)). While each of the knowledge-centered activities shown in [Fig. 1](#) can contribute to successful knowledge-based competition, not all aspects of knowledge-centered activities are equally important in all situations.

Like other types of teamwork, KITwork can vary in both degree and kind (cf., [Kozlowski & Bell, 2003](#)). Effectively managing an organization requires the identification of the knowledge-centered activities that are most essential to its success. A fully articulated model might include descriptions of alternative HRM systems to support each of several KITwork profiles. Our goal here is more modest. In the discussion that follows, we simply provide suggestions for how HR practices could be used to promote each of the six knowledge-centered activities listed in [Fig. 1](#). Given the considerable overlap and interdependencies that exist among the six knowledge-centered activities, substantial research is needed to determine whether small differences in the preferred KITwork profiles require distinctly different HRM systems.

A Multi-Level Perspective

Managing KITwork involves more than managing the behaviors of individuals; it also involves efforts to manage the emergent social systems that are created as individuals respond to partially random events and interact with each other across time and space (cf., Kozlowski, Gully, Nason, & Smith, 2000). Our framework assumes that KITwork is a construct that can be used to describe phenomena at several levels of analysis. Knowledge that flows only between individuals is not likely to create competitive advantage for a large firm with global operations. Likewise, an HRM system designed to manage only the behavior of individuals will likely miss many opportunities to create value through effective KITwork. Sustained competitive advantage more likely accrues to firms that understand how to manage knowledge flows between teams, throughout and among business units, through ill-defined social networks, and beyond organizational boundaries. Thus, an effective HRM system produces outcomes for individuals, teams, departments, business units, communities of practice, and so on.

Fig. 2 illustrates our multi-level view of KITwork. Consistent with a multi-level perspective, we refer to knowledge-centered *activities* (not behaviors, which often are associated with individuals) as the components of KITwork. Although we do not address all of the possible levels-of-analysis issues suggested by Fig. 2, we encourage readers to consider how focusing on units of analysis other than the individual raises new questions about the possible effects of HR practices on social dynamics within organizations at various levels of analysis (e.g., dyads, communities of practice, and inter-team relations).

To illustrate how KITwork can be conceptualized at multiple levels of analysis, consider one element of KITwork – knowledge-sharing activities. Individual-level knowledge sharing occurs when a person shares what he or she knows with another person or group. Team-level knowledge sharing is more than the aggregation of such individual behaviors, however. For social units (e.g., teams, networks), knowledge sharing involves managing social processes such as participation and decision-making. To ensure that team-level knowledge sharing occurs, a team may follow protocols regarding how to structure and run formal meetings, use technology to permit open access to information, and maintain strong norms to govern the behavior of individual members. Phenomena such as these are meaningfully treated as distinctly group-level phenomena. In order to understand and manage the flow of knowledge through an organization, it is necessary to understand and manage knowledge sharing at all of these levels of analysis.

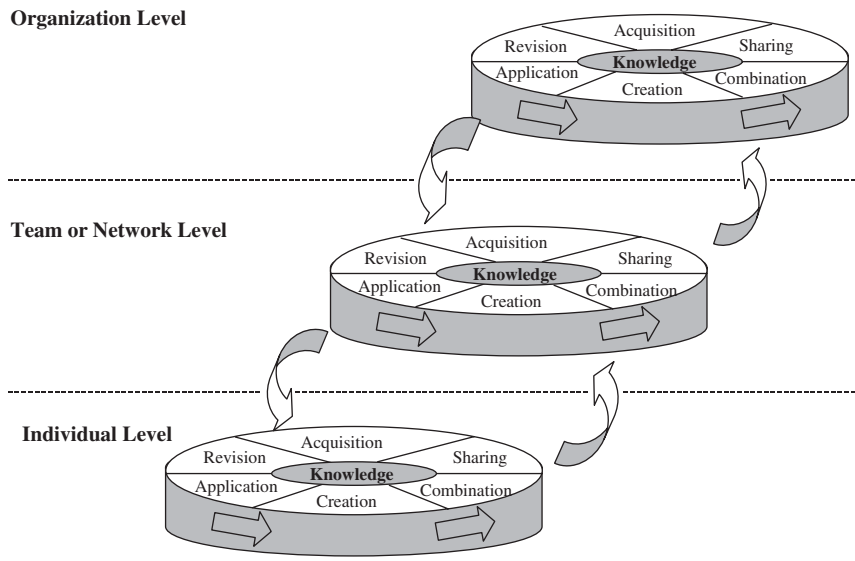


Fig. 2. A Multi-Level View of KITwork.

In this paper, we are not able to provide a detailed description of knowledge-centered activities at each of several levels of analysis. Nevertheless, our discussion of HR practices for managing KITwork presumes that HR practices are relevant to the knowledge-centered activities across the full spectrum of levels of analysis.

CHALLENGES IN DESIGNING HRM SYSTEMS FOR KNOWLEDGE-DRIVEN ORGANIZATIONS

Any HRM system includes a complex array of elements. Presumably, these elements are most effective when they are aligned and integrated with other elements and also aligned and integrated with the organization's unique conditions (e.g., see Jackson & Schuler, 1995; MacDuffie & Krafcik, 1992; Schuler & Jackson, 1987).

During the past decade, scholars have tried to identify bundles of HR practices that comprise integrated and coherent HRM systems (Becker & Huselid, 1998). Implicit in such efforts is the assumption that the many varieties of HRM systems found in organizations can be reduced to a small number of archetypes or configurations (Ostroff & Bowen, 2000; Lepak, Liao, Chung, & Harden, 2006). A potential problem with the search for system archetypes is underestimating the complex effects of an organization's external and internal environments and the path-dependent nature of system evolution. Any search for dominant practice configurations and archetypal HRM systems focuses attention on the commonalities across firms. Yet, the resource-based view asserts that a sustainable competitive advance is gained through the development of unique bundles of resources and distinctive capabilities that are difficult to imitate and distributed heterogeneously amongst competitors.

A process-based approach to understanding how integrated HRM systems emerge represents an alternative perspective for understanding HRM system design. A process-based approach presumes that some approaches to developing HRM systems are more likely to result in the system being internally aligned and appropriately integrated with other elements in the organizational system. If a firm outsources the design and/or implementation of its staffing to one external vendor and outsources the design and implementation of its training programs to another vendor, there is likely to be little integration between these aspects of the HRM system. Likewise, if a firm adopts practices simply because they have been identified as so-called "best practices," the degree of integration and coherence among its practices

would be low if it imitated the staffing practices in one organization, the training practices in another organization, and the pay practices in a third organization.

The development of an integrated and coherent HRM system is more likely to occur when an organization sets this as an objective and adopts a planning process to meet the objective (see Schuler et al., 2001; Jackson & Schuler, 2000). A planning process that addresses issues at multiple levels of analysis is more likely to result in the desired outcomes than is one that focuses on managing individuals. In addition, it seems likely that a coherent and integrated HRM system is more likely to evolve when the design and planning process eschews the traditional HR silos found in many large organizations (staffing, training, compensations, etc.).

Consistent with these assumptions, we assume that effective HRM systems evolve through a series of iterative decisions about how to use HR practices to achieve four major tasks: specifying the desired activities, managing competencies, managing motivation, and managing opportunities. More specifically, firms competing on the basis of knowledge need to: specify the desired knowledge-centered activities, manage knowledge-centered competencies, manage motivation to engage in knowledge-centered activities, and create opportunities for knowledge-centered activities. Next, we suggest how multiple HR practices might be coordinated to achieve these four tasks, and also suggest some future research directions.

Specifying Knowledge-Centered Activities

The behavioral approach to understanding management practices assumes that an effective HRM system includes practices for identifying the required activities of individuals, teams, networks, and so on. An effective HRM system also must ensure that the desired activities are communicated to all members. Because the identification and communication of knowledge-centered activities are intertwined, we include both as components of the first task in our model – specifying knowledge-centered activities.

Activity Analysis

Activity analysis (aka, job analysis) is the primary HR practice for specifying the activities required in a particular firm. Task analysis approaches describe the work activities and outcomes expected from people performing a job or role, while competency modeling (person analysis) describes the skills, knowledge, personality characteristics, and other personal attributes

needed to perform a job or role effectively (see Sackett & Laczó, 2003; Sanchez & Levine, 2001). The potential value of task analysis and competency modeling derives first and foremost from their potential usefulness as analytic procedures for building the foundation of a coherent HRM system.

Extensive research by I/O psychologists has yielded several useful taxonomies for describing the basic underlying dimensions of task performance (e.g., see Campbell, 1999; Campbell, McCloy, Oppler, & Sager, 1993; Pulakos, Arad, Donovan, & Plamondon, 2000). Only recently have these taxonomies been evaluated for their applicability in organizations engaged in knowledge-based competition. In one such analysis, Pulakos, Dorsey, and Borman (2003) set out to identify key task performance dimensions to use as input into the design of staffing decisions. Their expert judgment led them to conclude that three aspects of task performance seem to be central to the performance of knowledge-based work:

Building and applying knowledge. Includes gathering and sifting through information to gain an understanding of the situation; analyzing and integrating data to develop solutions or create new knowledge; developing new approaches, tools, strategies to increase competitive advantage; exploiting technology to enhance productivity.

Sharing knowledge. Includes sharing knowledge and expertise freely in written and oral form; collaborating with others to arrive at solutions; developing networks with other experts to facilitate knowledge exchange; packaging and presenting information that is on-point and persuasive.

Maintaining knowledge. Includes demonstrating enthusiasm and curiosity for learning and advancing knowledge; developing and maintaining specialized knowledge, skills, and expertise; staying abreast of new methods and content areas.

Clearly, the Pulakos et al.'s list of task dimensions overlaps with our list of six knowledge-centered activities. A major difference is that their definitions of the three knowledge-based task domains are defined by individual-level behaviors only. The objective of Pulakos et al. was to use this list of task domains to develop a list of employee characteristics needed for such work. Again, their focus was at the individual-level of analysis.

In order to identify the employee characteristics required to perform knowledge-based work effectively, Pulakos et al. asked 15 experienced selection experts to judge the relevance of several potentially important attributes. This small study yielded a list of 17 possible predictors (competencies) of performance in knowledge-based jobs. Cognitive skills and abilities (e.g., reasoning, critical thinking, information gathering, problem-solving, domain-specific knowledge, content-relevant experiences, reading

comprehension) dominate the list Pulakos et al. developed; social skills and abilities (e.g., active listening, interpersonal flexibility, cooperativeness) play a secondary role. While cognitive skills and technical knowledge are undoubtedly important for performance of many knowledge-based tasks, KITwork is likely to require a variety of interpersonal skills that facilitate collaboration among diverse people who work together as members of teams and fuzzy, boundary-spanning networks (cf., Morgeson, Reider, & Campion, 2005).

The work of Pulakos et al. was grounded in traditional approaches to conducting job analysis and competency modeling, which were developed in the context of traditional, bureaucratic organizations. Reflecting their heritage, they presume individuals are the appropriate unit of analysis, emphasize commonalities among individuals, and rely heavily on self-reports from employees. These features of traditional task analysis may lead organizations to underestimate the social nature of knowledge-based work, and overemphasize the cognitive elements. New approaches to conducting activity analysis are needed to overcome these weaknesses.

Toward Describing Social Systems

Task analysis methods that focus on individuals are problematic if they fail to capture the social systems through which work gets done. KITwork activities are embedded within social systems of myriad types. Consider, for example, the variety of forms that work teams can take: Some have stable membership, others rotate membership; some have relative autonomy, others are interdependent; some teams have members with relatively similar knowledge and expertise, while others have members who were chosen because they have quite diverse skills (e.g., see Mohrman, Cohen, & Mohrman, 1995). Similarly, the KITwork networks come in many forms: Some networks include primarily members of the same organization, but others include members who work in different organizations. The linkages among people in some networks are dense and reciprocal, while other networks loosely link together people who have little direct interaction with one another. Increasingly, KITwork also varies along the dimensions of virtuality, geographic dispersion, and cultural diversity.

In addition to analyzing the tasks of individuals, it is appropriate to analyze the activities of project teams, task forces, committees, collaborative networks, and so forth. Accurate activity descriptions require methods that identify not only the individual behaviors required to complete work, but also the social roles performed in doing the work (e.g., see Ancona & Caldwell, 1992). Methods that engage KITwork collaborators in describing

their work as a *collective* may yield more accurate descriptions of KITwork activities.

A shift from individual-focused task analysis to methods that focus on larger social units can have major implications when drawing conclusions about which tasks are most prevalent. To illustrate, suppose a work unit is comprised of 15 collectives (teams/groups/networks) each having an average of 15 members. Every collective requires one and only one person to act as a liaison to the unit's suppliers. An analysis conducted at the individual level of analysis would indicate that the majority of employees in the unit do not act as liaisons. It might further show that even those who do act as liaisons spend only ten percent of their time on that task. If the organization builds its HR practices around the individual-level results, the HRM system may not ensure that every team/group/network understands the importance of the liaison role for their effectiveness. Because the importance of liaison activities is underestimated, some collectives (teams, networks) may have no one who can perform the liaison role effectively and/or no one who is motivated to treat this activity as a key responsibility. When collectives are treated as the unit of analysis, the results would show that every collective requires someone to perform the role of liaison. If the organization builds its HR practices around the collective-level results, the HRM system is more likely to ensure that every collective recognizes the importance of this role, includes the competencies needed for the role, and ensures that the role is performed effectively even as particular members of the collective change over time.

Toward Understanding Tacit Knowledge, Skills, and Abilities

The bedrock of most task analysis and competency modeling techniques is self-descriptions. People are asked to describe how they spend their time and the competencies they use in their work. Such methods assume that employees are aware of and able to describe what they do, how they do it, and the personal characteristics required to perform effectively. To the extent that tacit knowledge, skills, and abilities are needed to perform effectively, self-descriptions are clearly inadequate. By definition, tacit knowledge is knowledge that employees cannot easily articulate.

Just as individuals have tacit knowledge, social groups or collectives develop tacit skills that facilitate their collective efforts. Thus, in addition to identifying the important tacit knowledge of individuals, organizations face the challenge of identifying the most important tacit knowledge and skills that enable collectives to perform effectively. Again, simply asking people to provide descriptions of the tacit knowledge that is important to their

collective performance may not be effective. Observational techniques, such as producing maps of electronic communications to identify the flow of information through networks, analyzing project management behaviors over time, and observing *in situ* group behavior may be more effective methods for identifying the tacit knowledge embedded in the routines that guide social interactions among people engaged in KITwork (e.g., see Edmondson, Bohmer, & Pisano, 2001).

Communicating the Desired Knowledge-Centered Activities

Assuming an organization can identify its most important knowledge-centered activities, it must communicate this information to employees. A strong HRM system can promote a climate that supports KITwork by communicating and signaling the knowledge-centered activities that contribute toward the achievement of the company goals (Bowen & Ostroff, 2004).

To illustrate how HR practices send messages about the importance of knowledge-centered activities, consider the signals sent by the process of activities analysis. If employees are asked to describe critical incidents related to knowledge sharing, knowledge creation, and so on, it signals the importance of these activities in the organization. Asking individuals to answer these questions with a focus on their own behavior sends a message that is different from the signal sent by conducting focus groups with members of teams, task forces, and communities of practice. Asking a team to describe only its internal functioning sends a different message than asking the team to describe how it learns from its clients and how it shares what it learns with others in the organization. In other words, the method that an organization uses to identify which knowledge-centered activities are most important has two major consequences. First, as described above, it influences the technical results, and second (perhaps unintentionally), it sends signals about the types of knowledge-centered activities that are most valued by an organization.

Toward Improved Methods for Identifying Knowledge-Centered Activities

Understanding the knowledge-centered activities that contribute to gaining competitive advantage is the essential first step in developing an HRM system that supports KITwork. Unfortunately, most task analysis and competency modeling techniques were not developed to comprehensively describe the knowledge-based activities of work teams, communities of practice, professional networks, and other collaborative structures that support KITwork. During the next decade, research is needed to develop analytic

tools that are sensitive to the unique concerns of knowledge-intensive organizations. Ideally, these new tools will expand beyond the traditional focus on individuals as the unit of analysis and in doing so provide a more complete picture of the frequency and importance of the knowledge-centered activities required for a particular organization's effectiveness.

Managing Competencies for KITwork

For organizations that rely on KITwork, managing knowledge-centered competencies presents several special challenges. These include addressing the dynamic nature of KITwork, managing competencies of collectives, managing tacit competencies, and balancing short-and long-term needs. Several elements of an organization's HRM system can be used to address these challenges, including practices related to training and development, staffing, and compensation.

The Dynamic Nature of Knowledge-Based Competition

Studies of knowledge-based organizations highlight the fact that managing knowledge competencies is a dynamic process (e.g., see the Special Issue on the Knowledge-Based View of the Firm published in *Strategic Management Journal*, 1996). The value of extant knowledge erodes quickly over time, and the search for new knowledge is never-ending. Rapid and often discontinuous environmental changes may require changes in a firm's profile of knowledge-centered activities. The dynamic nature of knowledge-based competition means that the value of competencies held by an organization will diminish unless they are continually updated, putting pressure on the workforce to continuously learn, adapt, and change. For knowledge-intensive organizations, a major challenge is ensuring that the competencies present in the workforce evolve to meet changing environmental conditions (Lepak & Snell, 2003).

Cognitive skills, personality, and task knowledge are among the competencies associated with creative and innovative behavior (e.g., see Mumford, 2000; Ree & Caretta, 1998; Taggar, 2002), and it is likely that staffing a workforce with people who have these competencies will facilitate knowledge-based competition (see Pulakos et al., 2003). To assist employees in building their cognitive skills and abilities, knowledge-intensive organizations are likely to offer traditional on-site or off-site training as well as web-based learning opportunities (e.g., see Noe et al., 2003). Such programs are grounded in a traditional, top-down view of learning; they assume that the

knowledge needed by employees can be identified in advance and then delivered when and where it is needed. Responsibility for building the knowledge base of employees resides with outsiders (e.g., HRM professionals), not with the employees themselves.

While helpful, top-down approaches to training and development are likely to be inadequate, for they underestimate the dynamic, problem-driven nature of KITwork. KITwork consists of “real-time” knowledge-centered activities that unfold in a dynamic context. Employees cannot rely on others to determine in advance the knowledge they will need and then deliver it to them – they must be able to access knowledge when they need it, recognize potentially useful knowledge when they encounter it, and understand that the knowledge they have may be outdated. “Spoon-feeding” knowledge *content* (“know what”) to employees is likely to be inefficient and ineffective.

Employees engaged in KITwork are likely to benefit more from HR practices that help them develop and continuously update the “know how” needed for KITwork. Employees with KITwork “know how” are able to take responsibility for their own learning and development on an as-needed, just-in-time basis. Two types of know-how required for KITwork are technological know-how and interpersonal know-how.

During the past decade, changing information technologies have created new opportunities for employees to easily acquire information whenever and wherever they need it. Employees with *technological know-how* – conducting effective internet searches, using electronic bulletin boards to communicate with experts, and participating in webcasts – can quickly acquire up-to-date information on almost any topic. Similarly, if collaborators know how to use intranets, groupware, and myriad other information technologies, it makes it easier to perform their work despite their being geographically distributed. Yet our research suggests that some employers fail to provide KITworkers with the technologies they need to communicate effectively; other employers provide their employees with access to the latest electronic equipment and software but fail to train them in how to use it for knowledge-centered activities.

Interpersonal know-how refers to competencies that facilitate effective interactions among collaborators. Organizations are complex social systems, which can be difficult for KITworkers to navigate. HR practices that help KITworkers develop an understanding of the social context within which their activities are conducted could smooth interactions and reduce the process losses that often plague group work. For effective teamwork, interpersonal skills that appear useful include conflict resolution, collaborative problem-solving, and communication (Stevens & Campion, 1999).

For example, in their analysis of talent contracting situations, [Davis-Blake and Hui \(2003\)](#) reported that contracting relationships typically require a manager who is adept at managing the interface between contract employees and regular employees. These managers should build mutual trust and engender feelings of identification with the contracting firm in order to encourage the flow of knowledge between contract and regular employees.

Managing the Competencies of Collectives

In our discussion above, we focused primarily on the KITwork competencies of individuals. Managing the competencies required for effective KITwork also involves ensuring that the collectives in which people work have the required competencies. For individuals, KITwork competencies constitute knowledge stocks. For groups and other collectives, KITwork competencies include the accumulated knowledge held by individuals in the group as well as group-level competencies. Although individual- and group-level competencies are closely related, the competencies of a collective are not perfectly correlated or isometric with the individual competencies of its members.

To illustrate, consider a group of individuals who come together and share their knowledge with each other. It is likely that the personal knowledge stocks of several individuals will increase as a consequence of their interactions. However, unless the interaction process also produces some new knowledge, the group's stock of knowledge will remain unchanged. If members of the group engage in joint problem-solving, however, new knowledge is likely to be created ([Levine & Moreland, 1999](#); [Liebeskind, Oliver, Zucker, & Brewer, 1996](#)). In that case, the group-level knowledge stock increases. Note, however, that a gain in group-level knowledge does not guarantee that every individual in the group gains knowledge; knowledge gains may be unequal across individuals. Conversely, individual knowledge stocks can increase without any concurrent change in the knowledge stock of the collective. The task of managing competencies requires recognizing the distinction between managing individual competencies and managing the competencies of larger social units, such as teams and networks.

Using activities analysis to identify the competencies needed by collectives is an essential step toward developing knowledge-based competencies. A considerable body of research on team performance provides insights into the competencies needed by collectives engaged in knowledge work. For example, research on conflict within teams suggests that effective teams are skilled at constructive controversy; that is, they are able to air and discuss

opposing views while maintaining positive personal relationships (Jehn, 1995; Tjosvold & Tjosvold, 1995). When creative solutions are needed, team competencies such as non-evaluative brainstorming, goal setting, the appropriate use of breaks, and scheduling of iterative team and individual idea sessions may contribute to team performance (Paulus, Larey, & Dzindolet, 2001). In volatile environments such as those in which KITwork is found, the adaptation skills of a collective may also be central to their success (cf., LePine, Colquitt, & Erez, 2000). Adaptation occurs when members of the collective recognize changes in task demands and reevaluate and perhaps reformulate their approach in response to the changes.

Assuming that collective competencies such as constructive controversy, creative problem-solving, and adaptation contribute to the success of KITwork, HR practices should seek to build these competencies, and practices that treat collectives as the fundamental unit of analysis may be most appropriate. For example, rather than providing technological and interpersonal skills training to individuals, training of intact collectives may prove more effective. In addition to providing incentives for individuals to develop their competencies, it may be useful to also provide incentives for collectives to develop their competencies. Finally, effectively managing the competencies of collectives involves recognizing that the competencies of a collective are not equivalent to a simple aggregation of individual competencies.

Managing Tacit Competencies

While a great deal is known about how to manage competencies (at least at the individual level), most principles of effective HRM address the management of explicit competencies – that is, competencies that can be articulated and codified. Explicit competencies are amenable to formal and systematic management; they can be measured and transferred with relative ease. Technical knowledge and interpersonal skills are examples of explicit competencies. In comparison, tacit competencies are difficult to articulate and measure and thus are more difficult to manage. At the individual level, creative thinking and political savvy are examples of tacit competencies. At the level of collectives, building consensus, managing changes in membership, and maintaining network ties may be examples of tacit competencies. Typically, HR practices ignore the tacit competencies of collectives, and they often undermanage the tacit competencies of individuals.

Knowledge management scholars have argued that extensive interpersonal contact between teachers and learners provides the best means for transferring tacit knowledge (e.g., see Fiol, 2003). HR practices that support the development of extended networks of people from diverse backgrounds

may facilitate the flow of tacit competencies. If tacit competencies are transferred and learned informally, then the development of these competencies should occur more quickly when employees are embedded in strong social networks that place them in contact with people who have the desired tacit competencies. Further, team-based training and development of a shared mental model facilitate problem-solving by improved communication and group decision-making ability (Hollenbeck, DeRue, & Guzzo, 2004). Research that illustrates effective approaches to measuring and managing tacit competencies clearly is needed.

Balancing Short- and Long-Term Needs

The dynamic nature of knowledge-based competition means that organizations must be adept at quickly changing the competencies of their workforce. Short-term employment contracts and increased use of outsourcing are one approach to addressing the need for rapid and frequent changes in required competences. But the foregoing discussion suggests that this approach may have hidden drawbacks. Clearly, contract labor can help meet short-term needs and allows employers to quickly shed competencies that are no longer needed. However, this staffing model implicitly assumes that competencies are attributes of individuals and ignores the emergent competencies of collectives.

In the long term, policies that increase workforce turnover and volatility may restrict the development of valuable social and intellectual capital. Employees who do not intend to remain with the organization may be less likely to share their ideas and insights with collaborators (Oldham, 2003). Furthermore, because contract workers usually are present in the organizations for relatively short periods of time, there is less time for core employees to learn from them. Increased turnover among regular workers is another possible unintended consequence of using contract labor. Regular workers may feel that highly paid contract workers are viewed as more valuable to the firm. For this or other reasons they may be attracted to the alternative form of employment and decide to seek employment elsewhere. Thus, firms that acquire the competencies they need by contracting for talent may find that they need a variety of HR practices designed specifically to manage the unique issues that arise in contracting situations (for a more complete discussion, see Davis-Blake & Hui, 2003).

While short-term employment contracts may be effective for an organization's immediate competency needs, the long-term return to the organization may be less than anticipated. When KITwork is involved, the effective use of contract employees requires HR practices that maximize the

flow knowledge into the firm and minimize the leakage of knowledge out of the firm.

The same issues that bedevil employers who rely on contract workers may also play out among KITworkers, even if they all are “permanent” employees of the same organizations. The project-based work assignments of some KITworkers share some similarities with the short-term contract work of temporary employees. Like contract employees, members of a project team may have been enlisted because they have unique knowledge or skills. Often, project participants do not know each other when a project begins, so they must work through issues of trust. Like contract employees, project members may have split or dual loyalties – e.g., to other projects or to a “home” department.

Managing Motivation for KITwork

Motivational forces influence which behaviors employees choose to engage in as well as the effort invested in those behaviors. Most psychological theories of motivation recognize that decisions about how to behave and how much effort to exert are influenced by both employee characteristics (including their competencies) and the work environment. In the preceding section, we noted that many elements of an HRM system can be used to ensure that an organization’s workforce has competencies needed for knowledge-centered activities. In this section, we consider how HR practices can influence the likelihood that employees *will* engage in knowledge-centered activities. Our discussion is organized around three key themes: the decision to participate in the organization and in knowledge-centered activities, rewards and recognition practices, and motivating learning processes.

The Decision to Participate

The decision to work for an organization is essentially voluntary for all employees, but descriptions of knowledge-based competition often highlight the ability of knowledge workers to exercise their free will when deciding which organizations to join, which projects to work on, whether to participate in various informal communities of practice, and whether to share their ideas. Tight labor market conditions for knowledge workers reinforce the belief that knowledge workers have considerable freedom to choose where, when, and how they work (see Maurer, Lee, & Mitchell, 2003).

When KITwork is central to an organization’s effectiveness, employers need to understand how employees decide which project teams to join,

whether to accept informal leadership and advocate roles, whether to participate as an instructor or mentor, and so on. In making decisions such as whether to participate in training programs and how much of their knowledge to share, employees shape the development of their own portfolio of knowledge competencies as well as those of others in the organization.

Research that enhances our understanding of participation decisions in KITwork settings is needed in order to design HRM systems that encourage it. As [Arthur and Kim \(2005\)](#) pointed out, research on HR practices to support knowledge-centered activities should take into account the political nature of organizations and the perspectives of multiple constituents. For example, organizations that use financial incentives to reward employees for contributing ideas should not expect the incentives to be effective unless employees trust managers to protect employees from potential harmful side effects of implementing the ideas (e.g., job loss).

Rewards and Recognition

Rewards and recognition often are assumed to be the most powerful HR tools for managing motivation, yet scholars hold differing views about the effects of rewards. For example, [Lawler \(2003\)](#) argued that contingent rewards should be used to support knowledge-centered activities because they are effective in directing employees' attention to the most important aspects of their work and motivating them to exert maximal effort. His arguments are consistent with research showing that organizations are more likely to achieve their stated goals when employees are rewarded for results that are consistent with those goals (e.g., [Montemayor, 1996](#); [Shaw, Gupta, & Delery, 2002](#)). Others have argued that tying rewards to the achievement of creative outcomes may reduce creative output (e.g., [Amabile, 1979](#); [Shalley, 1995](#); [Oldham, 2003](#)). To address the organization's desire for accountability while providing room for individuals to take the risks associated with creating new knowledge, [Oldham \(2003\)](#) recommended offering only small rewards and giving them after considerable time had elapsed.

In addition, rewards that focus attention on quality over quantity may be more consistent with knowledge-centered activities (e.g., see [Zenger & Marshall, 2000](#)). Although some field studies have reported that monetary rewards are not the main motivators of collaborative behavior (e.g., [Jassawalla & Sashittal, 1999](#); [Swart & Kinnie, 2003](#)), research also shows that people tend to underestimate the importance of pay due to social desirability considerations and lack of self-insight ([Rynes, Brown, & Colbert, 2002](#)). Research that yields practical suggestions for how to develop effective

reward systems for employees engaged in knowledge-centered activities is needed to resolve this ongoing debate.

Motivating Learning

Individuals, teams, and organizations learn through the KITwork processes of knowledge acquisition, sharing, application, and so on. Thus, when employees engage in knowledge-centered activities, learning is one outcome. Such learning requires more than mere access to information, however; employees also must be motivated to learn.

Motivation to learn is likely to be greatest when the value of learning is apparent and the cost of learning is small. Too often, the cost of learning is more apparent than the value of learning. Costs are perceived to be relatively great when people view learning as a remedy for knowledge deficiencies and see it as a remedial process for correcting inaccurate or obsolete knowledge. Admitting that one's knowledge is inadequate may threaten one's self-esteem and create resistance. This problem seemed to hobble the "lessons learned" review sessions that one drug company established to improve their clinical testing of new products. The scientists were reluctant to participate in discussions about past drug development failures. Managers concluded that the scientists felt threatened by such discussions because they cast doubt on the scientists' competencies (Jackson & Erhardt, 2004). Performance postmortems such as that company's "lessons learned" reviews (sometimes called After Action Reviews), which focus on diagnosing the reasons for past failures, invite finger pointing and defensive self-protection.

To motivate employees to critically evaluate and perhaps revise existing knowledge, organizations may need to reframe learning activities. Rather than dissecting the past, employees may be more motivated by practices that emphasize improving the future. Action learning techniques embody this approach. For example, Siemens University offers in-house corporate training that requires participants to engage in knowledge-centered activities such as knowledge acquisition, sharing, combination, and application to solve real business problems. Analysts and engineers from around the world work together in "student" teams. Instead of teaching students about what others already know, action learning at Siemens encourages teams to develop new knowledge that can be applied immediately.

The emotions experienced during action learning are likely to be quite different from the emotions associated with performance postmortems. Action learning projects may be (and perhaps should be) stressful, but participants finish the projects feeling a sense of accomplishment and pride.

They feel good about their learning and the collaborators who facilitated it, and this helps build social capital. In contrast, postmortems may elicit more negative emotions, including feelings of failure and embarrassment.

Clearly, research is needed to improve our understanding of how to use HR practices to motivate employees to engage in specific KITwork activities – i.e., knowledge acquisition, sharing, combination, creation, application, and revision. New research on the use of goals may prove particularly useful. The motivational effectiveness of specific and difficult goals is well established for tasks that are simple and routine (Locke & Latham, 1990). Similarly, studies of innovation processes indicate that specific and difficult project goals enhance the performance of R&D teams, and regular feedback from customers is associated with effective product development (Zirger & Madique, 1990). Findings such as these suggest that tying incentives and rewards to the achievement of specific knowledge-centered goals may be an effective HR practice. But other evidence indicates that individual creativity is impeded by productivity goals and excessive workloads (Amabile et al., 1996). For complex tasks that involve knowledge work, specific performance goals may interfere with experimentation and learning (see Dweck & Leggett, 1988). When innovation is the objective, motivation seems to be enhanced by challenging work and freedom in how to carry out the work, so perhaps “do your best goals” are more effective for the complex tasks found in knowledge-based organizations, which require people to learn – and perhaps invent – effective performance strategies (Earley, Connolly, & Lee, 1989; Kanfer & Ackerman, 1989; Winters & Latham, 1996).

Applying accepted goal-setting principles to collectives rather than individuals may also prove to be an effective solution for motivating employees engaged in KITwork. The size and complexity of many knowledge-intensive projects can be so immense that employees find it difficult to identify with the project as a whole. Like assembly line workers, knowledge workers may find it difficult to see how their efforts contribute to the organization’s success. Team goals may prove useful to establish a “line of site” between work activities and the success of the organization, while at the same time permitting considerable freedom and autonomy for individuals.

Research is needed to improve our understanding of how to motivate individual employees to learn from their engagement in knowledge-centered activities – which involve high degrees of interdependence, uncertainty, ambiguity, learning, and creativity. Also needed is research that improves our understanding of the motivational forces that prompt learning in teams and other social units. It is not clear, for example, that motivating individuals to engage in individual learning results in team-level learning.

Managing Opportunities for KITwork

If a workforce understands that KITwork activities are essential and has both the motivation and the competencies needed for KITwork, is it possible that KITwork will fail to flourish? Yes, because they also need the right opportunities. Considerable research on creativity and innovation documents the importance of having contact with people who have information, perspectives, and experiences that are dissimilar to one's own. The HRM system can help create opportunities for such interactions in a variety of ways. Here we comment on culture management and staffing practices that can be used to create opportunities for KITwork.

Managing the Culture

During the past decade, electronic knowledge management systems have become a popular way to provide opportunities for employees to engage in KITwork. The systems are intended to make it easier for employees dispersed throughout an organization to recognize that they face similar challenges, discover each other, discuss common problems, and collaborate in finding solutions. In practice, however, electronic systems appear to be more useful for knowledge storage and passive knowledge distribution. Providing electronic opportunities to communicate does not necessarily stimulate employees to search for new knowledge. Nor does it encourage serendipitous knowledge exchange and learning.

Opportunities for knowledge-centered activities often arise beyond the boundaries of work teams, and even beyond the boundaries of the organization. Often, employees in different parts of an organization are working on the same challenge, but are completely unaware of each other. They do not discuss common problems as they try to solve them, and they do not share solutions once they have been discovered because they have no opportunities to do so. Yet, when knowledge flow and innovation are the objectives, meaningful conversations appear to be invaluable (Hansen, Nohria, & Tierney, 1999).

An organization's culture – i.e., its norms and rituals – can create opportunities for people to cross or span boundaries that might otherwise be barriers to information flow (Bouty, 2000). Such opportunities should pervade organizational life. In addition to the structure of work itself, events such as meetings, celebrations, training programs, conferences, and myriad other occasions for social contact can all be designed with the goal of encouraging contact and learning among employees with different perspectives.

Recognizing the need for more serendipitous conversations, a consulting firm adopted the practice of setting aside the third Friday of each month as

a day when everyone would get together. Typically, the consultants worked at their clients' offices. People who worked for different clients seldom saw one another. To increase social contact and make it easier for knowledge to flow among consultants, the firm instituted the practice of hosting monthly gatherings. Consultants were expected to free their calendars from travel and client visits for the third Friday of each month. That day was to be spent at the home office. These monthly gatherings provided the consultants with more opportunities to build personal relationships, establish greater trust, and share their knowledge (Jackson & Erhardt, 2004). This is just one example of how thoughtful culture management can increase the opportunities for knowledge-centered activities. The principle of designing events that bring together people for conversations and dialogue is one that can easily be adapted by any organization.

Likewise, an organization's culture can create opportunities for employees to engage in knowledge-centered activities with people outside the organization, and thereby speed the flow of new knowledge into the organization. Examples of HR practices that create such opportunities include short-term leaves for employees who wish to provide community service or explore other non-employment activities, paying the costs associated with professional memberships and conference travel, staffing practices that draw in a *broad* pool of external applicants, maintaining positive relationships with "alumni" and supporting alumni-centered events that encourage current employees to mingle and learn from former employees, and supporting mentoring relationships that cross organizational boundaries (e.g., seasoned employees serving as mentors for college students).

Staffing

Parties, social outings, and other informal events can encourage knowledge flow, but more formal solutions may also be needed in large organizations. One company approached the challenge of creating linkages among employees by creating a network of "knowledge integrators;" their role was bringing together people from different areas of the company to share knowledge. If a project manager needed a subject matter expert for assistance with an acute problem, the knowledge integrator located the right person. In selecting people for the role of knowledge integrator, the company looked for employees with deep knowledge of the business and the organization's social fabric.

Placement and promotion decisions also can create opportunities for knowledge-centered activities. At Colgate-Palmolive, best practices are shared and applied to new situations by managers who routinely accept

transfers to unfamiliar functions, divisions, and countries en route to higher-level positions.

Staffing practices that attend to team and network *composition* also can create opportunities for knowledge acquisition, sharing, and creation. Despite their increasing popularity, cross-functional teams do not always achieve their objectives. Staffing practices that ignore the composition of teams and other collaborating groups are a possible explanation for this problem. For example, a study of R&D teams found that high amounts of functional diversity interfered with the teams' technical innovativeness as well as their performance against schedules and budgets (Ancona & Caldwell, 1992). Other studies have found that diversity increases conflict and turnover rates (see Jackson et al., 2003). When collaborators share too little common ground, the effective communication required for knowledge-centered activities is difficult. Conversely, familiarity and friendship among team members may promote group learning (see Argote, Gruenfeld, & Naquin, 2001). Organizations that allow employees to participate in decisions about how to staff project teams and who to include as collaborators may benefit from improved knowledge flows and the learning that such knowledge flows promote.

Finally, staffing decisions should attend to the issue of social capital. Effective knowledge exchange is more likely when a social network exists to facilitate the exchange (Nahapiet & Ghoshal, 1998). Connections between team members and others inside and outside the organization (i.e., external social capital) create opportunities for knowledge-centered activities (Joshi & Jackson, 2003; Tsai, 2002). Diverse teams appear to be most effective when team members have connections to external collaborators (Keller, 2001; Ancona & Caldwell, 1992; Reagans, Zuckerman, & McEvily, 2004). Thus, when staffing teams, the question of who is *not* in a team may be as important as the question of who *is*. Because a team's social capital may be related to the demographic characteristics of team members (e.g., their age, tenure, gender, and ethnicity), attending to the team's social capital is fraught with difficulties. Nevertheless, HR practices that ignore the enabling role of social capital may inadvertently diminish opportunities for knowledge sharing.

CONCLUSION

We have argued that knowledge-centered activities are more likely to occur when they have been identified as valuable *and* the required competencies

are present *and* the workforce is motivated *and* opportunities for knowledge-centered activities are plentiful. In order to leverage the knowledge of its workforce, an organization must make it easy for knowledge to flow into and through the organization. KITwork processes are the primary vehicle driving knowledge flows, and HR practices are among the tools organizations can use to promote and support KITwork.

For organizations that compete on the basis of knowledge, an effective HRM system serves to specify the knowledge-centered activities most critical to success, ensure that the competencies needed for these activities are present in the organization, motivate the workforce to engage in knowledge-centered activities, and create opportunities for knowledge-centered activities to occur. We have argued that all available HR practices can and should be used in unison to achieve these four major HR tasks.

Our description of KITwork highlighted three key issues that have major implications for managing it effectively: First, our description recognized that knowledge can be explicit or tacit. Second, we argued that the HRM system should be used to manage both knowledge stocks and knowledge flows. And third, we argued that HR practices can be used to shape the knowledge-centered activities of individuals as well as the activities of teams, networks, task forces, and other collaborative groups found throughout organizations. Our discussion of HR practices to support KITwork emphasizes managing social systems and is presented as one of two prongs that should comprise a knowledge-driven HRM system. A comprehensive HRM system would also include HR practices that build knowledge stocks, i.e., the explicit and tacit knowledge held by individual employees. The knowledge-centered activities that comprise KITwork are the means through which explicit and tacit knowledge flow through an organization. These activities allow knowledge to move among and between individuals, teams, networks, departments, divisions, and even organizations and industries. Managing these activities should be a primary objective (but not the sole objective) of HRM systems in firms that compete on the basis of knowledge.

To date, HRM research and theory have emphasized explicit knowledge over tacit knowledge, managing knowledge stocks over managing knowledge flows, and developing the knowledge resources of individuals over managing more complex social and organizational knowledge-centered activities. A broader view of the challenges and opportunities that knowledge management poses for the field of HRM recognizes the need to manage both explicit and tacit knowledge. It also disentangles the twin objectives of building knowledge stocks and supporting knowledge flows. Finally, it

views the HRM system as contributing to a key objective of knowledge-intensive firms, namely, ensuring that valuable individual knowledge becomes embedded in organizational processes and routines. In adopting this broader perspective, we hope to stimulate new thinking about how HRM systems can be used by organizations to achieve sustained competitive advantage.

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AN IDENTITY-BASED MODEL OF ORGANIZATIONAL MONITORING: INTEGRATING INFORMATION PRIVACY AND ORGANIZATIONAL JUSTICE

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ABSTRACT

We present a model of organizational monitoring that integrates organizational justice and information privacy. Specifically, we adopt the position that the formation of invasiveness and unfairness attitudes is a goal-driven process. We employ cybernetic control theory and identity theory to describe how monitoring systems affect one's ability to maintain a positive self-concept. Monitoring provides a particularly powerful cue that directs attention to self-awareness. People draw on fairness and privacy relevant cues inherent in monitoring systems and embedded in monitoring environments (e.g., justice climate) to evaluate their identities. Discrepancies between actual and desired personal and social identities create distress, motivating employees to engage in behavioral self-regulation to counteract potentially threatening monitoring systems. Organizational threats to personal identity goals lead to increased

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invasiveness attitudes and a commitment to protect and enhance the self. Threats to social identity lead to increased unfairness attitudes and lowered commitment to one's organization. Implications for theory and research on monitoring, justice, and privacy are discussed along with practical implications.

INTRODUCTION TO ORGANIZATIONAL MONITORING: CONCEPTUAL AND PRACTICAL BACKGROUND

Deb Tice worked at the Automobile Club of Southern California for 10 years. In the summer of 2005, she and 26 of her coworkers were fired for posting messages during their personal time and using non-work computers on an independent social networking Web site, MySpace.com. Despite the absence of a formal policy about the use of Web logs (i.e., “blogs”), the company claimed that these 27 employees used MySpace.com to plan work slowdowns, to criticize Club management, and to exchange jokes about coworkers (Associated Press, 2005). Although Tice admitted using the social networking site, she disputed claims by her former employer that she engaged in any of the alleged activities. Moreover, she argued that the Club's actions were unfair because they infringed upon her private life (personal communication, November 21, 2005).

This case raises several points. First, *organizational monitoring* – the process through which organizations collect information on employees to control them – plays an important role in the management of human resources. Second, although legislation restricts the capacity of employers to spy on employees (e.g., The Fair Credit Reporting Act limits organizations from hiring private detectives to investigate their employees), the reach of organizational monitoring efforts is extending beyond corporate walls, into the non-work lives of employees. To understand monitoring fully, therefore, scientists need to go beyond traditional approaches that focus solely on performance (e.g., Komaki, 1986; Larson & Callahan, 1990; Stanton, 2000), by also addressing the role of non-behavioral information (e.g., genetic, medical, personality) and non-work behavior. For example, in the Tice case, off-work activities such as employees' use of personal blogs that commonly are assumed to be outside the purview of employers, now are being monitored with some regularity. In a 2005 Society of Human Resource

Management (SHRM) Survey, 3% of the 279 HR managers surveyed indicated that they have disciplined employees for blogging (McCullagh & Gilbert, 2005). Thus, employees may engage in behaviors under an assumed veil of privacy that, in reality, may not exist. Heather Armstrong, a software company employee fired for blogging, urges caution: "There's this feeling that you just can't get caught or you won't get hurt because of it because it is so seemingly anonymous, but that is such a misconception" (National Public Radio, 2005). The pervasiveness and extended reach of organizational monitoring is raising serious concerns about employees' information privacy or their control over their personal information, and consequently their ability to behave autonomously, free from control of others. (See Table 1 for control-oriented definitions of information privacy.)

Other forms of monitoring also are raising concerns. The American Management Association's (AMA) 2005 survey shows that 76% of companies monitor employees' Internet connections, 55% monitor employees' electronic mail (e-mail), 51% use video to combat theft, violence, and sabotage at work, and 8% track employees' locations using GPS technology. An AMA (2004) survey indicates that 63% of companies require employees to submit to medical tests, and 62% require drug screening. According to SHRM, 80% of firms conduct criminal background checks (Bonne, 2004). Finally, the use of personality tests for employment screening is so pervasive that the publication of such tests is a \$400 million industry in the United States (Pepper, 2006). Together, these information-gathering initiatives reveal that today's employees may be at considerable risk for invasive and unfair treatment.

Indeed, because organizational monitoring practices can communicate mistrust (Westin, 1992) or may be used as part of more inclusive efforts to sanction employees – or, as in the case of Deb Tice, even fire them – issues of fairness invariably arise (Stanton, 2000). According to Ms. Tice, "I worked for AAA for 10 years, through sickness, deaths in the family, my child's surgery, and this is how they repay me?" (personal communication, November 21, 2005). Despite the controversial nature of organizational monitoring, there is no theoretically based conceptual model that integrates the dual effects of monitoring on justice and privacy processes. The purpose of this paper is to articulate such a model, and in so doing, to identify its practical benefits to managers (including HR professionals), and its theoretical implications for research on monitoring, justice, and privacy.

Table 1. Privacy Definitions.

Citation	Definition
Warren and Brandeis (1890)	“The right to be let alone” (p. 195)
Bloustein (1964)	I take the principle of ‘inviolable personality’ to posit the individual’s independence, dignity, and integrity; it “defines man’s essence as a unique and self-determining being” (p. 971)
Westin (1967)	“the claim of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about them is communicated to others” (p. 7)
Miller (1971)	“the basic attribute of an effective right to privacy is the individual’s ability to control the circulation of information relating to him” (p. 25)
Altman (1975)	“selective control of access to one’s self or group” (pp. 17–18)
Margulis (1977)	“Privacy, as a whole or in part, represents the control of transactions between person(s) and other(s), the ultimate aim of which is to enhance autonomy and/or to minimize vulnerability” (p. 10)
Sundstrom, Burt, and Kamp (1980)	“Privacy is defined in two ways: as a psychological state and as a physical feature of the environment. Psychological privacy comes from a sense of control over access to oneself or one’s group” (pp. 101–102)
Stone and Stone (1990)	“a state or condition in which the individual has the capacity to (a) control the release and possible subsequent dissemination of information about him or herself, (b) regulate both the amount and nature of social interaction, (c) exclude or isolate him or herself from unwanted (auditory, visual, [electronic], etc.) stimuli in an environment, and as a consequence, can (d) behave autonomously (i.e., free from control of others)” (p. 358)
Newell (1995)	“a voluntary and temporary condition of separation from the public domain” (p. 100)
Smith, Milberg, and Burke (1996)	“the ability of the individual to personally control information about one’s self” (p. 168)
Pedersen (1997)	“a boundary control process in which the individual regulates with whom contact will occur and how much and what type of interaction it will be” (p. 147)
Culnan and Armstrong (1999)	“Privacy is the ability of the individual to control the terms under which personal information is acquired and used (Westin, 1967). Personal information is information identifiable to an individual.” (p. 105)
Alge, Ballinger, Tangirala, and Oakley (2006)	“Information privacy entails the degree of control that an organization affords its employees over practices relating to the collection, storage, dissemination, and use of their personal information (including their actions and behaviors) and the extent that such practices are perceived as legitimate.” (p. 222)

Practical Significance of Organizational Monitoring

Practically, understanding how to implement monitoring in such a way as to balance the privacy and fairness needs of employees with the security needs of the organization represents a critical, emerging managerial competency. The terrorist attacks in New York, Madrid, and London earlier this decade serve notice that societies must be vigilant and “on watch,” but at what cost to freedom? That is, how much monitoring and surveillance will societies accept to ensure security (Yang, 2005)? This question extends to organizations, where underperformance and breaches of security are serious threats to the competitiveness of organizations and to the safety and well-being of their employees. Consequently, managers are confronted with decisions as to whether or not to monitor their employees, and if so, how to do it in a manner that promotes security, but that also ensures they receive appropriate levels of fairness and privacy.

Such decisions are not new. Yet, the methods for monitoring employees are evolving and becoming increasingly more sophisticated and far reaching, and this has placed additional pressure on managers to consider the fairness and privacy concerns of those being monitored (as evidenced by the *Deb Tice* case). Still, monitoring systems share at least one common feature – the collection of personal information about employees. Whether by means that are formal or informal, personal or impersonal, or electronic or manual, monitoring is highly controversial. For example, information collected via monitoring may be useful to managers attempting to make inroads into the widespread and costly problem of breaches of information security (Dhillon & Moores, 2001; Power, 2002). The rapid rise of electronic monitoring points to the perceived value managers ascribe to monitoring (e.g., AMA, 2001, 2005). Employees seeking objective, more accurate performance evaluations and feedback can benefit from certain forms of monitoring (such as electronic monitoring). Because these systems enable organizations to collect objective, unbiased, accurate performance data (Griffith, 1993), employees may judge related decisions to be fair, consistent with rules of procedural fairness (Leventhal, 1980).

The practice of collecting and using such information comes at a considerable cost. Among these are direct costs associated with administering monitoring programs (Alge, Ballinger, & Green, 2004; Welbourne, Balkin, & Gomez-Mejia, 1995; Tyler & Blader, 2005). For example, organizations must invest resources (e.g., time, people, systems, etc.) to collect and handle information on employees at a significant cost to the organization. Indeed, American companies are estimated to spend approximately \$655 million on

employee monitoring each year on Internet monitoring alone (*Employee Monitoring Guide*, 2005). Beyond these staggering direct figures are less obvious costs to the organization. For example, monitoring often triggers fairness and privacy concerns, which may trigger costly litigation (e.g., *Shoars v. Epson America Inc.*, 1990). In short, monitoring presents a dilemma for managers who, in deciding to acquire and use sensitive information, must balance the potentially conflicting interests of the organization and its employees. By presenting a framework for understanding the needs that privacy and fairness fulfill, we hope to provide managers some insight into ways of resolving this dilemma by effectively designing and implementing monitoring systems.

Conceptual Significance and Approach

Conceptually, the development of a monitoring framework (with a focus on the collection of employee personal information) provides a natural opportunity to understand the dynamic interplay between privacy and justice processes. With few exceptions (e.g., Bies, 1993; Culnan & Armstrong, 1999), prior theorizing has failed to capture the close, yet distinct conceptual relationship between justice and privacy. Both privacy and justice serve basic human needs that include the need for control, belonging, self-regard (i.e., positive self-concept), and meaning (Cropanzano, Byrne, Bobocel, & Rupp, 2001; Westin, 1967). However, it is unclear how these needs are evaluated under conditions, such as monitoring, in which both information privacy and justice perceptions are made salient.

One way to understand employees' needs is to examine their personal goals. By identifying employees' personal goals and the extent to which organizations support or impede goal attainment, we can begin to understand why people form particular fairness and privacy evaluations. In the present paper, we employ a cybernetic (self-regulatory) control theory framework (Carver & Scheier, 1998) as we draw upon theoretical arguments from the literatures on organizational justice (Colquitt & Greenberg, 2003; Colquitt, Greenberg, & Zapata-Phelan, 2005; Greenberg & Cropanzano, 2001), information privacy (Altman, 1975; Stone & Stone, 1990; Stone & Stone-Romero, 1998), and identity theory (e.g., Brewer, 1991; Higgins, 1987; Turner & Onorato, 1999) to illustrate how monitoring systems ultimately affect attitudes about invasiveness and unfairness, and how employees regulate these negative attitudes by using a repertoire of cognitive and behavioral adjustments.

Our identity-based model of organizational monitoring is presented in Fig. 1. A key purpose of this model is to understand how monitoring relates to identity and how identity serves to integrate fairness and privacy concepts. At the core of our model is the *self-concept* – how people perceive themselves. Identity is the primary cognitive aspect of the self-concept that draws our focus. Following social identity theory (e.g., Turner & Onorato, 1999), we distinguish between *personal identity* – how people define themselves individually, as unique human beings, and *social identity* – how people define themselves as members of various groups (Brickson, 1999; Elsbach, 2003; Tyler, 1999). Personal and social identity maintenance activities are central to understanding how people regulate personal and social boundaries in response to monitoring.

Although historically, monitoring has been considered an extrinsic control mechanism (an external force that motivates behavior), our model adopts an intrinsic motivation perspective toward understanding monitoring. Specifically, following an intrinsic motivation perspective (Deci & Ryan, 1985; Tyler & Blader, 2005), we examine the effects of monitoring on people's abilities to regulate their personal and social identities. According to this approach, people develop identity goals, which are intrinsic in nature, what Tyler and Blader (2002) call "autonomous" cognitions. Recently, justice scholars have begun to explore the relationship between extrinsic organizational forces (such as monitoring) and intrinsic needs or motivation (Tyler & Blader, 2002, 2005). For example, Tyler and Blader (2002) found that autonomous judgments of pride and respect, based on people's internal standards, were more powerful predictors of group-promoting behaviors than extrinsic, comparative status judgments (i.e., those based on external influences). Replicating the importance of intrinsic motivation, Tyler and Blader (2005) conducted two studies revealing that self-regulatory strategies to motivation yield greater adherence to organizational rules than extrinsic, "command and control" strategies. One limiting factor in these studies is that the authors treat extrinsic forces (such as monitoring) independently from self-regulatory strategies. In actual organizational settings, however, both extrinsic and intrinsic, self-regulatory processes are intertwined. Our model articulates the relationship between a particular external force, monitoring, and the self-regulation of identity aspirations.

There are additional reasons for adopting an intrinsic motivation perspective for understanding privacy and justice. First, as we already noted, both privacy and justice are important insofar as they serve people's innate needs or personal goals. Second, both privacy (e.g., Alge, Ballinger, Tangirala, & Oakley, 2006) and justice (e.g., Tyler & Blader, 2005) are

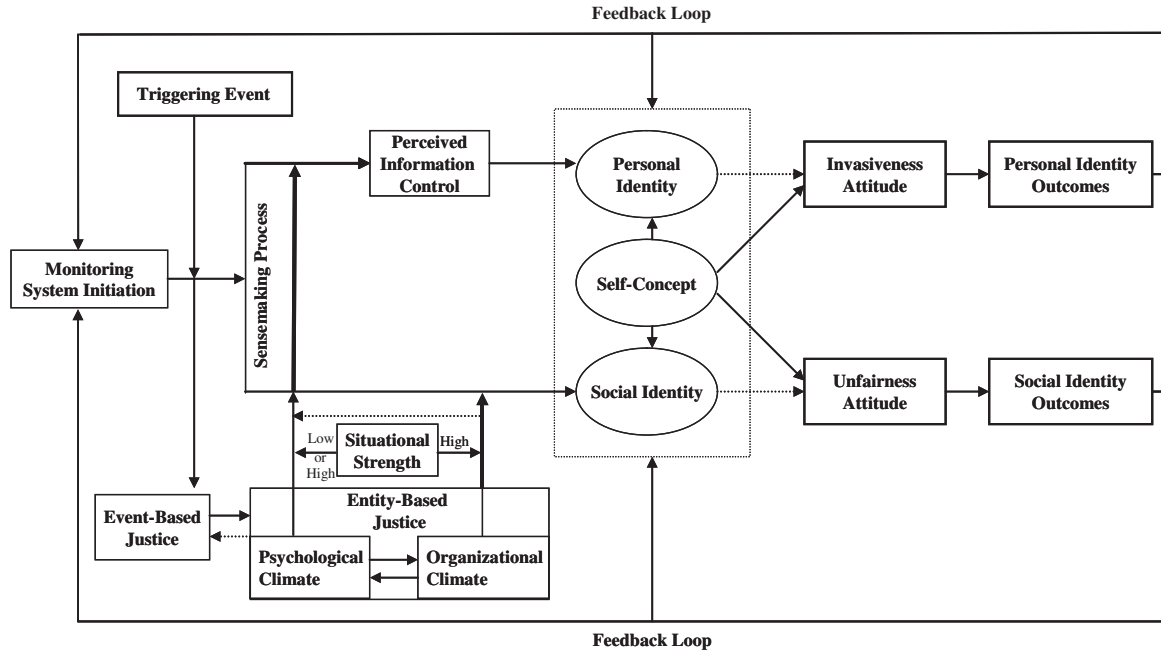


Fig. 1. An Identity-Based Model of Organizational Monitoring.

rooted in legitimacy – which, according to Tyler and Blader (2005), trigger intrinsic, rather than extrinsic, motivations to comply. Third, although extrinsic pressures, such as formal organizational efforts to control people via monitoring may undermine intrinsic motivation, this is not always the case. For example, monitoring systems embedded in work climates that support the realization of identity goals will be intrinsically motivating. Finally, the self-concept is an intrinsic motivational building block (e.g., Leonard, Beauvais, & Scholl, 1999), and as we will demonstrate, both privacy and justice are inherently tied to one's self-concept, which lies at the heart of our conceptualization.

Although great strides have been made in the justice literature by incorporating notions of identity, the primary focus has been on social identity, or the need to belong to valued groups – what Cropanzano et al. (2001) refer to as “belongingness” (see also Gillespie & Greenberg, 2005). Lacking, however, is a clear articulation of the importance of maintaining positive personal identities. Whereas social identity goals reflect belongingness needs, personal identity goals reflect distinctiveness needs. In fact, distinctiveness and belonging represent a continuum, ranging from the unique self on the one end, to an assimilated, social self on the other end. Distinctiveness implies some level of control, or the ability to act autonomously. Finding optimal distinctiveness and belonging becomes an important human striving (Brewer, 1991). Altman (1975) describes privacy regulation as a dialectic process involving the opening of the self to some (instrumental to achieving belongingness goals) and the closing of the self to others (instrumental to achieving distinctiveness goals). By considering privacy processes, we can begin to understand the dynamic interplay between the needs of employees to maintain distinctiveness (i.e., to control their personal information and personal identities) on the one hand, while also achieving a desired level of belonging on the other hand.

We now describe our model more fully – a systematic framework for self-regulatory control and feedback (Carver & Scheier, 1998) – by organizing our discussion into four sections corresponding to the main parts of the cybernetic control framework: input, sensor/comparator, effector, and feedback loop (see Fig. 2).

INPUT: MONITORING AS A CUE TO IDENTITY, FAIRNESS, AND PRIVACY

The input into the cybernetic control process constitutes an organization's decision to implement monitoring, a requisite step to ensure organizational

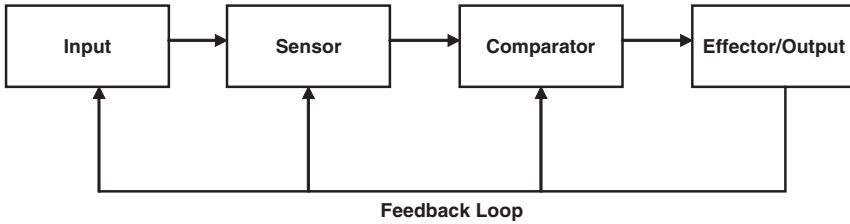


Fig. 2. A Generic Cybernetic Control Process.

control, where control is the process of aligning the actions of employees with the interests of their organizations (Miner & Brewer, 1976; Tannenbaum, 1968). At one level, knowledge of monitoring acts as an attentional cue, causing one to be highly self-aware and concerned with one's own personal and social identities. At another level, monitoring acts as an informational cue. Specifically, monitoring systems carry fairness- and privacy-relevant cues depending on the richness of the monitoring system. In the next two sections, we describe the attentional and informational functions of monitoring in more detail.

Monitoring as an Attentional Cue: Directing Attention to the Self and Identity

Before monitoring can have an effect on individuals' self-concepts, people first must become aware that they are being monitored (Botan, 1996). That is, some cue must alert people that they are targets of monitoring, thereby drawing attention to themselves. Such cues can be planned or unplanned. For example, leaders may announce that their companies will be implementing various monitoring efforts, thereby giving employees advance notice. Alternatively, triggers may be unplanned, leading to unexpected or accidental knowledge of monitoring systems. For example, the firing of employees at firms such as Xerox, The New York Times, and Dow Chemical for Internet abuses and related publicity (Jung, 2003) may have alerted surviving employees of these companies that monitoring is occurring. In both cases, monitoring awareness is triggered – a condition necessary for monitoring to have an effect on attitudes toward the invasiveness and fairness of monitoring.

People do not constantly evaluate and monitor their self-concepts, of course. Rather, something needs to make concerns about the self-concept salient, thereby turning attention in that direction. Monitoring provides a

critical input or cue that causes employees to become objectively aware of themselves and their identities. In their theory of objective self-awareness, Duval and Wicklund (1972) contend that to generate awareness of the self as an object of evaluation, it is necessary to remind oneself of his or her status as an object in the world. In laboratory research, this is operationalized by having participants look into mirrors, listen to tape-recordings of their own voices, or viewing photos of themselves. These manipulations provide external cues that turn attention toward oneself. Just as these stimuli are effective in experimental research to manipulate individuals' awareness of their own identities (see also Silvia & Duval, 2001), we posit that monitoring serves an analogous function within organizations, making it a sort of naturalistic manipulation that leads employees to become aware of their personal and social identities.

Objective self-awareness triggers self-evaluation. People become aware of themselves as objects to be evaluated. According to Duval and Wicklund (1972), "when attention is focused on the self, there will be an automatic comparison of the self with standards of correctness" (p. 5). In keeping with this, Greenberg (1980, 1983) found that objective self-awareness promoted adherence to prevailing norms of fairness. Although contrived manipulations to trigger self-awareness for purposes of testing objective self-awareness theory may not be germane to organizational settings, there exist other mechanisms for triggering self-awareness in these settings that support our inclusion of monitoring. For example, the mere presence of others can lead people to focus attention on themselves when they perceive that the others present are "focusing" on them (Cottrell, Wack, Sekerak, & Rittle, 1968). Put differently, when targeted for monitoring by external others, people's awareness of themselves increases, prompting them to engage in self-evaluation.

Similar to objective self-awareness, research on social facilitation also posits that the presence of others creates a drive or arousal (Zajonc, 1965), and this phenomenon occurs whether monitoring personnel are physically present or separated from the target employees (Aiello & Kolb, 1995). By extension, we posit that with respect to triggering self-awareness it does not matter whether the monitoring supervisor is present physically or electronically, but only that one is aware that he or she is the focus of another's attention in any form. Although scholars have pointed to evaluation apprehension (Henchy & Glass, 1968) and self-consciousness (Wicklund & Duval, 1971) as explanations for performance variance under "presence" or monitoring conditions, a well-articulated model of self-evaluation in the presence of organizational monitoring has not yet been advanced.

We posit that monitoring turns one's focus on the self, making identity concerns salient. People begin to search for information to evaluate their identities in light of monitoring by asking, "how does monitoring affect my identity?" To address this question, employees will examine features of the monitoring system and the organizational context within which the monitoring system is embedded. Thus, in addition to directing attention on the self, variations in monitoring systems carry important informational cues that can influence identity evaluation.

*Monitoring as an Informational Cue: Monitoring Richness,
Fairness, and Privacy*

Although knowledge of monitoring triggers awareness of the self, the nature of monitoring informs the evaluation of the self. Monitoring systems can vary along several dimensions. To distinguish monitoring dimensions from managerial enactment of monitoring, we use the concept of *richness* developed by Daft and Lengel (1984). According to these theorists, communication media (including face-to-face conversations) vary with respect to their capacities to convey meaning. Face-to-face communication, because it allows for exchanging verbal and non-verbal cues, is considered synchronous, multiway communication, and provides immediate feedback, is considered the richest form of communication. Other media, such as those in which computers substitute for people, are said to be leaner because they allow less information to be exchanged.

In the context of monitoring, traditional forms of surveillance involve actual physical supervision, with supervisors and employees together in time and space. Other types of monitoring (e.g., computerized performance monitoring) do not require supervisors to be physically present, or even to be engaged actively in the monitoring. However, technology-based monitoring may provide more information than physical supervision. For example, technology makes it possible to monitor all employees continuously, a level of efficiency that is impossible under traditional monitoring by supervisors. Moreover, technology makes it possible for supervisors to gain access to richer and more detailed information, such as the amount of time spent off-task (Alge, 2001).

Monitoring richness refers to the extent to which monitoring systems convey information about targets; higher degrees of richness are associated with closer control of employees' behavior. We identify four relevant dimensions of richness: transparency, pervasiveness, target level, and permanence

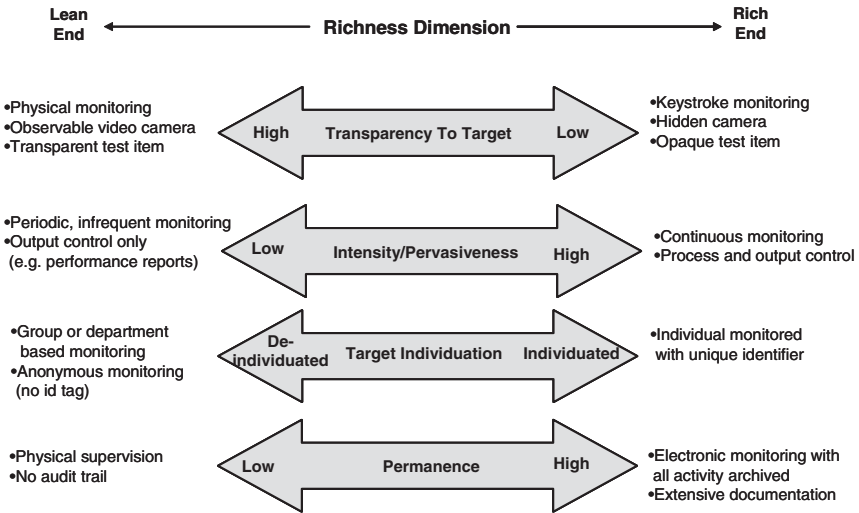


Fig. 3. Monitoring Richness Dimensions.

(for a summary, see Fig. 3). These dimensions are value-neutral but can carry multiple meanings that may lead to more favorable or unfavorable privacy and fairness assessments. In Table 2, we present a non-exhaustive list of possible positive and negative effects of higher- and lower-monitoring richness on privacy and fairness-related outcomes. We now briefly describe each dimension and its potential to carry information relevant to perceptions of justice and privacy.

Transparency

Monitoring systems vary with respect to the degree to which they are open and transparent to those being monitored. At one end of the continuum, monitoring can be completely open and transparent, such as when employees have full knowledge of the nature and extent of monitoring. At the other end, monitoring also can be completely covert and opaque, in which employees do not know what is being monitored, or even that they are being monitored at all. Recent technological advances make covert employee monitoring easy to accomplish. Some managers believe that by keeping monitoring secret (i.e., opaque) they can avoid the associated controversy. This is a risky strategy, however, because employees who uncover a covert monitoring system respond more adversely than those who had advance

Table 2. The Meaning of Monitoring Richness: Positive and Negative Effects on Privacy and Fairness-Related Outcomes.

Dimensions of Monitoring Richness		Positive Reactions		Negative Reactions	
		Privacy	Fairness	Privacy	Fairness
Transparency	High	Greater information control; manage others impressions of me	Due process, advance notice; level playing field, know rules of the game	I have knowledge that my personal information is being revealed, possibly without consent	Easy to fake; unable to distinguish high vs. low performers
	Low	Ignorance is bliss (do not feel a loss of control)	Accuracy increases, true performance captured	Lower information control; unclear how I should act	Reduced process control, lack knowledge and understanding of system
Intensity and Pervasiveness	High	Always “show time”; opportunity to prove self	Objective data (unbiased)	Panoptic effect (constant surveillance); loss of freedom	Unrelenting = unethical; indignation; lowered trustworthiness
	Low	Less personal information in hands of organization; off-stage time, solitude	Trusted, ethical	Good deeds go unnoticed	Decisions based on incomplete information

Target Individuation	High	Credit where credit is due; "my work"	Accuracy, opportunity, individualized performance feedback	Can be more easily controlled (the more information others have on me, the more vulnerable I am)	Unfairly targeted (Why me?), lowered trustworthiness
	Low	Not being targeted; not "out to get me," can not be individually controlled	Team first, relational bonds or identify strengthened	Team gets credit for my efforts; good deeds lost in the crowd; helplessness	Perception that others may slack (not do their share); my performance unrewarded
Permanence	High	Personal information availability higher; codified memory, personal events captured	Reconsideration opportunities correctability, accuracy	Personal information can be breached; others can manipulate information about me; unauthorized use	Risk that decisions are based solely on data that is collected, ignoring other pertinent factors; political manipulation
	Low	Past deeds can not come back to "haunt me"; data can not be manipulated by others	Learn from mistakes, without consequences	Difficulty in reconstructing past events related to me	Baseless justifications; decisions subjective/biased

knowledge that monitoring is occurring (Hovorka-Mead, Ross, Whipple, & Renchin, 2002).

The notion of transparency has important implications for our model. High transparency can undermine privacy insofar as people have knowledge that their organization is collecting detailed personal records. The mere knowledge that an organization is gathering personal information is likely to trigger reduced perceptions of information control, violating people's perceived rights to privacy. It also can have a negative effect on fairness. For example, transparency affords employees opportunities to "fool" the system because they know its intricacies. Moreover, when this occurs, honest employees may view the system as less accurate, unable to distinguish true performance from "faked" performance. In accord with Leventhal's (1980) accuracy rule, this can reduce perceptions of procedural justice. Interestingly, low levels of transparency also can have negative effects. For example, it is difficult for people to exert information control when they are targeted, and consequently, they may engage in behaviors or reveal information that they did not intend. Thus, lack of knowledge and understanding, which is common under opaque monitoring regimes, further can erode fairness perceptions.

On the positive side, high transparency communicates more information, leading to increased information control. Highly transparent monitoring systems provide clarity to those being monitored with respect to when, what, and how they are being monitored. An open monitoring system is consistent with managerial best practices that follow due process, such as providing advance notice (Folger, Konovsky, & Cropanzano, 1992; Taylor, Tracy, Renard, Harrison, & Carroll, 1995). This openness can be an advantage to employees because, through self-regulation, they can engage in impression management and other positive behaviors to make themselves look good, while at the same time, also increasing their perceived personal control over information. Thus, transparent monitoring systems affect privacy and fairness judgments in complex ways – both positively and negatively.

Intensity and Pervasiveness

Monitoring richness is enhanced as the breadth (i.e., pervasiveness) and depth (i.e., intensity) of personal information-gathering about a target is increased. For example, an electronic monitoring system based solely on output control, might enable managers to ascertain the degree to which productivity goals were met. It will be difficult, however, for these same managers lacking behavioral control, to understand why the goals were

or were not met (for a distinction between behavioral and output control, see Kidwell & Bennett, 1994). A richer monitoring system would combine people and technology so that both behavioral and output controls are present. We see this, for example, in the so-called “exception-based monitoring systems,” in which electronic technologies are used to flag exceptions to expected activities (e.g., customer service goals unmet or e-mails containing offensive language), thereby alerting supervisors, who then can be more proactive in monitoring the situation.

This dimension has several implications for our model. From a negative perspective, as intimate details about an individual are collected, his or her privacy is likely to be perceived as threatened. Indeed, studies have found that as information-gathering initiatives include increasingly personal information (e.g., finances or medical information), privacy is perceived to be impinged (Rosenbaum, 1973; Stone, Gueutal, Gardner, & McClure, 1983). Zuboff (1988) describes “Bentham’s Panopticon,” a type of circular prison with a central supervisor that creates a perception among prisoners that they constantly are being watched. Privacy notwithstanding, such a threat of constant surveillance raises ethical concerns and sends a message of mistrust to targeted employees.

However, high intensity and pervasiveness of monitoring can be favorable to employees. Such monitoring provides a full picture of one’s behaviors, thereby supporting detailed and accurate evaluation and feedback. In keeping with research showing the power of informational justice perceptions (e.g., Greenberg, 1993; Shaw, Wild, & Colquitt, 2003), an in-depth monitoring system enables managers to provide accurate, detailed explanations for decisions, leading employees to believe that the processes upon which decisions are made are fair. Moreover, managers can use this detailed information to make decisions that benefit employees (e.g., ensuring optimal person-job matching). A full accounting of situational and personal details can lead employees to believe that they are operating in a bias-free environment, thereby increasing their confidence in their ability to attain their goals, and promoting their perceptions of control (Gillespie & Greenberg, 2005). Employees may come to feel that under intense monitoring, they have unlimited opportunities to show their talents and to prove themselves to their organizations.

One difficulty of managing virtual, or geographically dispersed, teams is remote control – controlling employees from afar (Alge et al., 2004) because of incomplete performance information. In such situations, managers must rely more heavily on output control (e.g., management-by-objectives) and less heavily on behavioral control (e.g., management-by-walking-around),

focusing not on how work gets done, but on whether it gets done at all. Such an approach, however, makes it difficult for managers to diagnose why performance fails to meet objectives. For this reason, a purely electronic system based on summary performance report data is less informative than a detailed account of an individual's actions in real time. More thorough information, both in terms of the outcomes and how those outcomes are reached, provides a more meaningful representation of employee behaviors, and thus, greater monitoring richness.

Target Individuation

Monitoring systems vary in terms of their capacities to individuate employees. Whereas some identify the specific individuals who are violating the rules, others offer merely general or unit-wide information about rule violations. This distinction affects privacy and justice in several ways. From a negative perspective, the more identifiable a particular individual is to a monitoring system, the more that system can threaten that individual's personal identity and privacy. Group-based monitoring is less threatening, however. For example, some monitoring systems are designed to track the web-surfing habits of employees in a given department, but without identifying the specific employees who visited various Web sites. Because specific members of group-targeted monitoring systems are not identifiable, the monitoring system is not a threat to the identities of any specific employees. Thus, in terms of possible negative reactions, because individuated information is tied to a specific employee, organizations that collect such information have greater control over employees than those that do not. Consequently, employees in such organizations will feel vulnerable and suffer a loss of personal information control. Under such conditions, fairness reactions also may turn negative insofar as employees may believe that their organizations are targeting them unfairly (Leventhal, 1980). This is especially likely to occur whenever the change to such a new monitoring system occurs, but without sufficient explanation (Cobb, 1999).

There are also positive implications associated with individuated monitoring. For example, employees may feel confident that they will receive proper credit for their work. In expectancy theory (Vroom, 1964), terms, employees' instrumentalities (e.g., their beliefs that their performance will be rewarded) will be strengthened, as actions are tied directly to them. In addition, individuated monitoring can provide personalized performance feedback that is deemed more accurate and a belief among employees that fair

opportunities exist to demonstrate their unique contributions (Greenberg, 1986, 1991).

However, group-level monitoring is less rich than individual-level monitoring given that managers receive less detailed information. Thus, because only aggregate-level information is provided, it is difficult, if not impossible for managers to address individual performance concerns directly. Yet, employees may view it as a sign of their organizations' trust in them and that it is not seeking to "blame" or "catch" them in the act of performing individual transgressions. In this sense, monitoring may be viewed as in keeping more with an interest in improving the organization than a desire to sanction any particular employees. This is in keeping with the suggestion from social identity theory that actions that increase group salience will strengthen employees' identification with their organizations (e.g., Hogg et al., 2005).

Permanence

A final feature of monitoring richness is permanence – the length of time a monitoring record is retained, unchanged, and able to be refuted. Permanence strikes at the heart of whether a monitored behavior is "on record" or "off record." In the communication literature, this characteristic of permanence has been termed "bindingness" (Poole & Jackson, 1993), distinguishing the degree to which media carries a permanent, public record (e.g., a database of all e-mail conversations), is transient in nature (e.g., observed but not recorded), or even is unobserved entirely. Thus, behaviors that can be "textualized," or archived, have a high degree of permanence (see Zuboff, 1988). Moreover, because these behaviors are "on record" (often electronically), it is difficult for the targets of monitoring to deny responsibility for them.

In terms of positive reactions, permanence may enhance fairness by supporting the ability of managers to reconsider decisions and by allowing both managers and employees to correct inaccuracies. Indeed, in keeping with Leventhal's (1980) procedural justice rules, when managers reconsider decisions that are perceived by employees to be unfavorable (e.g., Dineen, Noe, & Wang, 2004), making it possible to correct any inaccuracies that may exist (Barclay & Harland, 1995) – both situations facilitated by permanent record-keeping systems – employees' perceptions of procedural justice will be enhanced (Tyler & Lind, 1992).

From a privacy perspective, permanent records can serve as a "memory system" for employees, allowing them to reconstruct their past histories,

thereby promoting information control. Permanent, objective performance records such as those stored in electronic databases, are difficult to refute (e.g., archived videotape of employee stealing from stock room). Compare, for example, an electronically monitored e-mail message between two coworkers who disparage their bosses to an employee who claims to have overheard two coworkers saying these same things. The quality of evidence is considerably better in the former; it is irrefutable and less vulnerable to alternative interpretations (e.g., “he said, she said”). Moreover, the written record also makes it possible to achieve a higher degree of permanence to the information.

As for privacy, people may be uncomfortable with the thought that their personal information is being stored on permanent databases. Thus, once an organization has someone’s personal information permanently available, employees lose some control over use of that information. In other words, because others may use, manipulate, or disseminate that information without that individual’s consent, he or she has relinquished information control. Electronic communication, such as e-mail, typically is stored, often indefinitely, on retrievable databases, posing a serious threat to personal information control. Once an employee “sends” an e-mail, it ceases to be under his or her control. Others can forward that information to anyone without the original author’s consent.

Consider, for example, the case of Claire Swire and Brad Chait. Mr. Chait, while working at a British law firm, received a “morning after” e-mail from Ms. Swire, with whom he was romantically involved (see, for example, [Campbell, 2001](#)). Chait forwarded the e-mail to several in-house colleagues who proceeded to forward the message to acquaintances outside of the law firm where they worked. The message traveled around the globe in a short period of time and eventually ended up in the British tabloids. Lack of permanence, however, can make it difficult for employees to reconstruct past events. For example, by examining prior e-mail archives, which can serve as a form of electronic memory, one can trace an entire series of e-mail communications and use that information to control future communications. Without permanence, this would prove more difficult.

To summarize, we have identified four dimensions of monitoring richness that can trigger concerns about fairness and privacy. Sometimes, these dimensions work to promote fairness or privacy; other times, they reduce them (see [Table 2](#) for examples). What tips the scales in support of more favorable privacy or fairness reactions? We address this question and the relationship of identity to justice and privacy in the next section, in which we turn to the monitoring-triggered process of self-evaluation.

SENSOR AND COMPARATOR: EVALUATION OF THE SELF-CONCEPT

Personal and social identities form the core of people's self-concepts (e.g., Onorato & Turner, 2004). Because identity is critically important to the well-being of employees (e.g., Elsbach, 2003) and because employees will protect themselves against threats to identity (Aquino & Douglas, 2003), the question of why employees should care about monitoring can be reframed as follows: To what extent does monitoring change the ways in which employees think about themselves? That is, how does monitoring affect people's identities? We already have argued that monitoring causes people to focus on self-evaluation and self-identity. Our central thesis is that identity explains why people care about privacy and fairness. Indeed, a growing literature suggests that identity serves as a primary explanation for why people care about justice (Clayton & Opatow, 2003; Olkkonen & Lipponen, *in press*; Skitka, 2003) and privacy (Robison, 1997), and that this identity focus need not be limited to social identity, but that it can and should also include personal identity (Robison, 1997; Tyler & Blader, 2003). This suggests that identity evaluations may serve as key determinants of privacy and fairness perceptions.

In evaluating identity (a concern triggered by monitoring), employees will consider their organizations (the source of monitoring) and the degree to which they have the capacity to maintain their identities within their organizations. Employees who perceive that they are unsuccessful in maintaining personal and social identities will experience negative privacy (invasiveness) and unfairness attitudes, respectively. The identity evaluation process entails the following: (1) discrepancy monitoring – in which people process information related to their identities and compare their ideal identities (identity goals) to their actual identities – and (2) the perceptions that develop from such discrepancies (i.e., invasiveness, unfairness). Distal outcomes (i.e., effectors) of this process include attempts to regulate the self-concept through cognitive or behavioral adjustments. Here, we describe the identity evaluation process, first examining identity standards and how people evaluate identity discrepancies, followed by a discussion of the relationship between discrepancies and outcomes.

Identity Standards and Discrepancy Monitoring

Our model is predicated on the belief that identity goals are important to people's self-concepts and because they come from within themselves, they

are intrinsically valuable. Consequently, success or failure in reaching such goals will affect intrinsic motivation. In extending the group-value and relational models of justice (for historical overviews of these approaches, see Colquitt et al., 2005), Tyler and his colleagues have addressed how justice and identity relate to intrinsic motivations, and how such motivations lead to greater engagement, rule adherence and cooperation in their group engagement model (Blader & Tyler, 2005; Tyler & Blader, 2003). According to this conceptualization, procedural justice (e.g., formal rules, and how one is treated, to which others refer as *interactional justice*; Bies, 2001) lead to psychological engagement – a construct characterizing the amount of pride, respect, and social identification people have toward their organizations – and this, in turn, determines the degree to which people engage in cooperative behavior. *Pride* refers to an individual’s judgment of the status of his or her group (i.e., group prestige). *Respect* refers to people’s judgments of their status within the group, their social reputation, or what Darwall (1995) refers to as *recognition self-respect*. These, according to the group engagement model, are specified as reasons why concerns about justice are important to people psychologically.

Because identity is intrinsically meaningful, people who are treated in procedurally fair ways will perform prescribed tasks as well as discretionary, extra-role tasks because they are “intrinsically motivated to see the organization succeed” (Blader & Tyler, 2005, p. 338). Our model posits a similarly important role for identity. Although the group engagement model explains behaviors directed toward the organization by focusing on the social identity component of the self-concept, it falls short of explaining personal identity goals and related behaviors – a gap that our model attempts to fill.

Specifically, we posit that, in addition to recognition self-respect (rooted in social identity), another type of respect, *appraisal self-respect* (rooted in personal identity) – a positive appraisal of oneself based on positive attributes one is pleased to have (Darwall, 1995) – also plays a prominent role in understanding identity. Appraisal self-respect reflects one’s unique, distinctive qualities, and we posit, it will predict different outcomes than recognition self-respect. Both types of respect, recognition self-respect and appraisal self-respect, define one’s sense of esteem or self-worth. In our model, personal identity could be assessed using a measure of appraisal self-respect; social identity could be assessed using a measure of recognition self-respect. Table 3 serves as a guide to our discussion of how identity evaluation unfolds and how issues of respect (and to a lesser extent, pride) relate to personal and social identities and resulting outcomes. To further

Table 3. Higher- and Lower-Order Characteristics of Identity Evaluation Process.

Hierarchical Level	Form	Evaluative Clarity or Level of Abstraction	Motivational Underpinning	Identity Focus	Identity Threat	Threat Responses
Principle level	Ideal identity goals; desired end; a sense of “why”	Abstract, unclear	Intrinsic: autonomous self-determined	Personal identity	Appraisal self-respect	Commitment to self-strengthened
				Social identity	Recognition self-respect, pride	Commitment to group/organization weakened
Program level	Actual identity is defined by goals and actions situated in (or constrained by) organizational context; the means to an end; A sense of “how”	Concrete; available cues	Intrinsic and extrinsic	Individuated distinctive “me”	Invasiveness Attitude	Self-enhance, repair, protest unique self
				Belonging, member of “my group”	Unfairness attitude	Diminish organization and withdraw from it

understand these effects, one must understand the nature of identity goals and the levels of information processing that occur in evaluating such goals.

Principle-level Processing and Identity Goals

People's personal goals are situated within a hierarchy of goals that range from abstract, distal, higher-order goals to concrete, proximal, lower-order goals (Carver & Scheier, 1998). Identification of goal frameworks for understanding the psychology of fairness are just beginning to emerge. For example, Gillespie and Greenberg (2005) position justice needs as goals within a hierarchy of goals ranging from abstract, higher-order goals (e.g., belongingness, being a good neighbor) to more concrete, lower-order goals (e.g., shoveling snow off a neighbor's driveway). Here, we highlight the important role of ideal standards that people hold regarding their personal and social identities, and how these standards contribute to their attitudes toward the invasiveness and unfairness of monitoring. Our arguments are rooted in discrepancy-reduction theories of the self (Carver & Scheier, 1998; Duval & Wicklund, 1972; Higgins, 1987). The needs to be a part of others (social identity) and to maintain distinctiveness (personal identity) at optimal levels represent desired end states or goals – ideal states for people's self-concepts. Based on these needs, people seek to evaluate and control both their personal and social identities in ways that help them promote positive self-concepts.

The self-evaluation process unfolds as follows. People identify their ideal identities – personal and social – similar to Higgins (1987) "ideal self," Bandura's (1991) "personal standards," and Schlenker's (1985) "idealized image." These ideal identities are shaped by a variety of factors (e.g., prior scripts, innate needs, social influence, or comparison processes), and represent the highest level goals in one's personal goal hierarchy, what Carver and Scheier (1998) refer to as principle-level goals. In fact, Carver and Scheier call such goals "be" goals – those higher order, meaningful aspirations one hopes to be. According to Gillespie and Greenberg (2005), such higher-order goals communicate meaning, or a sense of "why." These higher-order identity goals are intrinsic, or self-determined (Carver & Scheier, 1998). Because they are imagined and not often realized, they are ambiguous. Consequently, processing information and evaluating identity goals likely occurs at several cognitive levels. As Table 3 indicates, principle-level processing involves the conception of higher-order identity goals, which are abstract and lack information against which to fully evaluate one's self-concept. Thus, it is difficult to evaluate the self-concept solely at

the principle level. Just below the principle level in one's personal goal hierarchy is the program level.

Program-level Processing and Perceived Actual Identity

Although identity goals are highly meaningful, in isolation they can be problematic from a motivational perspective because they are difficult to evaluate. To evaluate progress toward such goals, individuals must drop to a lower level in their hierarchy of goals, where concrete actions and behaviors are recognized and have meaning – what Carver and Scheier (1998) refer to as the program level. Whereas principle-level identity goals convey a sense of “why,” program-level processes communicate a sense of “how” (Gillespie & Greenberg, 2005). That is, to evaluate ideal identity goals at the principle level, people will turn to the program level – the level that is less abstract and easier to evaluate. It is here that people will examine available identity cues in their environments that will help them evaluate their progress toward their principle identity goals. The program level serves this purpose by providing information about one's perceived actual identity.

This process of evaluating abstract principles against more concrete cues is consistent with uncertainty management theory (Lind & Van den Bos, 2002; Van den Bos, 2005) – a broader offshoot of fairness heuristic theory (Lind, 2001). Although knowledge of monitoring triggers self-evaluations, people will seek additional informational cues to make informed evaluations of themselves. Employees react to monitoring by contemplating what it means to themselves individually – how does it affect their appraisal self-respect, including their abilities to behave autonomously and to preserve their distinctiveness? They also will question how monitoring affects their standing in their organizations – how does it affect their recognition self-respect and their senses of belonging to their organization? When assessing a technology or a system, such as monitoring, people will draw upon features of the system (e.g., the richness characteristics of monitoring described earlier), but they also will consider the social context within which the system is embedded (Griffith, 1999). That is, a given socio-technical system such as monitoring may have a designed or intended use, but, its meaning will depend as well upon its embedded social context.

For example, when missionaries introduced a technologically superior steel axe to the primitive, Yir Yuront tribe of indigenous people in Australia, replacing the hand-stone axe that was prized by men and passed down to their sons, its effects were unexpected. As reported by Sharp (1952), men lost their senses of dignity and importance, and women and children (who now had their own axes) became disrespectful and independent. What was

intended to be a kind gesture on the part of the missionaries sent the entire tribe into confusion. Citing a more technologically sophisticated example, Markus (1983) describes resistance in an organization following the implementation of a centralized accounting system for monitoring financial information. End-users rejected the system because they interpreted it as an attempt by management to gain power over them. Extrapolating from these accounts, we believe that as individuals endeavor to make sense of monitoring, they will assess the system's social or symbolic meaning, going beyond the specific features of the techniques themselves (see also Zuboff, 1988).

How, precisely, do employees assign social meaning to monitoring systems? That is, how do they interpret the effects of monitoring on their identities? We argued already that identity goals are abstract. Similarly, one's monitoring context can be ambiguous or uncertain. For example, managerial intentions for monitoring may be malicious or benign (Zweig & Webster, 2002), and often, the meaning or managerial intent of monitoring systems is unclear – particularly when monitoring transparency is low. Thus, employees are likely to experience uncertainty surrounding both monitoring and self-evaluation.

Building on uncertainty management theory (Lind & Van den Bos, 2002), one must rely on other available cues to make sense of monitoring and its effects on identity. We contend that the fairness context serves this sense-making purpose. Indeed, “fairness and uncertainty are so closely linked that it is in fact impossible to understand the role of one of these concepts in organizational psychology without reference to the other” (Lind & Van den Bos, 2002, p. 181). Van den Bos and his associates have conducted several experiments demonstrating that fairness becomes more salient and is more predictive of outcomes when uncertainty is high (Van den Bos, 2001; Van den Bos, Poortvliet, Maas, Miedema, & Van den Ham, 2005). For example, Van den Bos (2001) demonstrated that the effects of voice on negative affect are stronger when uncertainty is high than when it is low. These findings have been extended to real-world settings, in which the positive relationship between procedural justice and job satisfaction was found to be stronger when uncertainty was higher (Diekmann, Barsness, & Sondak, 2004). This stream of research suggests that fairness offers an element of certainty to otherwise uncertain contexts.

However, to better understand the role of fairness in resolving uncertainties surrounding monitoring and identity, we distinguish between two different types of fairness judgments. Both event judgments (i.e., the perceived fairness of events) and entity judgments (i.e., the perceived fairness of the individuals or entities responsible for those events) matter as employees

assess the favorability of their fairness contexts (Cropanzano et al., 2001). In our model, event and entity fairness judgments are used to help employees clarify the meaning of monitoring systems and their ability in such contexts to regulate their identities. An event-based fairness judgment is a specific instance of monitoring interaction with employees and the associated fairness that it engenders, what we refer to as *monitoring event fairness*. Lab studies of monitoring typically examine such monitoring events to examine their effects on event fairness (Alge, 2001; Zweig & Webster, 2002). Prior monitoring theory has identified many of the relevant monitoring event rules that drive such event-based judgments (Ambrose & Alder, 2000; Kidwell & Bennett, 1994). Examples of these rules include participation (e.g., having input into the design and implementation of monitoring) consistency (e.g., in how data is collected and used), monitoring bias (e.g., selective administering of monitoring), and accuracy of data collected.

Entity-based judgments, on the other hand, are tied not to a specific monitoring event, but rather, to the entity responsible for monitoring (i.e., the organization). Entity judgments are cumulative, derived from many events over a longer period of time. As depicted in Fig. 1, entity judgments are manifested in people's climate judgments. Climate refers to employees' perceptions of formal and informal organizational policies and procedures (Ostroff, Kinicki, & Tamkins, 2003), and the climate literature distinguishes between individual perceptions (e.g., psychological climate) and group or aggregate perceptions (organizational climate). Thus, entity assessments can include individuals' global perceptions of procedural, informational, and interpersonal justice attributed to the organization conducting monitoring – what we refer to as *psychological justice climate* – an individual-level construct. These global perceptions typically are formed from individuals' perceptions of the policies, procedures, structures, and practices of the organization as experienced over time (Cropanzano et al., 2001; Ostroff et al., 2003; Rupp, Bashshur, & Liao, in press; Schein, 2000; Schneider, 1990). Insofar as there is strong agreement across employees, a discernable *organizational justice climate* may emerge, though this is not required for one's aggregate justice perceptions to have an effect on identity evaluation. Recently, research has turned to studying such climates for fairness – originally focusing on procedural justice (Colquitt, Noe, & Jackson, 2002; Naumann & Bennett, 2000; Mossholder, Bennett, & Martin, 1998; Simons & Roberson, 2003) but also extending more recently to informational and interpersonal justice (Liao & Rupp, 2005; Rupp, Bashshur, & Liao, in press).

In our model, we specify both event-based and entity-based judgments as potential moderators of the monitoring-identity relationship. Research has

been largely silent with respect to whether event- or entity-based judgments predominate in contexts of ongoing interactions of the type found in organizations. Although both likely play a role, given that event judgments and entity judgments are inherently related (Cropanzano et al., 2001), we suspect that aggregate entity judgments will be a more powerful moderator of organizational monitoring effects.

We base this on several lines of research. First, organizational monitoring typically is embedded as part of a larger organizational control system (Lawler, 1976), and often is conceptualized as a feature of an organization's structure (Dewar, Whetten, & Boje, 1980). Thus, concerns about systemic justice may be expected to be particularly germane in organizational monitoring contexts.

Second, the self-regulation and maintenance of identity is a continuous, on-going process, not bound to any particular event. Indeed, because identity often is consistently relevant across situations (Ashford & Johnson, 2001; Elsbach, 2003), people will look to more consistent global indicators of identity. Employer–employee relationships are continuous and on-going. As members of their organization, employees will look at the long-term implications of monitoring on their identities.

Third, empirical data supports the important role of aggregate justice judgments. For example, Colquitt, Conlon, Wesson, Porter, and Ng's (2001) meta-analysis of justice effects found that aggregate, indirect measures of procedural justice (e.g., measures that assess specific procedural rules) are more predictive of organizational outcomes than direct measures (e.g., measures that directly assess "fairness"). Importantly, these effects were found *only* when combination indirect measures were used (i.e., items assessing voice, accuracy, ethicality, etc., were combined into an aggregate justice measure), as opposed to measures of specific event-based rule violations. One interpretation of these findings is that aggregate justice assessments are powerful in many situations (e.g., where ongoing interaction is anticipated), because they represent a system of justice rather than a specific rule violation at a particular point in time. Consequently, people's global perceptions of the entity responsible, should have stronger effects on moderating the monitoring-identity relationship than transient, event-driven justice judgments. In effect, entity justice perceptions therefore, represent people's confidence in their monitoring environment across repeated interactions, providing particularly certain or reliable judgments.

Fourth, the episodic nature of event-based judgments, places them at a lower level in the goal-action hierarchy – what Carver and Scheier (1998) refer to as *sequence level processing*. Although sequence-level processing

(i.e., events) can influence program-level processes (i.e., entity judgments), events generally are too far removed to have significant effects on principle-level goals (e.g., identity goals). Indeed, Cropanzano et al. (2001) argue that entity judgments mediate the relationship between events and employee attitudes and behaviors. We represent this in Fig. 1 by positioning event judgments as indirect moderators of the monitoring-identity relationship and entity judgments as direct moderators of the monitoring-identity relationship.

But what role do the different climate constructs play in understanding identity? The short answer is they both matter when embedded in situationally strong environments. Situational strength refers to the degree to which an environment's policies and procedures represent a coherent or consistent whole, because, for example, they are communicated widely, consistently, and clearly throughout the organization (Ostroff et al., 2003). When situations are strong, our model predicts that psychological justice climate will have a relatively stronger moderating effect (when compared to organizational justice climate) on the relationship between monitoring and personal identity (through personal information control). Moreover, organizational justice climate will have a relatively stronger effect on the monitoring-social identity relationship (compared to psychological justice climate). Aspects of people's personal identity are idiosyncratic, unique to each person and therefore, psychological climate will be the strongest climate predictor of these concerns. On the other hand, social identity concerns reflect a shared sense of belonging, and in a shared context, organizational justice climate will be the strongest predictor, but only in strong situations where such climates can emerge. There is an indirect path from organizational justice climate to psychological justice climate reflecting the joint effect of psychological and organizational justice climates when situational strength is high. The relative strengths of these moderating roles are reflected by the darkened arrows from psychological climate to the personal identity path and from organizational climate to the social identity path (see Fig. 1).

In situationally weak environments (where perceptions of climate are idiosyncratic across employees), only psychological climate matters and it will moderate both identity paths. Irregardless of whether one or both of these climate judgments are activated, the direction of their moderating effects will be similar, varying only in terms of the strength of moderation on the different identity evaluations (personal identity vs. social identity), predicted above. Therefore, with respect to the form of moderation, we predict that perceived fair climates will accentuate the positive aspects of monitoring richness on personal identity concerns (with a relatively stronger effect

attributable to individuals' psychological climate perceptions), and on social identity concerns (with a relatively stronger effect attributable to organizational justice climate when situational strength is high, and a relatively stronger effect attributable to psychological justice climate when situational strength is low). In addition, the activated climate judgments (those activated by situational strength) will mitigate the negative aspects of monitoring richness on those same identity concerns (see Table 2). Consequently, climates that are perceived to be fair will reduce perceived discrepancies between actual and ideal identities. When justice climates are perceived as fair, people will experience confidence in their abilities to achieve desired personal and social identities and this will lead to positive self-concepts. Unfair climates, on the other hand, will lead to larger perceived discrepancies between actual and ideal identities and a negative self-concept.

Support for fairness as an antecedent to identity evaluation comes from Tyler and Blader (2002), who found that fair procedures positively influence autonomous (i.e., intrinsic) status judgments. Self-esteem and self-worth underlie the identity processes of recognition (e.g., Tyler, 1999; Tyler & Smith, 1999) and appraisal self-respect (e.g., Aquino & Douglas, 2003; Dillon, 1995). Moreover, given that justice positively predicts esteem and well-being (e.g., Brockner et al., 2003; Sutton & Douglas, 2005; Tyler & Blader 2002; Wiesenfeld, Brockner, & Thibault, 2000), this research provides a firm basis for positioning entity justice judgments (e.g., psychological and organizational justice climate) as predictors of identity evaluation in the face of monitoring and the uncertainty surrounding it. In this regard, Aiello (1993) argues that if a monitoring climate is heavily control-oriented, it will likely lead targets of monitoring to react negatively – that is, to feel that they are not in control of the situation (Stanton & Barnes-Farrell, 1996). Fair climates, particularly psychological perceptions of fair climate, ought to lead to positive judgments of personal control, and create contexts in which people believe their identities can be achieved.

Indeed, in reviewing definitions of privacy (see Table 1), control of personal information is a critical determinant of whether or not privacy is achieved. Because personal information is unique to each person, we anticipate that the inability to control that information will affect personal identity evaluation. Ryan and Deci (2003) argue that identities “fulfill the need for autonomy, for they can provide a forum through which people develop and express personal interests, values, and capacities” (p. 254). Loss of control or autonomy reflects a breakdown in people's abilities to carve out desired distinctive selves. When revelation of personal information is not self-determined, the psychological boundary between self and others is

weakened, thereby threatening people's private selves or personal identities (Buss, 2001). According to our model (see Fig. 1), employees' perceptions of personal information control are influenced jointly by monitoring and psychological justice climate. Personal identities will be maintained for those who believe they retain control over their personal information. The positive effects of monitoring on information control and privacy (see richness effects in Table 2) will be accentuated when psychological justice climate is high; the negative effects of monitoring on privacy will be accentuated when psychological justice climate is low. Organizational justice climate may have a similar, albeit weaker, effect as well, but only when situational strength is high. A greater sense of control increases people's confidence that they can progress toward their ideal personal identities – that they can determine for themselves, unconstrained by extrinsic forces, their ideal personal self.

To this point, we have examined how monitoring turns one's focus inward on objective self-awareness. We also have argued that monitoring alone is unlikely to provide sufficient information upon which to evaluate one's identity. When self-aware, people are inclined to ask, "to what extent does the monitoring system inhibit my ability to maintain ideal personal and/or social identities?" Rarely are answers to such questions straightforward given that these identity goals are at an abstract, principle goal level. In such situations, people are likely to invoke the justice context (entity judgments of justice climates) to better understand how monitoring affects their identities. Coupled with knowledge of monitoring, people's positive perceptions of psychological justice climate will lead to more favorable personal identity evaluations, and positive organizational justice climates will lead to more favorable social identity evaluations (where positive identity refers to small perceived actual-ideal discrepancies; negative identity refers to large actual-ideal discrepancies).

Attitudinal Outcomes of Identity Discrepancies

Although self-awareness (as triggered by monitoring in our model) creates negative affect (Fejfar & Hoyle, 2000), identity discrepancies (differences in "how I am" vs. "how I wish to be") create additional negative affect and a drive to reduce such discrepancies. Large actual-ideal self-discrepancies equate to a failure to achieve a positive identity and create negative affect, including dejection and depression (Higgins, 1987). This is said to occur because ideal identity goals have a promotion focus, reflecting goals that

concern aspirations, advancement, and accomplishment, making a failure to meet such goals serious threats to one's identity. The identity literature provides considerable evidence that positive identity is associated with positive affect and that negative identity is associated with negative affect. For example, research has shown that exposure to identity-relevant cues such as neutrality, trustworthiness, and status recognition, promote favorable self-esteem (Tyler, Degoey, & Smith, 1996). When people experience pride and respect, critical cognitions related to social identity, they also report high feelings of personal and collective self-esteem (Tyler & Blader, 2002). At the same time, people experience negative affect (e.g., dejection) when their valued identities are threatened (Costarelli, 2005; Higgins, Shah, & Friedman, 1997).

Although large identity discrepancies are aversive, a critical question remains: Does the type of identity discrepancy matter? That is, will personal identity discrepancies produce similar or different reactions than social identity discrepancies? We believe the answer is "yes." Our conceptualization specifies that two proximal outcomes result from the self-evaluation process of comparing actual-ideal identities: (1) personal identity successes or failures will predict invasiveness attitudes, and (2) social identity successes and failures will predict unfairness attitudes.

Invasiveness Attitudes

We believe that actual-ideal personal identity discrepancies serve as the basis from which invasiveness attitudes develop. Stanton (2000) identified invasiveness as an attitude consisting of feelings of privacy violation, intrusiveness, and a judgmental evaluation of the appropriateness of monitoring actions. Invasions of privacy entail affective and cognitive components – that is, people must believe they were invaded or wronged before they feel anger and resentment as a result. We contend that the first, immediate response to a large personal identity discrepancy is a sense that one has been wronged – not wronged in the sense of failing to receive an economic reward or outcome, but rather, an estimation that the "inviolable personality" (Warren & Brandeis, 1890) has been penetrated; that the core, unique self has been breached or compromised (Westin, 1967). An invasion is a "spiritual wrong" (Bloustein, 1964) – an attack on one's unique identity – what James (1890) referred to as the "spiritual self" – and to which we refer as personal identity. Invasiveness, then, is a negative attitude toward an organization that results from a threat to one's personal identity. Small personal identity discrepancies represent regulatory success (i.e., satisfactory attainment of ideal identity goals), leading to relatively lower-(i.e., more

favorable) invasiveness attitudes. Large personal identity discrepancies (i.e., those in which actual identity falls well short of ideal identity) represent regulatory failure, increasing invasiveness attitudes.

The personal identity-invasiveness link has received some attention in information-gathering contexts. According to [Mael, Connerly, and Morath \(1996\)](#), “Experiences and events that are not part of the person’s public or social identity, and are not exhibited in public settings such as the workplace may be topics that one is less willing to divulge as part of a job application, and would thus tend to be rated as more invasive” (p. 617). The manifestation of large personal identity discrepancies then, is increased invasiveness attitudes. This is an intrapsychic evaluation affecting one’s appraisal self-respect and involving cognitive elements (I believe I was invaded), affective elements (this makes me depressed, angry, and uncomfortable), and behavioral elements (how do I change this state?). In sum, employees’ invasiveness attitudes serve as affective and cognitive indicators of the extent to which actual-ideal personal identity discrepancies exist.

Unfairness Attitudes

Actual-ideal social identity discrepancies predict unfairness attitudes (i.e., a negative attitude toward the organization resulting from a threat to one’s social identity). Sub-optimal social identities suggest that people lack membership in valued groups and standing within desired groups. Earlier, we argued that event and entity fairness judgments act as moderators of the monitoring-identity relationship. These judgments reflect what [Colquitt and Shaw \(2005\)](#) refer to as indirect measures of justice because they capture the context or characteristics of the social situation (e.g., my organization bases its decisions on inaccurate information). Unfairness as a cognitive and affective reaction to organizational treatment represents people’s direct assessments of how they feel about their organizational treatment (e.g., my organization is unfair). Because the organization is our point of focus (as being the source of monitoring and the entity to which justice attention is focused), it is reasonable to claim that unfairness attitudes may serve as direct measures of social identity threats.

Relational models of justice (for overviews, see [Colquitt et al., 2005](#)) make it clear that people value being members of groups. Moreover, they have a desire to enhance the status of their groups (i.e., pride) and their standing within those groups (i.e., recognition self-respect) ([Tyler & Smith, 1999](#)). However, a perceived threat to one’s social identity (a potential loss of recognition self-respect and pride), will lead to a weakening of a commitment to the salient identity group (i.e., the organization). In sum, employees’

unfairness attitudes serve as affective and cognitive indicators of the extent to which actual-ideal social identity discrepancies exist.

EFFECTORS FOR REGULATING THE SELF-CONCEPT

Our control theory framework is predicated on the assumption that individuals are aware of who they are in reality and who they want to be ideally, and that these actual-ideal discrepancies, through invasiveness and unfairness attitudes, motivate the need to make cognitive or behavioral adjustments to minimize discrepancies. That is, people can make cognitive adjustments simply by altering their ideal identity goals, by modifying their perceptions of their actual identities, or both. They also may choose to make behavioral adjustments. According to Carver (2004, p. 13), behavioral adjustments represent the “continual process of moving toward (and sometimes away from) goal representations” – such as the ideal self. Invasiveness and unfairness attitudes act as motivational drivers for behavioral regulation of the self-concept. Thus, in addition to being aware of their self-concepts, individuals are executive agents with the ability to control or regulate their self-concepts (Baumeister, 1999; Johnson, Selenta, & Lord (2006); Leary & Tangney, 2003).

We posit that the way people respond to discrepancies will depend on the source of the discrepancy (personal or social identity-based). Breakdowns in personal identity-maintenance correspond to increased invasiveness attitudes, and as predicted in Table 3, when attributed to the organization, they will lead to a strengthening of a commitment to the self and behaviors to preserve, protect or enhance the self (e.g., Wiesenfeld et al., 2000). In contrast, breakdowns in social identity-maintenance correspond to increased perceptions of unfairness, and as noted in Table 3, they will lead to a weakened commitment to the identity group responsible for the breakdown. Indeed, research on organizational identification draws heavily on social identity theory (e.g., Ashford & Mael, 1989). A meta-analysis by Riketta (2005) found a strong correlation ($r = 0.78$) between organizational identification and affective organizational commitment. When coupled with research linking fairness to organizational commitment (Colquitt et al., 2001), there is a strong theoretical and empirical basis for predicting a weakening of attachment and identification with the organization. It follows that personal identity concerns should predict

interpersonal (and we add, intrapersonal) outcomes and that social identity concerns should predict organizational outcomes (e.g., Hogg, 2003; Turner, 1982).

We now discuss in more detail the cognitive and behavioral ramifications of judgments of invasiveness and unfairness as the motivating attitudes for regulation (see the right side of Fig. 4 for a list of outcomes). In general, people want to avoid the aversive states caused by large identity discrepancies. As we noted, by altering behavior, people might be able to reduce actual-ideal identity discrepancies.

The Individual Self: Personal Identity Outcomes

The degree to which individuals can maintain their personal identities, hence, their privacy, will influence several key outcomes. In his seminal book, Westin (1967) identified four privacy functions: autonomy, emotional release, self-evaluation, and limited and protected communication.

Autonomy is defined as the capability to avoid being manipulated or dominated by others. According to Westin (1967), “the individual’s sense that it is he who decides when to ‘go public’ is a crucial aspect of his feeling of autonomy” (p. 34). Other theorists ascribe similar importance to autonomy as a function of privacy (Altman, 1975; Pedersen, 1997). It is widely accepted that autonomy is related to privacy (see Table 1).

Emotional release, having opportunities to express oneself without the critical evaluative eye of an audience, is an important component in Newell’s (1994) conceptualization of human system maintenance and well-being. The notions of cognitive relief (Newell, 1994), catharsis, and rejuvenation (Pedersen, 1997), similarly reflect Westin’s view of emotional release. Indeed, Goffman (1959) argues that people need periods of “off-stage” time where they can express themselves without fear of public scrutiny. These notions correspond to more recent research on the dysfunctional and highly stressful potential of high emotional labor (Grandey, 2003). Research on high-visibility customer service jobs (waiters/waitresses, flight attendants), emphasize the stressful nature of these jobs and the “show must go on” emotions that results from emotional labor (Grandey, Fisk, & Steiner, 2005). After all, such jobs offer little “off-stage” time to recoup. When privacy is protected, employees feel free to vent their frustrations (e.g., complaining to coworkers about their boss) without knowledge of certain others, such as bosses (recall the Deb Tice case, in which employees were fired for venting on public Web sites). Thus, the

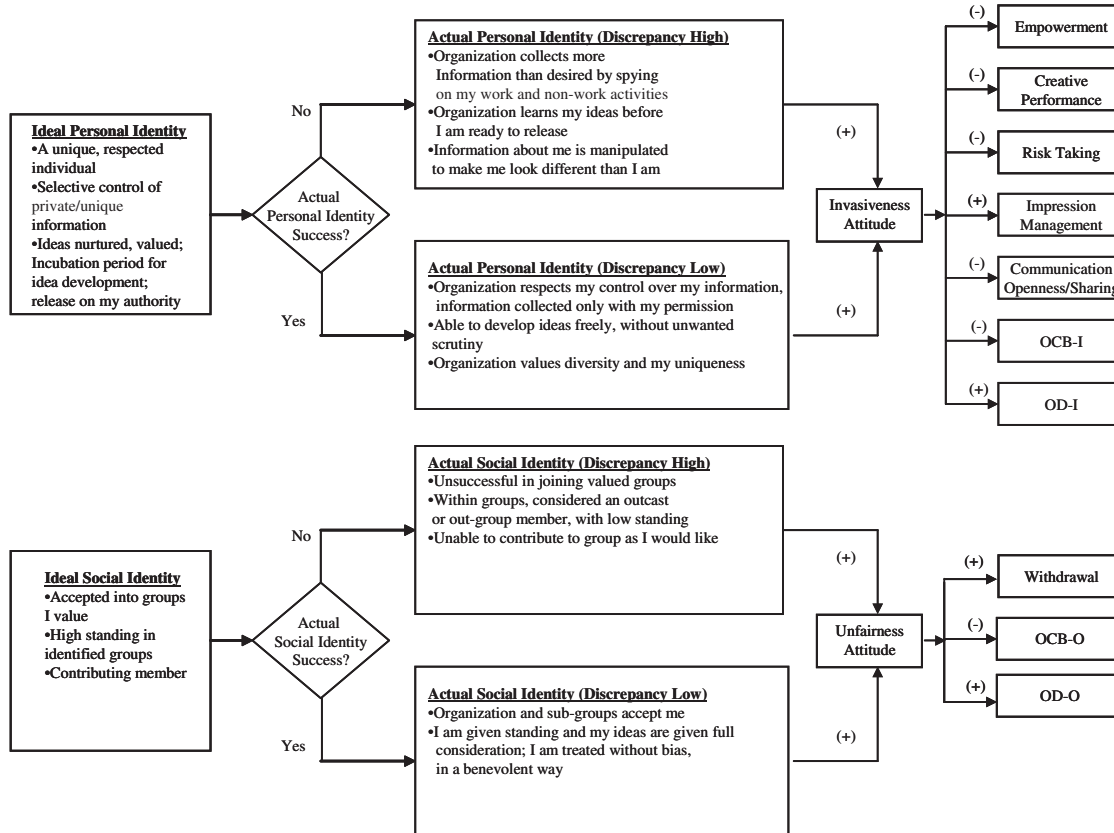


Fig. 4. Example of Comparator and Effector Process as a Function of Actual and Ideal Identity Discrepancies.

ability to release emotions freely, without repercussion serves a vital human function.

Self-evaluation refers to the opportunity for individuals to reflect and process information. Similar functions include contemplation and creativity (Pedersen, 1997), human system development (Newell, 1994), and self-observation (Altman, 1975). Privacy affords individuals an opportunity to think about problems, to assess information, to consider alternatives, and to be creative. For example, research on brainstorming has found collections of individuals working alone generated more creative ideas than the same number of people working together (Diehl & Strobe, 1987). Self-evaluation enables people opportunities to collect themselves, to gather their thoughts, and to self-communicate. Artists and writers, for example, often describe the need for “creative loneliness,” a period of self-evaluation, necessary to develop their work (Westin, 1967).

Finally, Westin’s (1967) function of *limited and protected communication* ensures opportunities to share information with trusted others, and establishes boundaries regarding what can be revealed to others. This function overlaps with Pedersen’s (1997) notions of confiding and concealment. This function suggests people seek a “safe zone” where they can reveal intimate knowledge or personal information, without fear of that information leaking. Drawing upon these dimensions, we have developed a set of outcomes that we believe best captures the types of regulatory cognitions and behaviors resulting from personal identity and privacy (see personal identity outcomes on right-hand side of Fig. 4). We elaborate below.

We propose that invasiveness will affect people’s senses of psychological *empowerment* in a negative fashion. Specifically, the loss of informational control and subsequent feelings of invasion will reduce autonomy and impact. Psychological empowerment is a multidimensional construct consisting of meaningfulness, competence (i.e., self-efficacy), self-determination, and impact associated with one’s work roles (Spreitzer, 1995, 1996; Thomas & Velthouse, 1990). As with privacy, control or autonomy is central to empowerment. Individuals must “see themselves as having freedom and discretion; they must feel personally connected to the organization, confident about their abilities, and capable of having an impact on the system in which they are embedded” (Quinn & Spreitzer, 1997, p. 41). Insofar as organizational monitoring regimes support personal information control, enabling people to maintain their personal identities, such practice may be understood also to enhance empowerment.

Creativity and risk taking. Psychological empowerment follows from theories of intrinsic motivation (e.g., Deci & Ryan, 1985; Hackman & Oldham,

1980) and is linked to several individual behaviors that are conducive to organizational effectiveness, including increased risk-taking, creativity, and innovation (e.g., Quinn & Spreitzer, 1997; Spreitzer, 1995). Thus, we expect that individuals who can achieve privacy will be inclined to take risks and to generate creative ideas – as often is found among empowered employees (Alge et al., 2006; Zhou, 1998). Large self-discrepancies that trigger invasiveness attitudes consume attentional resources that can constrict people's ranges of thought and reduce their creativity (Silvia & Phillips, 2004). Newell (1994) notes, "system development, including introspection, self-evaluation, analysis, decision making and creative thought of any kind ... involves the opportunity to develop freely, individually, and optimally, without coercion" (p. 66). Indeed, being "offstage" provides opportunities to develop ideas, before subjecting them to public scrutiny. Similarly, privacy affords the opportunity for self-evaluation whereby creative ideas can flourish (Westin, 1967). Organizational practices that minimize the degree of "offstage" time by intensifying monitoring are likely to inhibit creativity and risk-taking.

Individuals whose motivations to perform tasks primarily are intrinsic as opposed to being externally controlled demonstrate higher degrees of interest, excitement, and confidence, which in turn enhance creativity (Deci & Ryan, 1991; Sheldon, Ryan, Rawsthorne, & Ilardi, 1997). In this connection, Wiesenfeld et al. (2000) argue that self-threat "may make people unwilling to explore new ideas, hesitant to experiment with unfamiliar behaviors, and motivated to avoid risks" (p. 15; see also Staw, Sandelands, & Dutton, 1981). Additional research has demonstrated that evaluation expectations can impact creativity negatively. In two experiments, for example, Amabile, Goldfarb, and Brackfield (1990) found that when subjects believed they were being watched they received lower creativity ratings from judges on an artistic and verbal task. Monitoring also has been shown to have indirect effects on creativity. Notably, Zhou (2003) found that under conditions of close monitoring, the positive effects on creativity normally associated with working with a creative coworker diminished in magnitude.

Information management. Individuals will take steps to counteract the effects of privacy-invasive practices by engaging in information-based efforts to protect their privacy (Altman, 1975, 1977; Stone & Stone, 1990; Westin, 1967). These include impression management (e.g., Leary & Kowalski, 1990; Giacalone & Rosenfeld, 1989) and communication openness (e.g., Eddy, 1997).

Impression management is defined as the process by which people control the impressions others form of them (Leary & Kowalski, 1990). For

example, insofar as employees feel powerless to keep organizations from collecting personal information, they may choose to filter or skew the information they release, thereby manipulating the organization's impressions of them so as to re-establish personal control. This view is consistent with a psychological reactance interpretation of impression management – that is, an attempt to restore control or the appearance of control (Baer, Hinkle, Smith, & Fenton, 1980; Heilman & Toffler, 1976; Nail, Van Leeuwen, & Powell, 1996). Specifically, when management systems force individuals to disclose personal information beyond desired levels, those individuals will be motivated to restore control by influencing the amount and type of information their organizations are able obtain. For example, in an effort to restore information control, job applicants are likely to provide socially desirable (but unverifiable) answers to personality test items that they view as invasive (Dwight & Alliger, 1997).

Rosenfeld and Booth-Kewly (1996) argued that when requested information cannot be verified, individuals completing computerized questionnaires are likely to respond in socially desirable ways because of the increased salience of the “Big Brother Syndrome” – that is, the growing and pervasive fear that computers are monitoring and controlling people's lives. Individuals respond to systems that attempt to usurp control of their identities by engaging in self-identification, which Schlenker and Weigold (1989) define as “the process, means, or results of showing oneself to be a particular type of person, thereby specifying one's identity” (p. 23). They add that self-presentation is “accomplished privately, through contemplation of oneself, and publicly, through self-disclosure, self-presentation, and other activities that serve to construct one's identity for audiences” (p. 23). Thus, we propose that invasiveness is positively related to the amount and types of impression management in which one might engage.

Invasiveness is likely to lead people to withhold information (Derlega & Chaikin, 1977; Eddy, 1997) or to engage in other communication-limiting strategies (Burgoon et al., 1989). Stone et al. (1983), for example, found that individuals who believed they controlled their personal information were likely to participate in follow-up interviews – that is, they engaged willingly in information exchange. People are particularly likely to engage in information exchanges (i.e., feedback seeking) when the exchange for feedback is private in nature (i.e., when unwanted third parties are unaware of the feedback seeking) (Levy, Albright, Cawley, & Williams, 1995). Further, electronic monitoring of employee behavior has been found to lower privacy and to reduce communication (Botan, 1996). Privacy also provides the confidence or comfort to disclose information to others.

People who are attuned to private aspects of themselves are inclined to disclose intimate self-knowledge to others (Davis & Franzoi, 1987). We propose that invasiveness, therefore, will be associated with less communication openness and information sharing. Following Westin (1967), people will seek to restore a critical function of privacy – that is, limited and protected communication.

Prosocial/antisocial behavior. Prosocial and antisocial behaviors can be distinguished in terms of their beneficiary or target (Bennett & Robinson, 2000; Lee & Allen, 2002; McNeely & Meglino, 1994). We anticipate that invasiveness will predict organizational citizenship directed at individuals (versus organizations), called OCB-I (e.g., Lee & Allen, 2002) and interpersonal forms of organizational deviance, called OD-I (e.g., Bennett & Robinson, 2000). Altruism and courtesy are examples of OCB-I (e.g., answering the phone for a coworker); harassing a coworker is an example of OD-I.

For the precise nature of the relationship with prosocial behaviors, there are conflicting theoretical perspectives. According to Westin (1967), positive personal identities (low invasiveness) leads to greater intimacy, trust, and relational development among colleagues. This, in turn, leads to greater helping, and sharing of information with those with whom one has close relationships (Konovsky & Pugh, 1994; Pedersen, 1997). On the other hand, enhanced privacy enables people to assert their distinctiveness, or to at least control their personal identities (Robison, 1997). Taken to the extreme, then, privacy affords the possibility of behaving anonymously, completely undetected by others. In keeping with this, research on prosocial behavior, for example, has shown that the less identifiable or more deindividuated people are, the less accountable they feel to help, resulting in lower amounts of helping behavior (Garcia, Weaver, Moskowitz, & Darley, 2002), despite lower invasiveness.

It is unlikely, however, that complete anonymity can be achieved in organizational contexts. Consequently, we expect low degrees of invasiveness to increase OCB-I. However, consistent with research linking self-worth to interpersonal deviance (Aquino & Douglas, 2003), when invasiveness is high we expect lower degrees of OCB-I and higher degrees of OD-I. Both of these responses are rooted in the notion of psychological reactance (Brehm, 1966). Defying authority, not reciprocating aid from others, and failing to do a favor when asked may reflect attempts to assert one's freedom to act as desired. According to Heilman and Toffler (1976), "This interpretation suggests that the individual does not so much want to engage in these resistant behaviors as to demonstrate the right to do so. Thus, resistance

becomes the mechanism for freedom-affirmation” (p. 519). In the context of privacy, loss of information control leading to invasiveness ought to make salient issues of freedom and a need to reassert that freedom (see also Bennett, 1998).

In sum, when personal identity is maintained, empowerment is enhanced and individuals are intrinsically motivated. Consequently, they are likely to be creative, to take risks, to engage in only limited impression management efforts, to share information, to help other individuals and to show respect for them. By contrast, when control is threatened, individuals will feel less empowered, leading them to behave in the opposite manner.

The Social Self: Social Identity Outcomes

When people identify strongly with a group, they wish to develop identities that are positive so as to distinguish their in-groups (i.e., colleagues in their own organization) from out-groups (i.e., others who are not associated with that group) in favorable terms (Brewer, 1991; Turner & Onorato, 1999). Thus, people who believe they are valued by desired groups, identify strongly with those groups. They report feeling fairly treated by those groups, leading them to engage in behaviors that strengthen their association with it (e.g., by agreeing to remain despite hard times) – thereby reinforcing their positive social identities (Tajfel & Turner, 1979; Haslam, Eggers, & Reynolds, 2003). Justice attributed to the organization (entity judgments of psychological and organizational justice climate) strengthens people’s person–organization exchange relationships (their social identities) leading to favorable outcomes directed at the organization (Liao & Rupp, 2005). Two classes of social identity outcomes are predicted: (1) withdrawal from or attachment to the organization, and (2) prosocial behavior or antisocial behavior directed at the organization.

Withdrawal/attachment. Individuals with strong identifications to their organizations will feel attached and committed to their organizations, making them less likely to withdraw from it (Mitchell & Lee, 2001). Withdrawal can take behavioral forms (e.g., high absenteeism and turnover, reduced effort), or psychological forms (e.g., “checking out,” such as by not being engaged at meetings). Strong social identities create bonds with those organizations to which people identify. Not surprisingly, research has found that strong social identities are associated with reduced turnover intentions (Olkkonen & Lipponen, in press). Similarly, individuals exhibit stronger attachments to organizations to which they feel valued

than to those they believe fail to recognize them (e.g., O'Reilly & Chatman, 1986).

Prosocial/antisocial behavior. Whereas invasiveness attitudes are linked to prosocial and antisocial behavior directed at individuals, we expect unfairness attitudes to be associated with low levels of OCB-O (e.g., demonstrating low degrees of conscientiousness, civic virtue, and sportsmanship) and high levels of OD-O (e.g., sabotaging organizational processes). By contrast, individuals who identify highly with their organizations are motivated to enhance the status of these organizations in the eyes of others by helping to promote it by engaging in high levels of OCB-O (e.g., by attending organizationally sponsored charity events) and low levels of OD-O (e.g., not stealing from the company). Wiesenfeld et al. (2000), for example, found that managers who feel good about their organizations were more proactive in organizational change efforts than those who failed to identify as strongly with their organizations. Importantly, however, people whose organizational identifications are threatened are unlikely to help their organizations – and even may engage in proactive efforts to diminish it. For example, people whose identities are threatened by their organizations are inclined to sabotage its equipment or to release valuable trade secrets to competitors (Ambrose, Seabright, & Schminke, 2002).

Cognitive Reframing

The self-regulatory outcomes to which we have alluded thus far involve behavioral responses to identity discrepancies. It is important to note, however, that in lieu of regulating behavior to address personal and social identity discrepancies, people also can engage in cognitive reframing. In keeping with the cognitive consistency tradition (Festinger, 1957; Heider, 1958), people can alter their ideal identity standards (relax standards to be closer to perceived levels), or convince themselves that their perceived actual identities are closer to standards than they previously thought (Duval & Lalwani, 1999).

For example, as organizations monitor employees' e-mail, those employees' personal identities may be threatened (e.g., an inability to maintain distinctiveness or to behave autonomously at a desired level). Rather than changing their behavior (e.g., by controlling more carefully the information they release via e-mail), they may choose to alter their perceptions of the situations they are in (e.g., convincing themselves that organizations have a right to examine e-mail), or they may modify their identity

standards (e.g., “I have no expectation for privacy when communicating using work e-mail”). People will seek to affirm or create positive identities and will try to change parameters such that a “subjectively more meaningful and self-favoring identity becomes salient” (Hogg & Terry, 2000, p. 125). Therefore, by reducing perceived-real discrepancies, cognitive reframing can have the same immediate psychological results as regulating behavior.

FEEDBACK LOOP

The feedback loop is a mechanism through which employees monitor the degree to which their regulatory activities were effective in reducing discrepancies and in creating favorable self-concepts. Additionally, managers can use behavioral feedback from employees to legitimize or invalidate a monitoring system and to determine if and how such systems will be enacted.

Employees use feedback loops to re-examine their self-discrepancies in light of their new behaviors. That is, identity behaviors are regulatory strategies employed to reduce actual-ideal discrepancies. Of course, employees can utilize the feedback loop to engage in cognitive reframing as well. Feedback loops provide information through which employees are able to assess the effectiveness of their efforts to minimize self-discrepancies. When employees determine that a particular behavioral strategy was effective (e.g., withholding relevant information), they are likely to experience a reduction in their actual-ideal discrepancies. Evidence of the continued existence of large discrepancies is likely to lead individuals to devote more effort to their behavioral strategies, or to consider alternative strategies.

There also are indirect effects of behavioral regulation. That is, employees may affect changes in organizational monitoring systems either consciously or subconsciously and these may be either favorable or unfavorable to the employers. For example, employees may engage in impression management tactics to promote impressions that they are reliable. In response, organizations may relax the intensity of their monitoring efforts (or eliminate them altogether), thereby promoting positive personal identity evaluations. If company officials view employees as trustworthy, they may believe that reduced monitoring and control is justified (Alge et al., 2004). Conversely, employees who respond to identity threats by increasing deviance may find their organizations using this behavioral feedback as the basis for engaging in more intensive levels of monitoring.

Curiously, and unfortunately for the organization, it may have been the monitoring that motivated deviance in the first place. This suggests that monitoring systems may be self-fulfilling prophecies (Eden, 2003), thereby exacerbating, rather than reducing unwanted behaviors. A spiral of escalation may result similar to other spiral effect phenomena, such as Treviño and Nelson's (2003) spiral of unethical behavior, Lindsley, Brass, and Thomas' (1995) efficacy performance spiral, and Pearson's (in press) spiral of deviant behavior. Monitoring may lead to deviance, which when processed by the organization, affirms the need to monitor, and in fact, may increase monitoring. Employees then may respond by increasing deviance or other unwanted behaviors. Of course, these unintended outcomes may be controlled to the extent that monitoring is embedded within a climate that is perceived to be fair.

GENERAL DISCUSSION

We have presented a model of organizational monitoring in which we integrate, via the self-concept, two important but distinct (previously, at least) areas of research, information privacy, and organizational justice. We believe this represents the literature's initial attempt to articulate how privacy and justice processes are conceptually related within the context of a growing and increasingly complex literature on performance monitoring. In so doing, our approach extends theories of monitoring that have focused more narrowly on task performance (Komaki, 1986) and on fairness (Alder & Ambrose, 2005; Ambrose & Alder, 2000).

Theoretical Implications

The merit of our conceptualization is reflected, we believe, in its theoretical implications. Overall, our central thesis is that monitoring triggers awareness of the self and an evaluation of identity, which forms the basis for understanding the psychology of justice and privacy. Given that notions of identity and the self-concept are gaining momentum as foundations for conceptualizing justice and privacy (Alge, 2001; Clayton & Opatow, 2003; Johnson et al. (in press); Robison, 1997; Skitka, 2003; Tyler & Blader, 2003; Tyler & Smith, 1999), it is reasonable to draw upon this work as the basis for integrating privacy and justice. Our model allows this to be accomplished in several ways, which we now describe.

Implications for Integrating Justice and Privacy

Our model recognizes the important role that privacy judgments play when collecting personal information. Although several studies have incorporated justice and privacy to examine effects in information-gathering contexts (e.g., Alge, 2001; Eddy, Stone, & Stone-Romero, 1999), a conceptualization that situates justice and privacy constructs within a shared nomological network, has not been advanced until now. Scholars have argued for a theoretical link between procedural justice and information privacy (Alge, 2001; Bies, 1993). However, such efforts have not delved sufficiently deeply into the core psychological mechanisms that form the basis for integration. The self-concept, we believe, serves this purpose, linking invasiveness attitudes and unfairness attitudes. That is, there is a reciprocal relationship built into the self-concept such that people's personal identities are shaped, in part, by their social identities, and their social identities are shaped, in part, by people's personal identities. The self-regulatory framework we proposed enables people to balance their needs for distinctiveness (personal identity) and their needs for belonging (social identity). In keeping with this, Altman's (1975) ideas about privacy as a boundary-regulation process are germane to understanding the linkage between privacy and justice – specifically, we propose, through identity.

Consistent with discrepancy-reduction theories of the self (e.g., Duval & Wicklund, 1972; Higgins, 1987), we assert that the concepts of privacy and fairness are tied to an identity-discrepancy-reduction process. Admittedly, we are not the first to employ discrepancy-reduction as the basis for understanding justice responses. Indeed, this notion is the basis of several of the earliest conceptualizations of distributive justice (for reviews, see Cohen & Greenberg, 1982). More recently, fairness theory also addresses discrepancies, but does so using the notion of counterfactual thinking (Folger & Cropanzano, 2001). Fairness theory, however, focuses on treatment by others and hypothetical alternative treatments (e.g., how should I have been treated). By contrast, our approach focuses on self-regulation and identity goals (e.g., ideally, how I would like things to be). Moreover, fairness theory does not distinguish between personal identity and social identity, which as noted previously, is critical to explaining interpersonal and intrapersonal behaviors and multifoci effects. To the extent that ideal identity goals inform or influence counterfactual thinking, then there may be opportunities to merge these two conceptualizations in some ways.

The notion that people have ideal identity goals that guide self-evaluation is important because it squarely positions justice and privacy processes

as intrinsic, self-regulatory, and goal driven. If we consider identity goals as what Carver and Scheier (1998) refer to as being at the higher order, “principle” level, then we can link control theory with uncertainty management theory (Lind & Van den Bos, 2002) by arguing that to evaluate abstract identity goals, one must shift to the program level (where information on justice climate is available to inform higher-order identity goals). By focusing on goals and control theory (e.g., Carver & Scheier, 1998), we build upon Gillespie and Greenberg’s (2005) hierarchical, goal-based model of justice by proposing that identity plays a central role in higher-order goal setting. This emerging approach provides a flexible mechanism for integrating justice and privacy.

Implications for the Group Engagement Model of Organizational Justice

Our analysis extends relational-based models of justice (e.g., Lind & Tyler, 1988; Tyler et al., 1996), including the most recent incarnation, the group engagement model (Tyler & Blader, 2003). The group engagement model positions social identity and related identification cognitions (e.g., pride, recognition self-respect) as mechanisms mediating the link between procedural justice attitudes and cooperative behaviors in groups. Like the group engagement model, our conceptualization also posits a central role for social identity but we take it a step further.

Specifically, our identity-based model elevates the importance of personal identification and related cognitions (e.g., appraisal self-respect). This is particularly important because although social identity concerns are useful for explaining outcomes directed toward the group to which one identifies (as predicted by the group engagement model), these concerns predict neither intrapersonal behavior (e.g., empowerment, risk taking, creativity) nor interpersonal behaviors (e.g., withholding information). We address this gap by positing that in addition to social identification, personal identification is critical to developing and maintaining positive self-concepts, and that within the realm of information-gathering initiatives in particular, such intimate personal identity concerns are likely to be triggered. Thus, we extend identity-based models of justice by articulating the role of personal identity. As a result, scholars now have a new set of important outcomes that they can examine within a justice-identity framework (see personal identity outcomes in Fig. 4).

One interesting implication of this expanded identity conceptualization is the suggestion that personal identity effects are triggered by organizational actions, such as those that involve efforts to control employees through the collection of personal, often sensitive, information. Organizational

monitoring is a powerful organization-sourced activity that triggers identity concerns. Indeed, we suggest that the act of merely “shining light” on employees by organizations is sufficient to trigger objective self-awareness and a concern for identity – that is, people will begin to think about and evaluate their identities.

Implications for the Multifoci Approach to Organizational Justice

Our model suggests some interesting ways in which the multifoci organizational justice framework of Cropanzano et al. (2001) may be extended. The multifoci view distinguishes between supervisor-sourced justice treatment (i.e., justice perceptions stemming from the behavior of individual supervisors) and organization-sourced justice treatment (i.e., justice perceptions stemming from the behavior of organizations as entities), and has its roots in social exchange-based models of organizational justice (e.g., Masterson, Lewis, Goldman, & Taylor, 2000). This perspective predicts that organization-sourced justice will predict organization-directed outcomes (e.g., organizational commitment, OCB directed at the organization) and that supervisory-sourced justice will predict supervisor-directed outcomes (e.g., satisfaction with supervisor, OCB directed at supervisor). Using procedural justice as a proxy for organization-sourced justice and interactional justice as a proxy for supervisor-sourced justice, research largely has supported this pattern of within-foci (source) effects (Cropanzano, Prehar, & Chen, 2002). For example, Masterson et al. (2000) found that interactional justice predicted supervisor-directed citizenship behavior, supervisor satisfaction and performance (mediated by leader-member exchange), and that procedural justice predicted organizational citizenship and turnover intentions (mediated by perceived organizational support).

This research is limited by the fact that the type of justice is assumed to have one and only one source and that attributions toward sources often go unmeasured (e.g., procedural justice is assumed to be sourced at the organization and interactional justice is assumed to be sourced at the supervisor). To address this limitation, Liao and Rupp (2005) examined both individual and group (i.e., climate) levels of justice. They proposed and found support for a multifoci model that incorporates three types of justice (procedural, informational, and interactional) and two different foci (supervisor and organization) to create six unique combinations of justice type and justice source (see also Rupp & Cropanzano, 2002). In so doing, they provide the flexibility for informational or interpersonal justice to be attributed to the organization, and for procedural justice to be

attributed to the supervisor. Regardless of the type of justice, Liao and Rupp (2005) also found support for source effects consistent with earlier social exchange perspectives. In post-hoc tests, however, they also found some cross-foci effects – that is, evidence of organization-sourced justice (at the group level) predicting supervisor-directed outcomes (also at the group level).

Theoretical explanations for such cross-foci effects are lacking, as evident by the absence of a priori cross-foci hypotheses in prior research. In fact, we are aware of only one study that explicitly predicted cross-foci effects; Rupp and Cropanzano (2002) predicted and found support for supervisor-sourced justice (both procedural and interactional) predicting both supervisor- and organization-based outcomes. Our model provides a framework for understanding a specific form of cross-foci effect. Specifically, we predict that organization-sourced injustice will affect both personal identity and social identity, and that through personal identity, it ultimately will affect intra-personal (i.e., self) outcomes and interpersonal behavioral outcomes. Specifically, our model accounts for situations in which organization-sourced injustices affect outcomes not necessarily directed to the original source of injustice (e.g., when the target could be the self or another coworker). Thus, whereas social exchange approaches are well-suited to predicting within foci-effects, their ability to predict or explain cross-foci effects is limited. However, our identity-based model appears to be better suited to this challenge.

Implications for Monitoring Research and Theory

Because identity goals are intrinsic in nature, our model addresses how extrinsic managerial initiatives, such as monitoring, affect intrinsic motivation – a position that reconciles recent studies treating extrinsic (“command and control”) and intrinsic (self-regulatory) initiatives as independent (e.g., Tyler & Blader, 2005). Indeed, in most organizational settings, however, both organization-initiated actions and self-regulatory-initiated actions constantly are affecting and being affected by one another. Recall, for example, in discussing the feedback loop that people’s behavioral responses to self-discrepancies (e.g., withholding information, engaging in deviance) can influence the nature of extrinsic organizational actions such as monitoring, to which organizations may respond by increasing monitoring, leading to additional self-evaluation, and potentially more deviance or withholding behavior.

Importantly, our conceptualization extends prior theoretical work on employee monitoring (Ambrose & Alder, 2000; Kidwell & Bennett, 1994;

Stanton, 2000). First, expanding upon monitoring research that has identified various characteristics of monitoring (Aiello, 1993; Stanton, 2000), we develop the monitoring richness concept as a useful mechanism for more fully understanding monitoring effects on identity evaluation. In particular, we identify four dimensions of monitoring richness (transparency, intensity/pervasiveness, target individuation, and permanence). Although these dimensions are value-neutral and independent of monitoring event fairness (where specific justice rules are applied to monitoring), each carries important implications for privacy and fairness that can be favorable or unfavorable (see Table 2).

Monitoring theory and research has focused predominantly on two areas: computerized performance monitoring (e.g., Ambrose & Alder, 2000) and traditional performance monitoring of in-role, on-the-job behavior (e.g., Komaki, 1986). Our framework takes into account an array of monitoring possibilities and outcomes that is broader in scope than these earlier efforts. At the same time, it is also sufficiently flexible to account for traditional forms of monitoring and supervision (e.g., Komaki, 1986) as well as other forms of monitoring, ranging from technologically sophisticated electronic surveillance (e.g., Zweig & Webster, 2002), to off-work types of monitoring (such as was the case with Deb Tice).

Methodological Implications

Methodologically, our proposed model raises questions as to how best to measure identification processes. In the justice literature, for example, identification typically is measured using status or pride judgments or more general measures of identification (e.g., Tyler et al., 1996). However, when identification is positioned within a self-regulatory, discrepancy framework, alternative methods for measuring identity are likely to emerge. That is, identity maintenance entails both ideal and actual identity standards, and the resulting discrepancies between them. Change or discrepancy models such as ours should incorporate measures of both perceived-actual discrepancies and perceived-ideal discrepancies. Rather than compute difference scores, which are wrought with methodological problems, both components of a discrepancy measure should be included and analyzed using polynomial techniques (e.g., Edwards, 1994). Such an approach may reveal greater insight into understanding the psychology of identification, detecting effects that otherwise might have gone unnoticed and perhaps providing greater predictive precision.

Practical Implications

From an applied perspective, our model has implications for managers generally, and HR managers in particular. Typically, HR persons are responsible for documenting performance and for ensuring the well-being of employees. Monitoring entails information-gathering, but it also is intended to ensure that employees behave in accordance with organizational goals. Our model suggests that organizational monitoring efforts run the risk of damaging their employees' self-concepts. This is problematic because it can lead to employee behaviors that undermine organizational goals, thereby having the opposite effect of making organizations less secure. And, should monitoring be embedded within an unjust climate, it can have particularly dire consequences, such as increasing deviance, potentially undermining the very safety and security the monitoring system is designed to ensure in the first place.

In addition, monitoring can undermine competitiveness and threaten organizational survival. Security breaches are costly to organizations (Dhillon & Moores, 2001; Power, 2002). At the same time, however, efforts to increase security through monitoring may lead to less creativity, risk taking, and information sharing. In competitive industries, where knowledge and social capital are considered critical sources of sustainable competitive advantage (e.g., Hatch & Dyer, 2004), actions that may compromise those resources or that motivate stakeholders to act in ways that could impede organizational progress (e.g., taking fewer risks, sharing less information with colleagues) are detrimental to an organization's long-term viability. Fortunately, our model suggests several steps that organizations can take to prepare managers and employees to deal with the risks associated with monitoring.

First, managers should develop what we call, *monitoring competencies* – that is, the necessary knowledge, skills, and abilities to understand monitoring capabilities, its potential to affect employees favorably or unfavorably, and the ability to balance their needs to gather information against their employees' needs for dignity, respect, and positive self-concepts. At minimum, this entails detailed training programs that educate managers on the various monitoring technologies and types of monitoring richness available to them.

Importantly, because these richness dimensions are value-neutral, managers need to understand that any of the richness dimensions can be judged favorably or unfavorably. It would be a mistake, for example, to suggest that all monitoring systems should be totally transparent. Indeed, there are

specific forms of information-gathering in which less transparency may lead to better decisions for organizations. For example, keeping interpretations of personality test items from applicants or employees taking such tests promotes unbiased responding (e.g., Rees & Metcalf, 2003). With respect to electronic surveillance, it might be tempting to not inform employees at all. However, evidence suggests that such strategies often backfire (e.g., Hovorka-Mead et al., 2002). Most would agree, however, that providing employees with advance notice as to when, what, and how they will be monitored is ethically appropriate insofar as it demonstrates a level of respect for employees.

Second, in addition to developing a thorough knowledge of different monitoring systems and their capabilities, managers need to understand the vital functions that privacy and fairness serve. To the extent that managers understand these implications, they can make better choices with respect to how to design monitoring systems that protect their organizations, while at the same time, providing employees with reasonable opportunities to exercise autonomy. One way to accomplish this is through sensitivity training exercises designed to expose managers to the harm that follows from threatened identities (e.g., Aquino & Douglas, 2003). Some managers may have little concern about employees' feelings about monitoring. However, as our model shows, violations of privacy and fairness have direct implications for the security and competitiveness of organizations. Managers, for example, need to be aware that as they increase the intensity and pervasiveness of monitoring, target particular individuals, and retain personal information indefinitely in electronic databases, concerns mount over personal information control, personal identity, and invasiveness. Striking an appropriate balance is important. Receiving input from employees, not only promotes monitoring fairness (e.g., Ambrose & Alder, 2000), but provides managers with information on precisely where that balance point may be located.

Third, to gain insight into employees' concerns, we recommend that organizations conduct monitoring readiness assessments in which employees are surveyed with respect to their monitoring richness preferences, the importance of identity goals, and perceptions of the fairness of the climate within which monitoring is to be embedded. Justice climate is especially critical to effective monitoring implementation. Managers who do not understand their employees' climate perceptions are unlikely to understand the damage that poorly thought-out monitoring systems can inflict.

Such damage can be avoided, however, insofar as organizations that engage in monitoring take steps to ensure that the climate within which

monitoring is occurring is perceived to be fair. Our model implies that, absent a strong organizational justice climate, it will be unlikely to encounter consistent levels of desirable employee behavior across an organization. This is because psychological justice climate is idiosyncratic, and may vary considerably across monitored employees (Ostroff et al., 2003). To build a fair climate, managers must build a system of justice that pervades the organization – what climate researchers refer to as system-based strength – facilitated by strong socialization and training programs (Ostroff et al., 2003; Rupp, Bashshur, & Liao, in press). This helps build a “strong situation” necessary for climate emergence. Following the basic tenets of procedural justice (Folger & Greenberg, 1985; Lind & Tyler, 1988), this can be promoted by communicating decisions and policies consistently and clearly throughout one’s organization.

Fourth, HR managers would be wise to attempt to understand the types of identity goals that are important to their employees. For example, managers could be proactive by including self-concept goal assessments and feedback into the performance appraisal processes to gain better insight into employees’ self-concepts. For example, a set of survey items could tap employees’ identity concerns, including feelings of appraisal self-respect (“I respect myself”) and recognition self-respect (“I am respected by others), and their senses that they are able to achieve their self-concept goals (e.g., “My organization enables me to achieve my need to belong” or “... need for individuality”). Recently, research suggests that employees have certain identity orientations (Flynn, 2005), which managers can use to ascertain precisely where employees might resist monitoring. Moreover, HR specialists can initiate surveys and focus groups that tap into employees’ privacy expectations, identity orientations, and perceived norms of fair treatment, and this information can serve as valuable input into the design of monitoring systems. Ironically, collecting such personnel information to better understand employee self-evaluations itself may trigger the identity concerns articulated in our model. One potential way around this dilemma is to query this type of information anonymously or in exit interviews.

Limitations and Needed Research

Several limitations of our conceptualization and opportunities for future research are noteworthy. First, although our model focuses on the formation and maintenance of the self-concept in response to information-gathering

attempts, it does not address situations in which organizations use information they already have. Thus, the matter of how organizations use the information they collect, although important, is separate. Although information use surely will influence judgments of privacy and fairness, our model does not consider the nature of these effects. Put differently, ours is a model of monitoring, not control. A much broader model of control would incorporate how organizations use information to control others, possibly through the allocation of rewards and punishments. In such a model, we envision distributive justice playing a key role, although this particular form of justice did not figure prominently in our more limited conceptualization.

It also is important to note that self-regulation is a continuous process carried out over time. However, our model does not take into account how repeated attempts to establish or regulate people's identities will affect them. Will they become frustrated and give up? Will they persist through repeated regulatory failures? And, are there individual differences in these responses? Future research is needed to examine the dynamic nature of such identity-maintenance processes.

We believe that research on different types of self-esteem may provide a more precise picture of the role of the self-concept than that upon which we have relied. Specifically, we must recognize that self-esteem can be thought of in global terms – how one feels about oneself in general, across all situations. Because this type of self-esteem is so central to the core self, we suggest that it might explain personal identity maintenance outcomes above and beyond invasiveness. Another type of self-esteem refers to how people feel about their organizations (e.g., [Pierce, Gardner, Cummings, & Dunham, 1989](#)). Such organization-based self-esteem may be sensitive to discrepancies surrounding social identification with the organization. Whether these two types of esteem should be considered as rough proxies for our two types of identity or as outcomes of identity is subject to debate. Yet, these other types of self-esteem clearly hold promise for understanding the different behavioral outcomes postulated here.

Despite these limitations, we believe that our conceptualization will prove to be a useful adjunct to the literatures on privacy and organizational justice. Indeed, we believe that each of these literatures stand to be informed by the other and that the self-concept is a useful tool for bridging them. Of course, the true merit of our analyses is to be determined by the follow-up work we inspire. Indeed, we sincerely hope that we have sparked such efforts.

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LAYOFFS IN LARGE U.S. FIRMS FROM THE PERSPECTIVE OF SENIOR MANAGERS

Kevin F. Hallock

ABSTRACT

This paper uses data on over 4,600 layoff announcements in the U.S., covering each firm that ever existed in the Fortune 500 between 1970 and 2000, along with 40 interviews of senior managers in 2001 and 2002 to describe layoffs in large U.S. firms over this period. In order to motivate further work in the area, I investigate six main issues related to layoffs: timing of layoffs, reasons for layoffs, the actual execution of layoffs, international workers, labor unions, and the types of workers by occupation and compensation categories. The paper draws on literature from many fields to help further understand these issues.

INTRODUCTION

This paper uses data on more than 4,600 job loss announcements over the past 30 years, along with detailed information from 40 interviews with senior managers in U.S. firms that have faced layoffs to provide a description of when and why firms let workers go. There is a great deal of interest in the business press lately over the growing number of firms announcing

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layoffs. Although we know a great deal about what happens to workers in the wake of layoffs¹ very little is known about what happens to firms before, during, and after these layoffs. A great deal is known about job loss more generally, however. From an economic point of view, Farber (2003) carefully documents changes in the incidence and consequences of job loss from the early 1980s through 2001. Kammeyer-Mueller, Liao, and Arvey (2001) carefully organize the literature on downsizing from a “stakeholder” perspective by drawing on research from a variety of fields related to human resources management. They discuss “organizational actions” (such as reduction strategies, logistics, and goals), discuss stakeholders related to job loss (including employees, applicants for jobs, the community, and stockholders), reactions by these stakeholders (including job performance, attitudes, health, depression, and stock price changes), and finish by discussing organizational outcomes.

My paper is intended to be a useful step in a wider plan to study job loss and *firm* outcomes. Along the way, I will address some of the ideas in the work by Kammeyer-Mueller et al. (2001) and by others. In related work, my coauthors and I have collected a great deal of data regarding layoffs in large U.S. firms over the past 30 years and have begun to understand some of what happens to firms around the time of layoffs (Hallock, 1998; Farber & Hallock, 2003; Billger & Hallock, 2005).

However, the methods used in these studies are limited and some questions cannot be answered by only using these kinds of standard archival data. In addition to using more conventional data, I use information from a set of 40 interviews I conducted with senior managers in U.S. firms from October 2001 through October 2002. Combining these two sources of data, this paper aims to provide a description of layoffs in large U.S. firms over the past 30 years, with one goal being motivating further work in the area.

While the “interview” method used for part of this paper is common in many areas of human resource management, it is not common among labor economists today. It was common among economists several generations ago (e.g. Lester, 1948). Several recent examples have shown that such interviews can shed important light onto labor market questions that more conventional theory (by today’s view) and empirical work cannot address.² Bewley (1999) is one recent example. He was interested in why wages are “rigid” and thought that the best way to find out would be to ask people who had considerable institutional knowledge by using free-form interviews. Blinder, Canetti, Lebow, and Rudd (1998) asked managers about price stickiness but used a much different method than Bewley. Blinder and his colleagues used structured interviews completed by a set of Princeton

graduate students. In still another example, Freeman and Rogers (1999) began with focus groups and developed a formal survey to help determine “What Workers Want”.

This paper aims to specifically answer a set of simple questions about what happens around the time of layoff announcements in large U.S. firms. Clearly, this is a subset of the issues covered by Kammeyer-Mueller et al. (2001) plus a set of new ones. The major focus here, however, is on my unique data and on the effects of job loss on firms. One of the issues is time. Do firms manipulate the timing of announcements of job loss (and other financial news)? Are there incentives to make announcements of layoffs during certain days of the week or certain weeks during the year? I will provide survey evidence and evidence from the archival data on each of these questions. Many authors have used stated “reasons” for layoffs (or other events) culled from the newspaper. I, therefore, ask how believable these data are and then document the wide (and changing) variety of reasons for layoffs in large U.S. firms. Next, the paper is concerned with the actual execution of the layoffs and considers various methods and issues such as security, survivors, etc. The following sections outline complications regarding international workers and labor unions. I then consider the types of workers let go. There has been increasing discussion that the distribution of the kinds of workers let go (e.g. white-collar versus blue-collar) has changed over the past few decades. This section sheds some light on this issue. The final section concludes and offers some suggestions for future research, including how these issues may vary by industry.

BACKGROUND LITERATURE AND LEGISLATION

This section briefly describes some background literature on layoffs. The first part is focused on the relationship between job loss announcements and firm outcomes, such as CEO compensation and long-term stock performance. This section also provides some background on the Worker Adjustment Retraining Notification (WARN) Act.

Background Work on Relationship between Layoffs and Firm Outcomes

Although a great deal has been written about the relationship between job loss and outcomes for workers and their families, very little attention has been paid to the relationship between layoffs and what happens to firms.

Throughout the past decade there have been reports in the popular press that firms with highly paid CEOs were firing thousands of workers only to see large increases in their firm's stock price (and their own wealth) and their pay in the following year. [Hallock \(1998\)](#) seeks to address these issues. He investigates whether these claims were true by collecting data on all job loss announcements for a large set of U.S. firms over a seven-year period. It turns out that firms that announce layoffs in the previous year pay their CEOs more and give their CEOs larger raises when compared to firms that do not have at least one layoff announcement in the previous year. However, the likelihood of a layoff varies dramatically along other dimensions, for example, firm size, which are correlated with CEO pay. Once these other detailed characteristics are controlled for, the CEO pay premium for laying off workers disappears. In addition, there is a small negative share price reaction to layoffs, at least for the period 1988–1995.

[Farber and Hallock \(2003\)](#) follow up on this work by considering the share price reaction to a series of layoff announcements over the years 1970–1999. While a host of authors have documented a small negative relationship between job loss announcements and stock prices (e.g. [Abowd, Milkovich, & Hannon, 1990](#); [Blackwell, Marr, & Spivey, 1990](#); [Caves & Kreps, 1993](#)), most of these studies were concentrated in the 1980s and considered relatively small samples. Among the findings in [Farber and Hallock \(2003\)](#) are that the distribution of stock market reactions to job loss announcements has shifted to the right (become less negative) over time. One possible explanation is that, over the period studied, job loss announcements designed to improve efficiency have become more common relative to job loss announcements designed to cope with reductions in product demand. While this explanation gets some support in the data, a more complete explanation for the patterns in the data is needed.

Since it is clear that the most senior managers ultimately make decisions about the size of employment in their firms, and it is clear that at some times in recent decades share prices have reacted to job loss announcements, [Billger and Hallock \(2005\)](#) study the relationship between large-scale job loss announcements and CEO turnover (job loss). They were motivated to try to consider whether there was a relationship between the turnover of workers and of the senior manager. Using 25 years of data, they find that there is a strong negative relationship between firm performance and management changes and a positive relationship between market performance and CEO turnover (conditional on own-firm performance). They also find an unusual result: top management changes are strongly positively associated with mass job loss announcements two years earlier.

The obvious next step is to investigate the long-term relationship between job loss announcements and firm performance. Do firms that make the decisions to let workers go fare well in the longer-run? Cascio, Young, and Morris (1997) make an important first step in this area and investigate this for a sample of firms and conclude that firms that simply “downsized” did not show higher returns when compared with other firms in their industries.³ However, firms that “downsized” and restructured their assets did have higher stock returns and returns on assets than comparable firms in their industries. However, their analysis is based on 5,479 employment changes as reported by Standard and Poor’s COMPUSTAT between 1980 and 1994. These employment data are missing for many firms and are not audited, so they are sometimes thought to be unreliable. More work in this area would be interesting.

The WARN Act

One piece of legislation that is particularly relevant to this paper is the Worker Adjustment and Retraining Notification Act (WARN). This Act went into effect on February 4, 1989. The Act “requires employers with 100 or more full-time employees to provide 60 days’ written notice of a plant closing or mass layoff to representatives of the affected workers (to the worker directly in the absence of a union), to local government, and to the state dislocated worker unit” (Addison & Blackburn, 1994). If firms do not provide this notice, they must pay back wages and benefits for each day notice was not given, and may be subject to a small fine. Brislin (1990) provides very specific details on related questions such as “which employers are covered”, “what is a plant closing”, “what employees are counted”, and “what are the situations that do not require giving notice”.

DATA SOURCES AND WARNINGS

The data for this paper are collected from two entirely different sets of sources. The first set of data is the archival data. They were collected from articles in the *Wall Street Journal* along with additional information on the firms collected from Standard and Poor’s COMPUSTAT. The second set of data is from 40 detailed interviews I had with managers of firms. Both sources are described in more detail below.

Archival Data

The information on the announced reductions in force was collected from the *Wall Street Journal*. First, the sample frame was identified. All firms that were ever in the Fortune 500 in any year between 1970 and 2000 were included in the sample. Next a spreadsheet was created for each of the 31 years. Included in this spreadsheet was a list of all of the firms (in the first column) and a set of relevant variables (e.g. number of employees in the announced Reductions in Force (RIFs), dates, reason for the RIF) at the top of each of a number of subsequent columns. Then paper copies of the *Wall Street Journal* Index were searched for each firm for each year in the data. The Index is a listing by firm name of an abstract of each article that appeared in a given year's *Wall Street Journal*. Therefore, for every firm in every year each abstract was checked to see whether it had any information about a job loss announcement.

After completing this process, it became clear that there was not enough detailed information in the abstracts of the *Wall Street Journal*. For example, there was only information on the number of employees involved in the RIF for 31 percent of the announced RIFs. A decision was made, therefore, to go back to each original full-length article in the *Wall Street Journal*. This provided much more detailed information (e.g. now the number of employees involved in the RIFs is available for 90 percent of the observations). In addition, a host of new variables were collected at this stage such as region of the country and type of worker (e.g. white-collar versus blue-collar, salaried versus hourly). Over the 31 years of data, there were 4,604 announced RIFs made by 791 firms. I estimate that it took roughly 3,000 hours to collect these data. The firms are all, obviously, quite large (see Table 1).

The Interviews

I also conducted interviews with 40 managers from 26 firms headquartered in the United States. The managers included, Chief Executive Officers, Chief Operating Officers, a Chief Financial Officer, and many Senior Vice Presidents of Human Resources. The firms varied widely in industry, geographical location of the headquarters, and size. I interviewed managers in firms with more than 100,000 employees and managers in firms with fewer than 1,000 employees. Most, however, are large Fortune 500 firms. The interviews lasted between 30 min and 90 min and were conducted either in person or on the telephone. Although I do include many direct quotes from those I interviewed, promises of confidentiality obviously keep me from

Table 1. Summary Statistics.

	All Years (1970–2000)	1970s	1980s	1990s
Financial in millions				
Firm value	12,270 (374) [3,826] <i>N</i> = 3,578	10,703 (550) [2,188] <i>N</i> = 1,248	9,330 (415) [3,257] <i>N</i> = 1,246	16,966 (855) [8,305] <i>N</i> = 1,014
Assets	8,015 (211) [2,725] <i>N</i> = 3,190	9,339 (354) [2,994] <i>N</i> = 1,244	8,517 (387) [2,598] <i>N</i> = 1,135	5,353 (324) [2,388] <i>N</i> = 754
Sales	29,473 (710) [8,902] <i>N</i> = 3,586	28,689 (811) [7,996] <i>N</i> = 1,250	32,553 (1,339) [9,378] <i>N</i> = 1,245	27,441 (1,258) [10,901] <i>N</i> = 1,021

Note: Means, standard errors (in parentheses), and medians [in brackets].

Source: Data are from Standard and Poor's COMPUSTAT. All data are reported in real (year 2000) dollars.

revealing any information that would help to identify a specific person interviewed or the associated firms. I identify managers by their broad industry and provide only some information about their position (e.g. CEO, CFO, COO, other senior manager).

I worked from a set of 17 basic questions but did not always ask each respondent each of the 17 questions. This was typically because we focused on a specific area, I already knew the answers to certain “facts” since I may have already questioned several people in the same firm about the same issue, or we simply ran out of time. The issues included questions such as “Do firms have incentives to make announcements at certain times”, “what happens to survivors”, “how are the layoffs actually executed”, “were people surprised when they were asked to leave”? A broad list of the questions I used to guide my interviews is included in the appendix.

Warnings

There are several warnings that should be taken into consideration. First, the archival data cover all layoff announcements in any firm that was ever in the Fortune 500. Although this is a substantial number of firms, they are for

a particular type of firm – very large ones. Therefore, any inferences drawn here can only apply to very large (and, no doubt, high profile firms). Second, I assume that all announcements of layoffs by all of these firms are actually recorded in the *Wall Street Journal*. There is quite a bit of evidence that many of the announcements actually make it into the *Wall Street Journal*, as there are many instances of relatively small firms (for the Fortune 500) announcing very small layoffs. It is also clear from the discussion above concerning the WARN Act that it is hard to imagine that these organizations do not report job loss. In any event, to the extent that some of the announcements are too small or firms are too small, I may undercount the true number of layoff announcements.

The third issue is that it must be clear that these are layoff *announcements* and not necessarily actual layoffs. So, these events can either be taken as simply layoff announcements (which they are) or actual layoffs (which they may be). I should also note that multiple announcements of the same layoffs are only included as a layoff announcement on the first day. I asked most of the 40 managers whether the announced layoffs actually happen. A great majority noted that “yes”, they do happen. However, some commented that firms may tend to slightly “over-announce”, so that they have a cushion and do not need to go back to the market, workers, and customers, and announce again. There is a detailed discussion of this below.

TIME

The issue of time and job loss announcements has many interesting features. The first important issue is the distribution of job loss announcements over the past few decades. The second part considers whether there is “manipulation” of the timing of job loss announcements within years or weeks. That is, do firms announce at certain times of the week or year so as to gain some advantage, either for the firm or the managers? The last issue is whether the layoffs actually happen at all. As I noted in the section on “Background literature and legislation”, these are just announcements of layoffs. The end of this section considers whether firms follow-through on the announcements and actually let workers go.

When do the Layoffs Happen over Time?

The number of job loss announcements or reductions in force (RIF) varies considerably over the years in the data. Fig. 1 plots the number of layoff

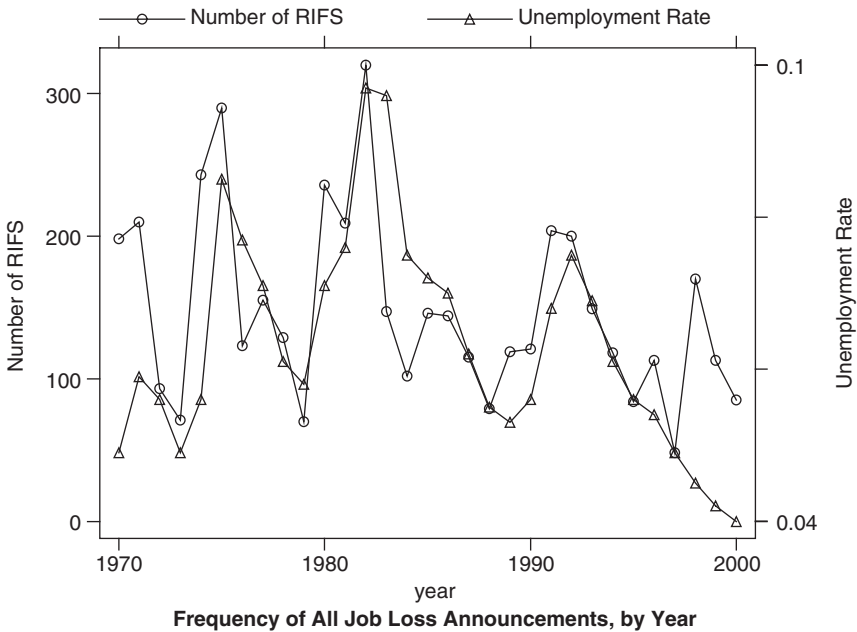


Fig. 1. Frequency of Announced RIFs by Year with Annual Unemployment Rate.

announcements (left-hand axis) and the civilian unemployment rate (right-hand axis) against the 31 years from 1970 to 2000. The mean number of layoff announcements per year is 149. The median number is 129. There were only 48 announcements in 1997 but 320 in 1982. It is clear from Fig. 1 that the relationship between the civilian unemployment rate and the number of announced RIFs is very strong, especially for the years 1972–1997. It is particularly striking to see the divergence between the two series starting in 1998. There, the unemployment rate continues to drop but the number of job loss announcements stays high. In general, however, the number of job loss announcements follows the business cycle quite closely.

Is There Any Manipulation of the Timing of Announcements? Time of Week, Time of Year

Now that we have some information about the frequency of job loss announcements over the years, it is interesting to consider whether there is any

“manipulation” of the timing of job loss announcements within the year or even within the week. Yermack (1997) provides evidence that is consistent with the hypothesis that senior managers manipulate the timing of the release of news information concerning their firms for their own benefit. He finds that firms are relatively more likely to announce “bad” news just prior to option grants to senior managers and are relatively more likely to announce “good” news just prior to stock option exercise by senior managers. In this section, I will briefly summarize some of the comments of the managers I interviewed on this topic and provide statistical evidence on the timing of job loss announcements from the archival data.

Time of Year

Given the work of Yermack (1997) and others, it seemed natural to see whether the managers could provide insight into whether there was “gaming” of the timing of announcements throughout the year or if there were other reasons for differences in when firms announce layoffs. Surprisingly some admitted that there was probably some gaming of timing so as to benefit senior managers but for the most part, not in their current firms. Others were vehemently opposed to such actions and found them “deplorable”. One other main theme with respect to timing throughout the year seemed quite common. The idea was to start a financial period (year or quarter) “clean”. That is, the firm wanted to count its expenses for severance in the pre-period and try to move for better performance in the next one.

I was surprised that so many admitted that there may be some kinds of manipulation so as to help the senior managers profit in the short term, along the lines suggested by Yermack (1997).

I've never been a part of something like that but I would assume there is potential to do it. I imagine you time it just right to drive the stock price. I think firms game options.
Senior Manager, High Tech

Yes. There are discussions like that. Our quarterly earnings release and conversation with analysts is day x so the announcement is day $x + 1$.
Vice President, Agriculture

People see patterns of announcements depending on the timings [of options].
Senior Manager, Nondurable Goods Manufacturing

On the other hand there were many managers who found the idea of actually using the announcement of a layoff as a way for the senior managers to potentially gain from their stock options incredibly distasteful.

No gaming. [Layoffs] can be absolutely devastating. One woman was lying on my floor screaming and crying.
Senior Manager, Nondurable Goods Manufacturing

You make them when you have to make them. There has to be a catalyst event. It is a human decision. It is hard. We cut [a large percentage] of employees ... It is deplorable to manipulate for short-term financial gain. *CEO, Mining*

One firm felt that its employees perceived that they may be using the announcement time so as to avoid a potential “commitment” to stock option compensation that has not yet vested. They felt it was necessary to make a layoff announcement at a particular time that happened to be nine days prior to a vesting of a large number of stock options for employees.

We made layoffs on a Saturday. There was a big vesting nine days later. Some thought that, oh it is since you don't want the options to vest ... So we actually gave employees until [nine days] to vest. *Senior Manager, High Tech*

One manager suggested that “gaming” of the timing used to be more common but that it was virtually impossible in the most recent period due to the fact that analysts know so much about the companies and are on site practically every day.

This used to be important. This is of no impact. In this industry everything is so close to the analysts ... Analysts hate surprises. *Senior Manager, Durable Goods Manufacturing*

A group of managers suggested that they had some flexibility in when they could announce layoffs and therefore tended to focus on fiscal quarters. The idea being that they may have already been suffering financially and therefore would take an additional “bath” and count charges such as severance in a quarter that was already bad. They could then go into the new quarter (or year) “fresh”.

Our fiscal year starts on [X] of each year. We may make sure that all employees are out for the end of the fiscal year so we can have everyone out and lower costs for the next year. *Senior Manager, Durable Goods Manufacturing*

Fiscal year? I don't know. This business of taking a one-time charge. In [X] or the first weeks of [Y]. You report 2000 results plus exceptional one-time charge for severance and then you go into next year clean. *Vice President, Durable Goods Manufacturing*

Many of the managers mentioned the “holidays”. They found having to execute layoffs (see below) to be among the more painful experiences of their lives. They felt that complicating this by delivering such news near holidays was just not “fair”.

No one wants to do it at Thanksgiving or Christmas. *Senior Manager, High Tech*

There is always a year-end crisis ... So take the charge at the end of the year to make next year get better. Is that appropriate to be laying people off around the holidays? *Senior Manager, Nondurable Goods Manufacturing*

We didn't want to have layoffs in December for emotional reasons, not financial ... We don't want to lay people off at Christmas. That just [expletive deleted]. *Senior Manager, High Tech*

In summary, there seemed to be three different types of explanations for making (or not making) decisions at different times during the year; “gaming”, “coming clean in the new financial period”, and the extreme distaste of making layoffs at the end of the calendar year due to the “holidays”. The top left panel of Fig. 2 shows the distribution of job loss announcements by week during the calendar year for the entire sample period of the archival data: 1970–2000. It is clear that job loss announcements are more likely either early or late in the calendar year. In fact, given the interviews, both are surprising. Several managers noted that they felt it was simply inappropriate to either let people go or even announce that you would let them go at a later date around the “holidays” in late November–December.

Also, several managers noted that sometimes layoffs were timed so as to “clean the slate” for a new year. That is, once you have made a decision to let people go, it is better to do it before the end of a fiscal quarter so that you can count the severance as an expense in the current period and the next period will look all the better. Perhaps the firms that are making the layoff announcements that account for the spikes in January (Fig. 2) have fiscal year ends at the end of January (retailers). Determining the relative importance of firms wanting to avoid layoffs near the “holidays” and firms trying to “clean the slate” before a new fiscal period is the subject of future research.

Fig. 2 also shows the distribution of the timing of announcements throughout the year by decade. The 1970s shows the most dramatic spikes in the first and fourth quarters. However, it is clear that in all decades, that layoff announcements are no less likely in November and December than in other months.

Time of Week

It is very interesting to see the diversity on views regarding the time during the week. Several managers mentioned that the firms serve three constituencies; shareholders, customers, and employees (not necessarily in that order).⁴ It became clear in the discussions with managers that in terms of the timing during the week, they were concerned with all three but most often they were considering the employees who were left behind – the “survivors” of the layoff. Some were concerned about logistics. One firm, a particularly small one in the high tech sector, hoped to release the information over the

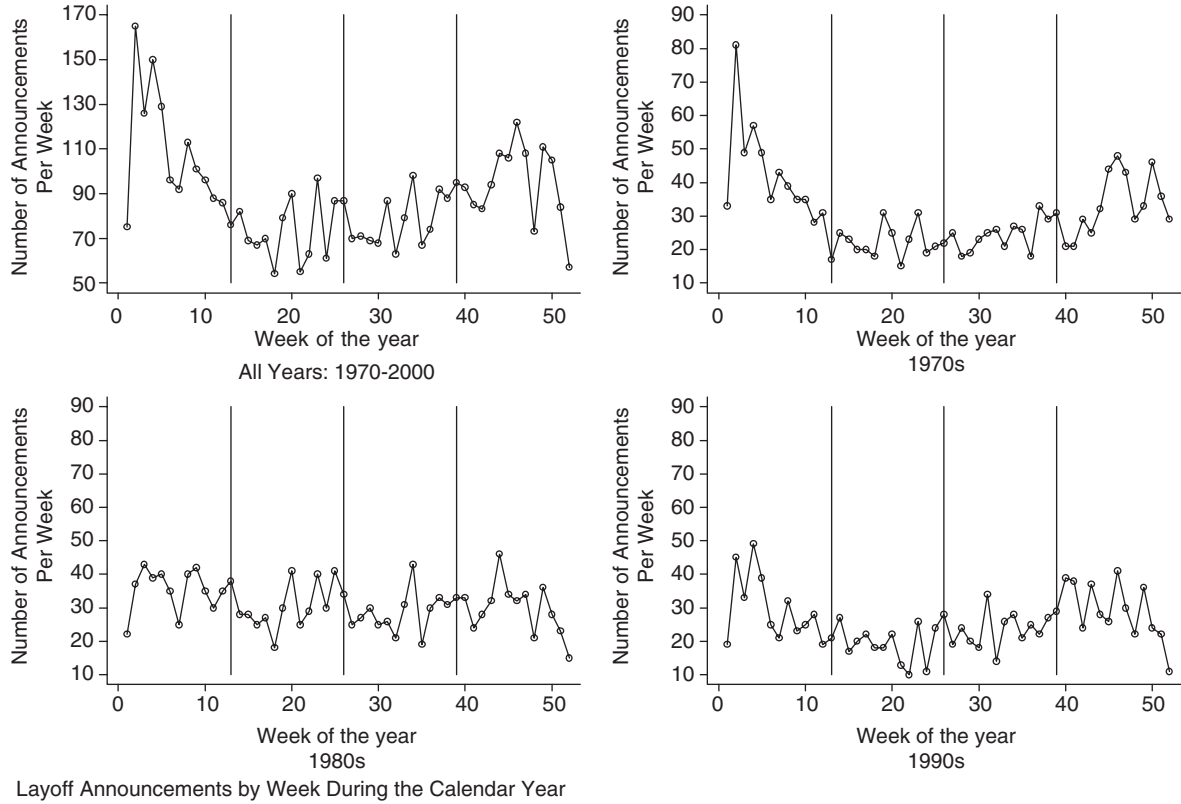


Fig. 2. Frequency of Announced RIFs by Week in the Year. Source: Archival Data for 1970–2000 Collected by the Author.

weekend in hopes that things are not scrutinized by the press so much on the weekend.

To begin, it was clear that everyone I asked about this felt that a layoff should not span a weekend. One manager in the high tech industry highlighted that the timing during the week might depend quite a bit on the size and scope of the layoff. So she had a practical or logistical reason for wanting to start the process on a Tuesday.

We needed a three day period. We chose Tuesday, Wednesday, and Thursday. A lot of us felt Friday was bad ... I would have chosen Tuesday if there was only one day. We did them all around the world so one day was difficult. *Senior Manager, High Tech*

Most of the managers were concerned about how the layoff would affect “survivors” (there is a further discussion of the workers that are left after a layoff below).

I don't think it matters if it's a Monday or a Friday ... I'll pick the day in which I can pick the event and counseling with each one. If I can get it all done on a Friday then fine. If there are 100 workers, I may need a few days. *Senior Manager, Durable Goods Manufacturing*

If you are laying one person off and you are afraid of safety you might do it at the end [of the week]. If it is a mass layoff – middle – need to prepare in the middle and deal with the aftermath. *Senior Manager, Agriculture*

Never do it on a Monday. Always on a Thursday and people have time to chill out on Friday and we can message about it. *COO, High Tech*

In HR practice, we always try to announce sort of the middle of the week or maybe later. We like to have some control of what is happening. We don't want them to go home and make up stories. *Senior Manager, Financial Services*

The motivations with which I am concerned are internal motivations. There are two schools of thought on timing in the week. On the one hand, you want it early in the week so survivors have time to recover. Or, the school of thought, that you make an announcement on a Friday so that it gets in the Saturday paper. *Senior Manager, High Tech*

An additional issue that concerned several of the managers I met in one company had to do with the fact that they liked to have the layoffs on Friday's. In fact, they would time it just so that the news would not appear in the local papers until Saturday – because of the feeling that readership was down considerably on the weekend.

We always time layoffs so they hit the papers on Saturday. Ninety percent of readership is lost on the weekend. We are cognizant of timing, spin, and letting customers know that we aren't going under. This is just a bump in the road. *Senior Manager, High Tech*

This was a small firm with only one location in the U.S. and they may have felt that local reaction was important. This is probably much less of an issue in most national firms.

In summary, the view of the managers on the timing of job loss announcements is quite mixed. Clearly, some suggest that announcements should be made very late in the week so as to avoid news coverage. Others prefer to have time after the announcement so that workers have time during the week and after the layoff to discuss matters. The upper left panel of Fig. 3 is a plot of the distribution of the 4,604 job loss announcements by day of the week they appear in the *Wall Street Journal*. Announcements are more frequently published in the *Journal* on Mondays and Fridays than Tuesday through Thursday. Clearly, Friday is by far the most popular day for announcements to appear. Furthermore, if when the distribution of announcements by day of week is examined by decade, it is clear that in all decades Friday is the most common day for an announced layoff and Monday is less important over time.

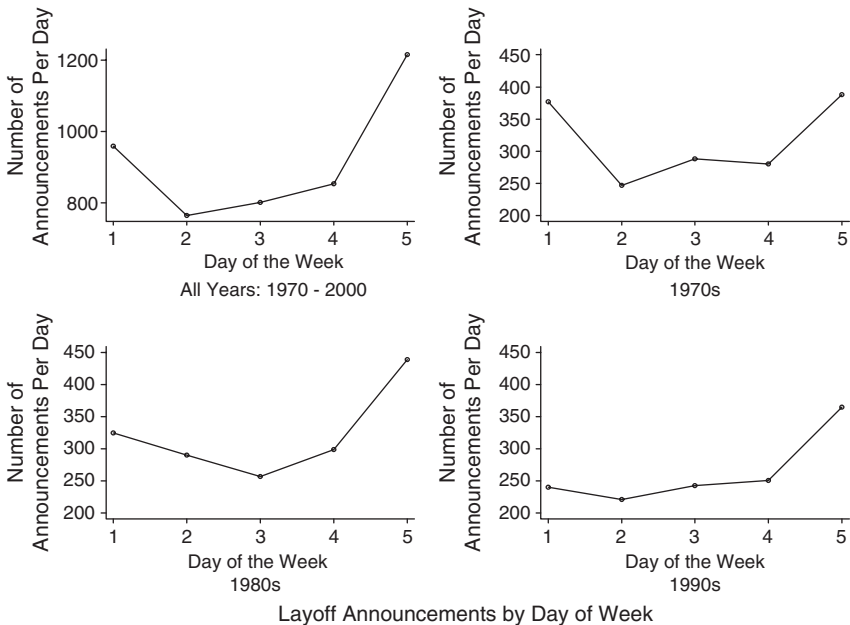


Fig. 3. Frequency of Announced RIFS by Day of the Week They Appeared in the *Wall Street Journal*. Source: Archival Data for 1970–2000 Collected by the Author.

Do Layoffs Actually Happen? Is There Over-announcement?

As I noted above, one problem with examining *announcements* of job loss is that we are not specifically certain that these actually lead to loss of jobs. In fact, there is anecdotal evidence that some firms simultaneously hire and fire workers. I asked many of the managers “Do the layoffs actually happen?” Some of the answers suggested that although a certain number of positions would be eliminated, it did not mean that that many people actually would lose their jobs. This is due to the fact that people were given the opportunity to take other positions elsewhere in the firm.

When we made the public announcement, I don’t think we told the number. We might have said approximately [X] percent but we didn’t want to tie our hands. How did we arrive at the number? It was the dollars we were trying to cut from overhead. We cut other things too including capital budgets and expense budgets. *Senior Manager, Durable Goods Manufacturing*

People were laid off by one organization [in the firm] and hired by another ... You try to find a home for them. *Vice President, High Tech*

There is reshuffling – we are going to eliminate 10,000 jobs but only 4,000 people to lose their jobs. *Senior Manager, Nondurable Goods Manufacturing*

About [one-third] found positions elsewhere in the company. *Senior Manager, Financial Services*

It is also interesting to think about whether the firms had some tendency to “over-announce” layoffs. For example, suppose that a firm was expecting with reasonable certainty that 1,000 positions had to be eliminated and also expected that there was some chance that another 200 might have to follow within a few months. In cases such as these, a large fraction of the firms seemed to believe that it was worth “over-announcing” so that the workers, shareholders, customers, and suppliers would not have to receive the negative employment news twice. So I asked the managers: “Is there an idea to over-announce so you don’t have to go back and announce more?”. Here is a sampling of some of their answers.

Yes. Yes. Absolutely. I personally have been part of doing things like that. You just don’t want to announce bad news twice. *Senior Manager, High Tech*

The 100 [person layoff] might be [slightly lower than 100 or slightly higher than 100]. I can see that we would tend to communicate the high number. *Senior Manager, Durable Goods Manufacturing*

That is the notion absolutely. That is a common notion. ... I know we had fairly good insight that an additional one would be coming. We said we would be laying off [X]. [$X - 15\%$ of X] today, then [15% of X] when projects get completed. From a public

relations standpoint, let's just announce the whole thing. My guess would be that ... that is common. *Senior Manager, High Tech*

Very much an over-estimate. *Senior Manager, High Tech*

[At my previous employer] we over-announced. Over a two year period, we got up to it. *Senior Manager, High Tech*

You'd rather err on the high side in the numbers of people in groups. It is better to say hey we had less going out than more. *Senior Manager, Agriculture*

I think most of them over-announce them. I can remember, certainly in the 70s, there was a stigma – shame on the firm. Now organizations expand and contract. I think there is almost an implied incentive to please the street. *Senior Manager, Nondurable Goods Manufacturing*

We absolutely overinflated the number – especially with the second one. [X] is a very legally conservative company. ... If anything the announced numbers are an overestimate. *Manager, High Tech*

Publicly owned company? Yes. If they say they are going to make a layoff and don't, they get killed by investors. *Partner, Consulting*

On the other hand, managers at some firms were very specific and clear that they never over-announced. This is for a variety of reasons. For example, if you over-announce, you may unnecessarily worry too many workers.

We do ours right down to the head. We take it really really seriously. *Senior Manager, Durable Goods Manufacturing*

We don't want to scare any more than we have to. *Senior Manager, Financial Services*

In some cases there is overestimation and in some cases underestimation. You don't want to overestimate, chicken out, and wait for attrition. You don't want to de-motivate employees. We make sure to do what we say we are going to do. *CEO, Mining*

REASONS FOR LAYOFFS

Work by [Farber and Hallock \(2003\)](#) uses stated “reasons” for layoffs in the *Wall Street Journal*. Specifically, they try to decompose the change in the share price reaction to job loss announcements from the 1970s through the 1990s into a part that is due to a change in the fraction due to certain “reasons” (e.g. deficient demand versus efficiency) and another part due to changes in share price reactions within reason types. They find that up to one-third of the change in the stock price reaction to job loss announcements is due to a change in the mix of reasons. Some literature suggests that “reasons” for layoffs really do matter to employees. For example, [Rousseau](#)

and Anton (1988) suggest that layoffs that are justified by economic factors such as “changing technology” are perceived by employee to be more “fair”. This section begins by considering some of the stated reasons for layoffs using the archival data over the past 31 years and then goes on to discuss whether the senior managers believe the reasons we read about in the *Wall Street Journal* or other parts of the business press are related to the actual reasons for announced layoffs.

What are the Stated Reasons for Layoffs?

The “reasons” for the layoffs were recorded after reading the individual 4,604 *Wall Street Journal* articles and were categorized into primary, secondary, and tertiary reasons. The 20 primary reasons are listed in Table 2. Of course, organizations could include more than one reason in an

Table 2. Distribution of Reasons for Announced RIFs over Time.

	All Years (1970–2000)	1970s	1980s	1990s
Reorganization	457	116	127	178
Restructuring	284	37	96	143
Cost control	509	103	162	225
Demand slump	1,533	569	589	369
Increased competition	89	20	20	47
Merger	89	8	29	50
Restore profitability	50	16	16	17
Bankruptcy	10	2	8	0
Leaving market	122	56	32	29
In-house merger	7	0	3	4
Posting losses	247	107	98	42
Plant closure	227	66	84	72
Increase earnings	22	5	4	13
Excess supply	333	148	160	25
Structural	30	13	9	8
Strike	200	134	47	19
Supply shortage	11	1	4	6
Government intervention	81	47	23	11
Missing	109	37	38	33
Other	194	97	68	29

Note: Sum of last three columns does not equal first column for each row since the year 2000 is included in the first column but in none of the last three.

Source: Data on RIFs collected from *Wall Street Journal* from 1970 to 2000.

announcement but for these primary reasons, the one that best reflected the issues in the announcement was recorded. The category “demand slump” is associated with more layoffs than any other. This is true overall and within each decade, but has become less important in the most recent decade. “Cost Control” is also important, and has become increasingly more important over time. “Reorganizations and Restructurings” are frequently cited and much more so recently.

Farber and Hallock (2003) had the idea that the change in the stock price reaction from negative in the 1970s to about zero in the 1990s could have been due to the fact that layoffs are occurring for different “reasons”. For example, perhaps they were more likely to occur for “deficient demand” type reasons (that would send stock prices down) in the 1970s and more for “efficiency” reasons (that would tend to send stock prices up) in the 1990s. If we see more “efficiency” reasons in the 1990s, this may exactly account for the changing share price reaction to layoff announcements overall.

In Fig. 4, these twenty categories are organized into only five. Clearly the categorization into each of these five groups is somewhat arbitrary, but it seems natural to try to examine them in a more aggregated way in order to try to detect any patterns. The five categories are “reorganization” (reorganization, restructuring, and in-house merger), “plant closing” (leave market and plant closing), “slump in demand” (demand slump, excess supply, structural), “cost issues” (cost control, posting losses, increase earnings, restore profitability), and “other” (increased competition, merger, bankruptcy, strike, and other). There are two stark patterns that are clear from Fig. 4. First, the category “reorganizations” is much more prevalent. Second, “slump in demand” is much less common.

Are the Reasons in the WSJ Related to Actual Reasons?

Now that the *stated* reasons for *announced* layoffs in the *Wall Street Journal* are clear, it seems natural to consider whether these reasons are believable. After all, these may be filtered many times. First, a press release may be made by a firm. Then an author from the *Wall Street Journal* interprets this press release and writes a story. Then the researcher tries to consider which of 20 categories this most closely matches. I specifically asked the managers, “Why do firms make announcements? and “are the stated reasons in the *Wall Street Journal* related to actual reasons?”

Several of the people I interviewed thought that the news articles were simply not true and that there was, at best, a slim relationship

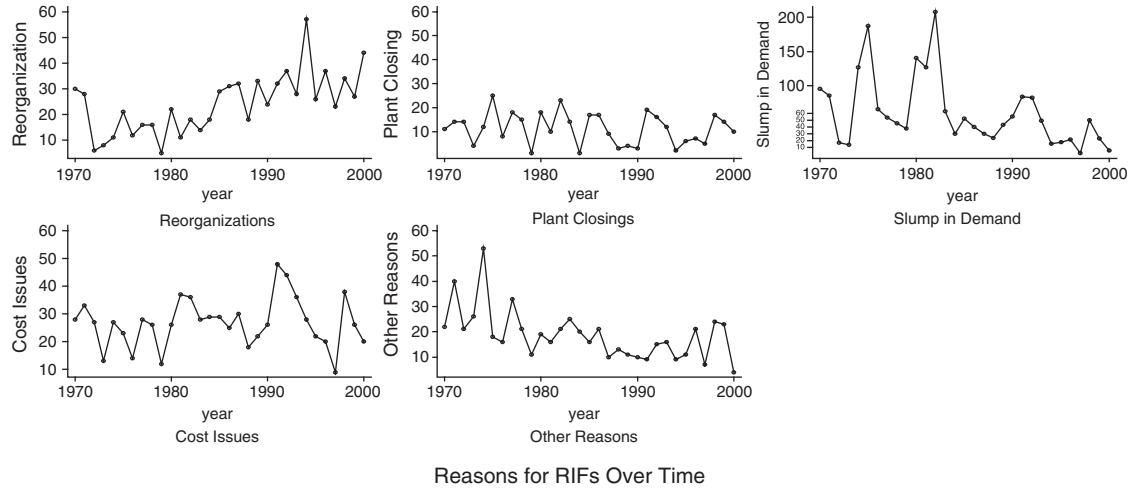


Fig. 4. Distribution of Stated Reasons for Announced RIFs over Time. *Source:* Archival Data for 1970–2000 Collected by the Author. *Note:* These Five “Reason” Categories are a Consolidation of the 20 Categories Listed in Table 2. The Five Categories are “Reorganization” (Reorganization, Restructuring, and In-House Merger), “Plant Closing” (Leave Market and Plant Closing), “Slump in Demand” (Demand Slump, Excess Supply, Structural), “Cost Issues” (Cost Control, Posting Losses, Increase Earnings, Restore Profitability), and “Other” (Increased Competition, Merger, Bankruptcy, Strike, and Other).

between the reason stated in the article and the actual reason for the announcement.

No. I don't believe them. Most of it seems to be management screw-ups. *Senior Manager, Nondurable Goods Manufacturing*

Businesses absolutely manipulate the reasons in the *Wall Street Journal*. But don't necessarily put a negative connotation on this word. You do everything you can to message. ... In the last year, there was almost no negative connotation of layoffs. Firms can make massive layoffs with almost no repercussions. *COO, High Tech*

Every meeting we go to we talk about a layoff or a downsizing, whatever the [expletive deleted] you want to call it ... Why does the CEO get any satisfaction from using the words we are compressing the size of company? Nobody ever wants to tell the truth. *Senior Manager, Durable Goods Manufacturing*

Should I have any confidence about what is said? No. Audiences are different. The *Wall Street Journal* is speaking to potential investors so the spin is to make opportunities to buy the company stock. *Senior Manager, Durable Goods Manufacturing*

No. Rarely. There is so much corporate speak.⁵ ... It is all spun because the constituency is the current workforce, shareholders, consumers. *Senior Manager, Nondurable Goods Manufacturing*

They won't admit poor judgment. Some truth, but it doesn't include we screwed up. *Senior Manager, Wholesale Trade*

In fact, most respondents felt that the articles in the *Wall Street Journal* were not false but may have had some type of spin put on them. Others felt that they were only part of the story.

I never feel that the stated reasons are lies or incorrect. But I do feel that they are never complete ... The PR guy's job is to describe that the glass is half full. *Senior Manager, High Tech*

I think the companies are trying to collectively manage their image and investor confidence. I think they spin the information. I always wonder what is really happening. That is the job of the reporter. I rarely think the company is lying. They just need to put the best light on it. *Senior Manager, High Tech*

Firms might take the most glamorous reason ... We would have a PR agency involved in layoffs and would craft that into what the market wanted to hear. ... As with all – layoffs are a scapegoat for poor performance. Weak managers. *Senior Manager, High Tech*

I think so. Well, I think as positive sounding as we can. We try to frame it in a positive light. It is a sad story. We try to emphasize that we are trying to do right by the employees. *CFO, High Tech*

Probably not accurately. We spin it a certain way and they take it from there. ... They accurately portrayed specific pieces. They spin it to make news. *Senior Manager, High Tech*

I guess, reasonably confident, that what is in the *Wall Street Journal* tells about 80 percent of the story, possibly ... Typically what you see is all true. There just may be additional details. *Senior Manager, Agriculture*

Only a few of the managers responded that they felt that what was reported in the *Wall Street Journal* or other business press was the whole truth and nothing but the truth.

I believe they are absolutely, positively the actual reasons ... We said it was overcapacity and that was why. *Senior Manager, High Tech*

Any company is reporting what actually is. *Senior Manager, Nondurable Goods Manufacturing*

There has been a recent explosion in layoffs that are described for the reasons of “reorganization or restructuring”. Also, while there is some variation in the beliefs of managers about how they feel about the reported “reasons” for layoffs, most feel that the news that is reported in the business press is most of the truth but not all of it. Only a handful of managers state that they perfectly believe what they read in the business press.

THE EXECUTION OF LAYOFFS

This section is mainly focused on how firms actually “do” layoffs. This encompasses a number of areas including how the news is actually delivered, whether people are “surprised” by being asked to leave, safety and security issues, and how the firm deals with “survivors”. Perhaps more so than in any other section, the answers to these kinds of questions varied quite a bit depending on the type of layoff.

How is it Done? Are They Sent out the Door?

One of the first layoffs that I heard about was communicated in a large auditorium with more than 1,000 workers present. Roughly 40 percent of the workers at the site were to be laid off and the senior manager on site made this announcement to the entire group. He also said that each individual would be given an envelope upon leaving the auditorium with information about whether they still had a job, or not. When I told some other managers about this, they thought it was unusually “harsh”. The managers who thought this was harsh were less likely to have been involved in a large layoff, however. Others felt that communicating information quickly is

extremely important and that this, therefore, might be a particularly useful way to do it. Below are a few examples of how layoffs were executed in the sample of manager interviews. Also see Brockner (1992) for a set of “how to” suggestions for managers facing layoffs, including advance notice, assistance, and communication.

You need to have a fast and furious execution of the layoff. There has to be lots of communication. There is a company meeting. The survivors go to one place. The non-survivors go to another. There is messaging there and then individual messaging. Then all of the survivors are brought together again. *COO, High Tech*

We aren't debating the decision. Kind of like your marriage is over. Good severance, communication, prompt notification. *Senior Manager, High Tech*

I think you owe people a few things. 1. Prompt notice. 2. All their answers to their questions as quickly as possible. You don't want them to sit around with ambiguity. As management of the company, you have all the answers. *Senior Manager, High Tech*

[It was a] Thursday. Chairman [X] announced 3,500 layoffs [in person] would happen that day if name called. ... Empty boxes were left by the offices of those who had been laid off. Men with 35 years service were sobbing. Psychologists were there. No work got done. On Monday it was as if nothing happened. *Senior Manager, High Tech*

When we closed the plant in [major city], the VP of the area went to make the announcements along with the director of HR for that area to the day shift at 2. Then stayed and talked with the second shift and then came back at 11 and talked with the 3rd shift. Then break out groups to talk about benefits, timeline, and other information. *Senior Manager, Nondurable Goods Manufacturing*

They had the day to get their things (not supervised). If they wanted to, they could come back. Computer access was cut. We took their badges. They may have had access through that day. We put a lot of trust. We got good marks from those who were let go and those who stayed. *Senior Manager, High Tech*

The top four things are money, money, money, and communicating ... By and large, letting people say their goodbyes is important. But nobody's going to get any work done. *Partner, Consulting*

At [our company], it's a pretty nice process. [Our company] actually has ... a ... list – there are 45 days to find a job in [the company] or take the package. *Senior Manager, Nondurable Goods Manufacturing*

Rehearse, say what you need to say, and send them to outplacement. *Senior Manager, Agriculture*

The reactions are very strong and emotional. Have to do it in private and have to have the department manager deliver the news with the HR professionals right there. *Senior Manager, Durable Goods Manufacturing*

Of course, these are just a set of examples. Greenhalgh, Lawrence, and Sutton (1988) outline a host of strategies for firms when arranging for layoffs. They suggest that a number of factors influence the choice of strategies by managers. Several managers mentioned communication. In a study of 108 individuals, Wanberg, Bunce, and Gavin (1999) found that communication was crucial. In particular, they found that communicating with employees lead to employees thinking the process was fair and to employees being more likely to “endorse” the firm in the future. See DeMuse and Marks (2003) and Marks (2003) for additional strategies firms may use in executing layoffs.

Are People Surprised When They are Asked to Leave?

Most managers felt there was some diversity in how employees reacted to layoffs, although the majority did answer that workers were “surprised” that they were being laid off.

Often surprised. We are getting a little better at that. We have changed our strategy a bit there. We used to wait until everything was dotted and crossed before the announcement. Now we announce earlier. In our estimation we will be making changes. You may have opportunities for early retirement or voluntary separations. Here is the timeline. ... We know it makes them nervous but it is better. *Senior Manager, Durable Goods Manufacturing*

There is no middle ground of mild surprise; they are shocked or completely understanding. Is Bob getting laid off? How the [expletive deleted] can that happen? *Senior Manager, High Tech*

Oh, shocked. They may say, well, I sort-of expected it. My experience is that the reality is so harsh. *Senior Manager, High Tech*

Even if you are expecting it, when you hear it, it is a surprise. *Senior Manager, Non-durable Goods Manufacturing*

When they are one-offs you sometimes get [surprise]. ... A lot of them tell you they saw it coming. Kind of they personalize it. You get a lot of shocked people. What tends to happen – I hate to use this metaphor – if someone knows a family member is going to die – they even know it might happen – you still get shock when you get the news. ... It hits them when they go home. ... Despite all of that, most people don’t want to go home and slam the company. They want to be able to defend their company. *Senior Manager, Financial Services*

Another set of managers had quite strong views that their employees were not surprised when the layoffs came. These were generally workers in firms

where the work was more cyclical and workers who had not been performing well recently.

No, they are not surprised. But occasionally there is a person who doesn't understand. But it makes sense that they are leaving. *CEO, Mining*

... people in a business unit that is in trouble. They are not surprised but deeply disappointed. *Senior Manager, Durable Goods Manufacturing*

The low performers were not surprised but angry. *Senior Manager, High Tech*

Our workers are set up to know. We have quarterly ... meetings. This is the state of the business and what it means to you. Here is the good side and the downside. We may have to make careful decisions. Here is what you can do to help. Are they surprised? Some are. *Senior Manager, Agriculture*

I have never *ever* found an employee surprised to hear that layoffs will occur. No one disagrees with the headline but they almost all say why me? ... With [a recent merger] some people virtually had no work to do. *Senior Manager, Nondurable Goods Manufacturing*

I think it varies. It is never an easy decision. If it is performance related they normally get it. *Senior Manager, Financial Services*

Are There Safety and Security Concerns?

Safety is clearly an issue around layoffs for at least two reasons. The first is the actual physical safety of the workers at the work site. Some literature suggests that this is a serious concern. For example, [Mishra and Spreitzer \(1998\)](#) point out that if employees do not trust senior managers then the remaining employees may be more likely to be threatened and more likely to be destructive. In addition, [Folger and Skarlicki \(1998\)](#) document survey evidence that if layoffs are thought to be due to "mismanagement" then managers making layoffs are much more likely to anticipate confrontation with employees. Finally, [Kammeyer-Mueller et al. \(2001\)](#) suggest frustration and aggression ([Berkowitz, 1989](#)) as issues.

Second is the "security" of the intellectual property of the organization. A very large majority of the organizations had little concern for either. Of course, some were in industries with no proprietary information so this was obviously a non-issue. A handful had some concerns as described here.

We have plain clothes [security] people, just to be prudent. *Senior Manager, Durable Goods Manufacturing*

Security is always a concern. More so a few days after than on the day of the layoff. We try, in a non-obvious way to beef up security. *Senior Manager, Nondurable Goods Manufacturing*

We haven't been burned, although we are cautious. We pre-identify anyone who may be a problem. *Senior Manager, High Tech*

We had security at work and security at home for some people. We put the responsibility on the [very senior managers]. We installed a glass door with an electronic lock and installed alarm systems for deterring breaking into people's houses. *CEO, Mining*

I'll tell you a funny story. In [city] we walked in with the head of security about two hours before [opening of the work day]. He was on our list. ... Minutes after the announcement our rental car was towed. ... It was a 45 minute ride and not a nice place and we had to pay \$150 to get the car back. *Senior Manager, Durable Goods Manufacturing*

What about Survivors?

When the managers were asked about survivors, the majority mentioned that they felt that there should be a great deal of communication. A great majority also felt that if those who were being asked to leave were treated well (e.g. communication, severance, treated with respect) that the remaining "survivors" would feel very good about the company as well. As an example that is consistent with this, Brockner, Grover, Reed, DeWitt, and O'Malley (1987) use data from 132 subjects in a lab setting and 504 survey questionnaires from a retail chain that had recently closed many of its outlets. Among the findings were that survivors reacted most negatively when they identified with those laid off who were perceived to have been paid poorly as a result of the layoffs. In a related paper, Brockner, Grover, Reed, and DeWitt (1992) use similar data to document an "inverted-U" relationship between job insecurity associated with the layoffs and work effort by those who survived the layoff.⁶

I think this is hugely important and often overlooked. You have to treat those leaving fairly. If not, what will the others think? You have to be super clear about why this is still a super company. Then you need to re-energize them. *Senior Manager, High Tech*

I think there are a couple of levels worth distinguishing. There are the best players – have to have private, back door, conversations. On one hand, it can allay their fears. On the other hand, they can feel guilty about the special attention. The main event is the garden variety survivor who because of their role or unit, they survived. I would say we haven't paid enough attention to the survivors. I guess we have assumed that due to generous severance, we haven't been so concerned. *Senior Manager, Durable Goods Manufacturing*

The survivor issue is more important for salaried employees. Sales people are spread out. ... With salespeople survivors generally are people who need to do more with less money. Didn't know who the other guy was anyway since salespeople are spread out. *Senior Manager, Durable Goods Manufacturing*

This is far and away the biggest issue. How do we do this and make the survivors know about it? ... When this first started, we had stay and retention bonuses. Ultimately it was so severe that the environment is so bad that they should just be lucky to have jobs.
COO, High Tech

We tried not to call them survivors. We did special training for remaining employees.
Senior Manager, High Tech

The theory is that if people leave well, then the people left will likewise feel best about the place.
Senior Manager, Agriculture

The first thing we worried about was that people would leave. The reality is – to survivors. Is it over? The reality is there might be more – it depends on business. Honesty is the best way. It is hard enough to worry about if they have a job. Then if management isn't being straight, then what?
CEO, High Tech

Terminate low performers. Reductions in force of this or any variety start with poor performers. Frankly, this is received pretty well.
Senior Manager, Financial Services

Communicate, communicate, communicate. ... Employees want to know you did it fairly.
Senior Manager, Agriculture

It is important internally, not just externally to take layoffs seriously.
CEO, Mining

There is pretty heavy use of retention bonuses during acquisitions. I have not seen us use retention bonuses due to an economic layoff. In any event, I will tell you, just as focused as you are, we pay equal attention on the survivors as the victims.
Senior Manager, Nondurable Goods Manufacturing

No it is pretty easy to keep survivors. We are a good company in a great market with good compensation.
Senior Manager, High Tech

In addition, there is some literature with coping following layoffs. Examples include [Latack, Kinicki, and Prussia \(1995\)](#), [Hamilton, Hoffman, Broman, and Rauma \(1993\)](#), and [Wanberg \(1997\)](#).

A few of the managers noted that they felt that being laid off could be *good* news to workers. At the same time, they noted that it is extremely difficult (and not warranted) to tell these workers. The idea is that workers may not be entirely happy with their jobs but alternative jobs are uncertain and the workers are not willing to take on the possible downside risk of switching. When laid off workers have no choice but to switch jobs and are often happier (in the longer run) as a result. This idea was first introduced to me by a manager at a forum on layoffs we had at the University of Illinois in 2001. In fact, several audience members were quite upset with this explanation, *until* the speaker explained that he had been laid off twice himself and found that the jobs he was matched with shortly thereafter were each better.

Everybody was worried about their jobs. Most were worried about a job they didn't like.
President, Financial Services

What everyone told me was that you would be in a better spot. That certainly helped me. You get caught in the inertia. Coming back to [major city] was a huge personal and professional upgrade. Going through the process [expletive deleted]. For some people, it's awesome. Suddenly someone pays them to get out of a bad situation. End result, people are going to be fine. Can't say that to victims. *Senior Manager, Wholesale Trade*

Devine, Reay, Stainton, and Collins-Nakai (2003) surveyed 667 health care workers in Canada after an enormous downsizing where 17 percent of the health facility budget in the region was cut. They concluded that "victims" (who secured jobs elsewhere) "actually fare better" than those who kept their original jobs.

INTERNATIONAL WORKERS

Most of the managers I interviewed work for firms that have operations internationally. I wondered about differences with international workers and whether things were more difficult. Many of the managers understood this to mean workers working in units outside of the United States. Others interpreted this as non-U.S. workers working in the United States. For the group that considered workers in other countries, most all felt it was simply "harder" to lay workers off elsewhere. There were some examples, however, typically in a few countries, where it was somewhat easier.

In Other Countries

Most of the managers felt that it was considerably more difficult to make layoffs outside of the U.S. than inside of the U.S. See Carabelli and Tronti (1999) for an introduction and review of papers discussing management redundancies in Europe and Van Audenrode (1994) who discusses employment contracts in OECD countries.

It is totally different due to laws and underlying values. How people get laid off [overseas] is just totally different. *Senior Manager, High Tech*

Every other country in the world has way more restrictions. *Senior Manager, Durable Goods Manufacturing*

Yes. Much more so. Depends on the country. In Brazil, Columbia, and Latin America, dismissals are extraordinarily expensive for the firm. In Europe many countries are the same way. This makes us much more sober in terms of whether there should be layoffs. ... We are very careful in terms of adding workers. But there are significant protections on the front end. *Senior Manager, Nondurable Goods Manufacturing*

France. Germany is hard. Italy is really hard. Asian countries are difficult. Dynamics are different. In Japan, they have to agree. Actually agreeable and publicly acceptable. On the other hand, you have a different kind of employee/employer relationship. “Obedient” employees. France and Italy are hard since you have to pay so much and it takes so long. *Senior Manager, High Tech*

[In] Europe, the laws are very different. ... If you take somewhere like Belgium – one of the most difficult places to get rid of an employee – but if you want to operate in Belgium you just have to swallow it and hire a good lawyer. I would say, when you know the rules, you manage better and reduce your potential liability, the probable cost of getting rid of people – things work better. I think risks and costs of layoffs [in the U.S.] are much greater than in the UK. *Senior Manager, Financial Services*

[The French rules] make it *so* difficult. There are other tough countries. Korea was difficult. China would be difficult but we have a relationship with the government. *Senior Manager, High Tech*

I feel like U.S. [versus East Asia⁷] laws are more complicated. For example, you must be aware of possible age discrimination in the U.S. In Southeast Asia laws are pretty straight. They just want people to be treated fairly by the big monster company. Minimum standards. In Singapore you can ask to leave and give just one month. In Indonesia there were lots of negotiations involved on a case by case basis. If there is any twist with the person there is a lot of negotiation. Usually you know the minimum standard which is very low. Most multinationals talk and benchmark. *Senior Manager, Agriculture*

You need to count California as a different country. There are a bunch of laws. *Senior Manager, Wholesale Trade*

In Australia the person has no recourse whatsoever. In France and Germany there is a lot of protection. In Belgium, it is incredible what you have to pay in severance. *Senior Manager, Durable Goods Manufacturing*

In some cases, it obviously was not clear whether it was more difficult to make layoffs in other countries since this required managers to understand the rules and customs in multiple countries, or if it was simply technically more difficult in other countries.

It was very interesting to have spoken with some managers who found it so difficult to fire workers in some countries that they have basically made the decision not to even hire in those countries any more.

It is a complete [expletive deleted]. Next time we have a chance to hire people in France ... never mind. *Senior Manager, High Tech*

Some managers found that letting workers go in other countries was “different” than doing it in the United States but that it was, in fact, easier.

There are no age or minority restrictions in [some] other places we employ workers. *CEO, Mining*

International Workers Working in the United States

Some managers interpreted my initial questions about “international” workers to mean non-U.S. citizens working for their firm in the United States.

Another side is foreign visa holders who get laid off. ... I think, technically, once they stop working, they have ten days to leave the country. It has become apparent to me that there are lots of these with expired visas still in the country. *Manager, High Tech*

Another manager recounted a story where her firm, in several instances, agreed to keep workers on the payroll (at lower pay) so that the workers could maintain their visas while they looked for a new job.

Without doubt, letting “international” workers go seems, on average, to be more difficult than letting workers go in the United States. This is for at least two reasons. The first is that when asking managers in the United States (who are most familiar with U.S. law and procedure), to compare the way things work in the U.S. versus all other countries, they are typically far more familiar with the U.S. than most any other places. The second reason is that (except for a few examples), the U.S. laws and procedures around layoffs are much more straightforward and clear, and there are fewer regulations. This seems to be particularly true, especially as compared with Europe.

Among the variables collected from the newspaper accounts of the layoff announcements was whether the job loss announcement was in an “international” or “foreign” unit of a U.S. firm. If the layoff announcement contained information about workers in Chicago losing jobs this would be coded as zero. If the article mentioned workers in London, this would obviously be coded as a 1. If workers in Chicago and London were let go, then this would also be coded as a 1. Of the 4,604 job loss announcements, this information was missing for 406 of them (about 9 percent). For the other observations, it appears from Fig. 5 that the fraction of announced layoffs that had some connection to an international unit ranged from 10 to 20 percent for each of the years from 1970 to 2000, with the exception of the years between and including 1993 and 1999. In fact, in 1995 and 1997, the fraction was over 35 percent.⁸

LABOR UNIONS

I also asked managers how they felt about labor unions around the time of job loss.⁹ That is, I was interested to know if having labor unions made the process of laying off workers “easier” or more “difficult”. My original

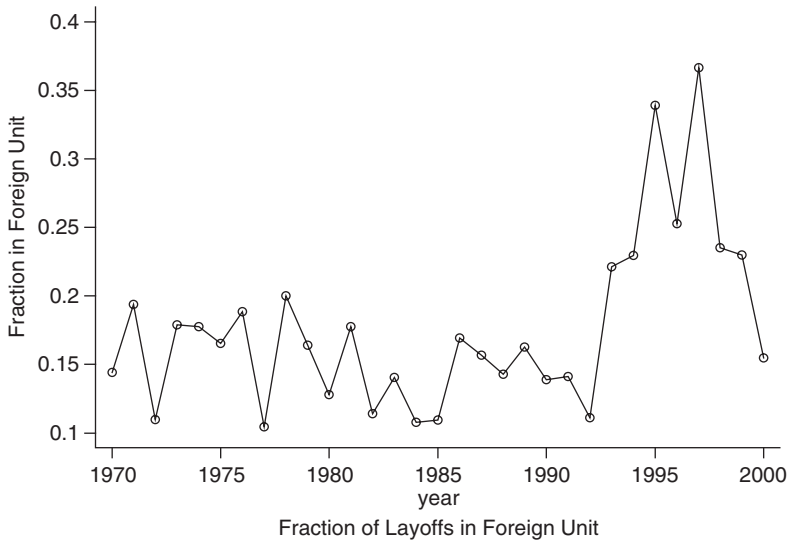


Fig. 5. Fraction of Announced Layoffs in a Foreign Unit of a United States Firm.
 Source: Archival Data for 1970–2000 Collected by the Author.

expectation was that it would be “easier” in the sense that union contracts may be more clearly laid out and that most of the layoffs would have to be done through seniority. On the other hand, I suspected that since there may be “bumping” within labor unions that the process may actually take much longer to complete. Several managers thought it was “easier to deal with unions”.

Yes. Usually it is easier. Since it is all laid out. It still is a little emotional. With a union you have we/they issues. We would tend to follow seniority, all the things being equal, even in non-union situations. *Senior Manager, Durable Goods Manufacturing*

It is much easier with unions. All you need to do is follow the collective bargaining agreement to the letter. *COO, High Tech*

I would argue that it is easier. I think there is the assumption that there is less legal risk versus any layoff in a nonunion setting. *Senior Manager, Nondurable Goods Manufacturing*

In contracts it is pretty well spelled out. It is easier to do layoffs with unions. *Senior Manager, Wholesale Trade*

On the other hand, some managers found dealing with labor unions during a layoff made the process more difficult.

There is no question that it is harder with unions. Typically when we do a layoff it is an economic reason, but that is usually a bad time to make performance distinctions. You must have a performance system in place ahead of time. *Senior Manager, Durable Goods Manufacturing*

Much harder. Much, much harder. Administrative jobs were all unionized at [former employer] ... There is deadweight that never left. Use things as a way to take out the bottom. *Senior Manager, High Tech*

I had a union at [my former employer] but it was the teamsters and I never had to do a layoff. But they would have challenged it – it would have made it more difficult. *Senior Manager, Agriculture*

Only a handful of managers felt that the union and non-union situations were identical.

Exactly the same. *Senior Manager, Nondurable Goods Manufacturing*

Well, I guess when you weigh it all, it's all the same. You never wake up and say I can't wait to tell people you are going to lose your jobs. ... Whether union or non-union they are our people. ... [Company name] is quite paternalistic. Treat them with dignity. *Senior Manager, Durable Goods Manufacturing*

Most of the managers I interviewed either did not have unionized workers in their firms or did not deal with unions directly. Of those who did have labor unions, there was a relatively even mixture between those who thought having the labor unions made the process of layoffs more “difficult” and those who thought it was “easier”.

TYPES OF WORKERS

My goal is to never terminate a good employee. *Senior Manager, Nondurable Goods Manufacturing*

It is interesting to consider who is actually laid off. Some managers seem to have the feeling that layoffs can be a “useful” way to terminate some employees who are not necessarily a good match for the firm, for whatever reason. Although this was not the majority view, some argued that in “early” layoffs at a given location, it is not particularly difficult to select those for dismissal. This is because the first few workers that are asked to leave probably should have been asked to leave anyway, but layoffs are difficult to do. Therefore, when some sort of financial pressure or other issue

arises, it is in some sense a relief for the manager as it is a simple way to remove some workers who are not well matched for the firm.

In anybody's initial layoff, the people who are fired could have been anyway. The first few are easy. *Senior Manager, High Tech*

There has also been recent discussion of the potential increase in white-collar or salaried workers losing their jobs, relative to blue-collar workers. In fact, the number of news stories related to job loss increased dramatically in the early to mid-1990s (even after the recession) as compared with the mid to late 1980s (Farber & Hallock, 2003). Some have hypothesized that this is, at least in part, due to the fact that as more white-collar workers are being laid off, there is increasing attention from the media (also white-collar workers).

Using the archival data on all of the layoffs from the *Wall Street Journal*, I examine whether the relative fraction of white-collar (or salaried) workers who are let go has increased relative to blue-collar (or hourly) workers. The data on layoffs were categorized by occupation type and compensation type. For occupation type, news stories about layoffs were categorized so that it was clear whether white-collar workers, blue-collar workers or both were involved in the layoff. Unfortunately, this variable is missing for a great majority (81 percent) of the observations. This rate of missing data is fairly constant over the 31 years of the sample. Of the remaining 19 percent of the sample for which I have complete data, 40 percent were categorized as white-collar, 25 percent were categorized as blue-collar, and 35 percent as both. Interestingly, as can be seen in Fig. 6, the fraction categorized as white-collar increased quite dramatically starting in the early 1980s and through to the early 1990s where it has seemed to have stabilized.

As with international workers, this may be due to an overall increase in white-collar workers in the labor force. In order to see this more clearly in Fig. 7, I plot the fraction of layoffs including white-collar workers on the right-hand axis. On the left-hand axis, I plot the fraction of all workers in the Current Population Survey outgoing rotation group files who are white-collar in each year from 1979 to 2001.¹⁰ It is clear that this has also increased steadily over the past few decades.¹¹ Furthermore, Farber (2003) notes that "while the least educated workers continue to have the highest rates of job loss, there appears to have been a secular increase in the job loss rates of college educated workers from the early 1990s onward".

I have also examined the fraction of the articles attributable to salaried workers, hourly workers, or both types. In this case the data are missing for 76 percent of the observations. For the remaining cases, 25 percent are

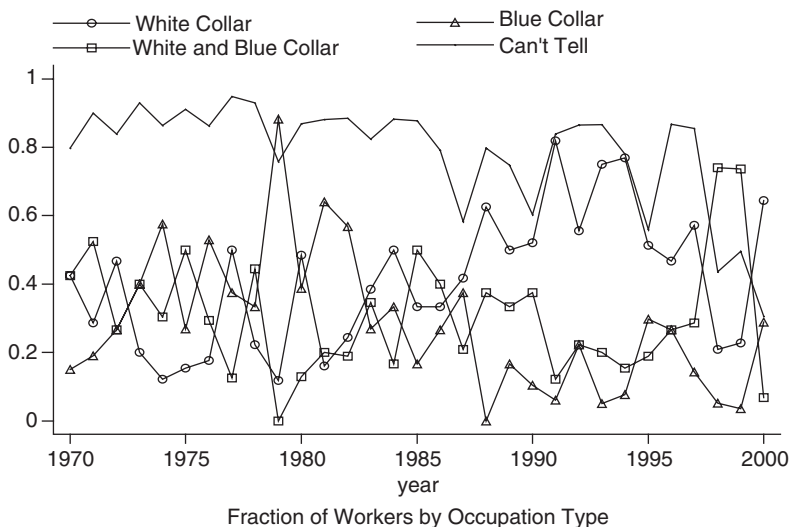


Fig. 6. Fraction of Workers by Occupation Type. *Source:* Archival Data for 1970–2000 Collected by the Author.

associated with salaried workers, 35 percent to hourly, and 40 percent to both. As seen in [Fig. 8](#), this case is also consistent with the idea following [Farber and Hallock \(2003\)](#). The fraction attributable to salaried workers began a dramatic rise in either the early or mid-1980s up through the mid-1990s.

CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

[Kammeyer-Mueller et al. \(2001\)](#) outline a careful review of the literature on job loss from a stakeholder perspective. This paper is aimed at trying to investigate six issues related to job loss by specifically focusing on the *firm*. It uses two entirely separate sources of data to try to document the kinds of layoffs and characteristics of layoffs in large firms in the United States from 1970 through 2002 and to consider how and why firms make layoffs. The first set of data is from detailed summaries of each layoff announcement by any firm ever in the Fortune 500 from 1970 through the end of 2000 that

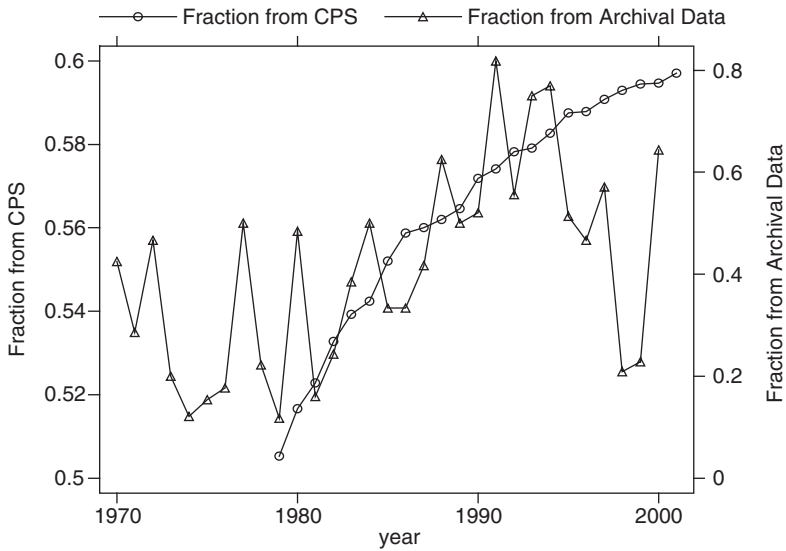


Fig. 7. Fraction of White-Collar Workers in Archival Data and in the Current Population Survey Outgoing Rotation Group Files. Source: Archival Data for 1970–2000 Collected by the Author. Outgoing Rotation Group Files from Current Population Survey, 1979–2001.

was reported in the *Wall Street Journal*. The second set is from detailed interviews in 2001 and 2002 with 40 managers (HR managers, COOs, CEOs etc.) of very large (for the most part) U.S. firms. Combining both methods was the only way to answer the set of questions posed here.

I investigated six main areas related to layoffs in order to develop a unique picture of layoffs in the United States: timing of layoffs, reasons for layoffs, the actual execution of layoffs, international workers, labor unions, and the types of workers by occupation and compensation category. However, I concentrated most of the discussion on the first three. Managers have differing views about when layoffs should take place within the week. In the archival data, more layoffs are announced on Friday than any other day, and this has kept up over time. Also, in the interviews, many managers seem to find making layoffs near the “holidays” distasteful. However, there are certainly more layoffs actually announced in the final calendar quarter of the year than in the middle two quarters. There has been a recent

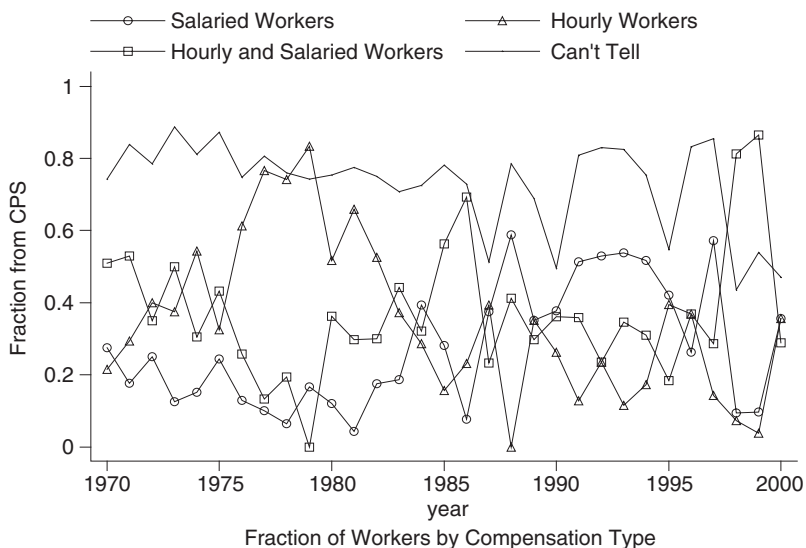


Fig. 8. Fraction of Workers by Compensation Type. *Source:* Archival Data for 1970–2000 Collected by the Author.

explosion in layoffs that are described for the reasons of “reorganization or restructuring” in recent years. Also, while there is some variation in the beliefs of managers about how they feel about the reported “reasons” for layoffs, most feel that the news that is reported in the business press is most of the truth but not all of it. This paper also spent considerable time describing how layoffs are actually executed, including safety and security issues, and how to deal with “survivors” of layoffs. Also, on average, most managers find it considerably more difficult to lay off workers in other countries than in the U.S. At the same time there has been recent growth in the fraction of workers being let go who are in foreign units of U.S. companies. Finally, although there are many missing observations, there seems to have been a dramatic increase in the relative fractions of layoffs associated with white-collar (relative to blue-collar) workers and salaried (relative to hourly) workers.

Perhaps an interesting area for future work is to consider how layoff experiences vary by industry (Table 3 displays the frequency distribution of layoffs by industry overall and for each of the three decades). Experiences with the layoffs, the procedures used, the reasons for the layoffs, and the

Table 3. Distribution of Industries for Announced RIFs over Time.

	All Years (1970–2000)	1970s	1980s	1990s
Agriculture	4	0	0	3
Mining	58	16	28	14
Utilities	37	5	9	19
Construction	1	1	0	0
Wholesale trade	43	20	13	9
Retail trade	105	29	24	45
Transportation and warehousing	30	1	5	21
Information	230	9	74	137
Finance and insurance	132	7	39	81
Real estate and leasing	14	3	9	2
Professional, scientific, and technical	58	6	13	38
Administration and support, waste management	2	1	0	0
Accommodation and food services	3	1	0	2
Other services (except public administration)	9	1	0	8
Health care and social assistance	4	0	1	1
Unclassified establishments	120	54	42	23
Food manufacturing	117	46	31	38
Beverage and tobacco production	31	18	7	5
Textile mills	42	12	15	9
Apparel manufacturing	29	11	4	13
Leather manufacturing	10	0	1	9
Wood product manufacturing	20	8	7	4
Paper manufacturing	128	67	35	25
Printing and related	4	0	0	3
Petroleum and coal manufacturing	54	7	30	16
Chemical manufacturing	298	115	116	66
Plastics and rubber manufacturing	99	47	38	11
Nonmetallic mineral production	32	7	19	6
Primary metal Manufacturing	228	93	100	33
Fabricated metal manufacturing	56	19	19	16

Table 3. (Continued)

	All Years (1970–2000)	1970s	1980s	1990s
Machinery manufacturing	220	69	111	38
Computer and electronic manufacturing	340	87	121	124
Electronic equipment, appliance and computer manufacturing	76	37	22	15
Transportation equipment manufacturing	1085	464	384	228
Furniture manufacturing	7	2	0	5
Miscellaneous manufacturing	39	4	14	19

Notes: Sum of last three columns does not equal first column for each row since the year 2000 is included in the first column but in none of the last three.

Source: Data on RIFs collected from *Wall Street Journal* from 1970 to 2000. Industry data collected as NAICS from Standard and Poor's COMPUSTAT.

types of workers affected could plausibly vary by industry. It was clear, in speaking with the managers that issues such as how to deal with survivors and using HR practices such as retention bonuses varied quite dramatically by industry. For example, in one high tech business, managers felt it unnecessary to use retention bonuses after the “bottom fell out” in their industry whereas other firms in other, perhaps, more stable industries, were equally likely to use them at all points in the business cycle. At the same time, it would be interesting to investigate issues of fairness (e.g. [Wanberg et al., 1999](#)), earnings losses (e.g. [Jacobson, LaLonde, & Sullivan, 1993](#)), and health (e.g. [Devine, Reay, Stainton, & Collins-Nakai, 2003](#)) by industry.

It is also clear that combining different research methods to investigate one common issue is potentially useful. Several of the questions in this paper could not have been answered by interviews or more standard archival data alone. I think it would be additionally useful to combine a third method with these two – a formal wide-scale survey (as in, for example, [Brockner et al., 1987](#); [Devine et al., 2003](#), and others discussed in [Kammeyer-Mueller et al., 2001](#)). Based on my own work, that of others, and the combination of archival data collections and the survey of the 40 managers, it is clear that also asking exactly the same set of very specific questions to a very large sample of managers of all types would be extremely informative. This is particularly the case when considering questions such as how the practices and experiences of laying off workers vary by industry.

NOTES

1. For example, note the idea that job loss and unemployment have been associated with psychological distress (e.g. Hepworth, 1980; Jackson, Stafford, Banks, & Warr, 1983; Grunberg, Moore, & Greenberg, 2001; Brenner, 1977). Also see Neumark (2000) and the associated papers and references.

2. Other sets of interviews or case studies related to layoffs can be seen in Gordon (1996), Illes (1996), Rudolph (1998), and *The New York Times* (1996).

3. Cappelli (2000) is an interesting and informative examination of downsizing and establishment performance.

4. This is consistent with Kammeyer-Mueller et al. (2001).

5. O'Neill and Lenn (1995) note that middle managers' anger over layoffs "was directed at top managements' willingness to accept superficial slogans to justify the harsh reality of layoffs and corporate restructuring".

6. Brockner et al. (1986) Brockner, Greenberg, Brockner, Bortz, Davy, and Carter (1986), Brockner et al. (1994) Brockner, Konovsky, Cooper-Schneider, Folger, Martin, and Bies (1994), Caplan and Teese (1997), Ambrose (1996), and King (1996) also discuss survivors of job loss.

7. See Godement (1999) for an account of job loss in Asia.

8. Of course, this just may mean that there are more international workers in these firms over time.

9. Bennett, Martin, Bies, and Brockner (1995) discuss coping by workers around job loss in a unionized setting.

10. Workers were defined to be white-collar if in the years 1979–1982 their two-digit occupation codes were 1–17 and in the years 1983–2001 their three digit occupation codes were between 3 and 199 inclusive or between 203 and 289 inclusive.

11. It is clear in Fig. 7 that these two variables are measured on substantially different axes. Recall that the archival data are for layoff announcements that include white-collar workers among those let go. The Current Population Survey (CPS) data are for individual workers.

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APPENDIX. BROAD AREAS FOR QUESTIONS TO 40 MANAGERS IN THE STUDY

1. Tell me a little bit about your most recent layoff. Do you have any hard and fast rules?
2. Why do firms make the announcements? Are the stated reasons in WSJ related to actual reasons?

3. Do the layoffs actually happen? They are announced but do they actually happen? Is there an idea to announce more so do not have to go back and announce more?
4. Do firms have incentives to make announcements at certain times? Is there gaming of the timing of announcements?
5. Who is laid off? How is that decision made? Who makes the decision?
6. What happens to survivors? Is there anything the firm provides for them?
7. Are people ever hired back? What about those with historical human capital (specific capital)?
8. What happened to your stock price after your most recent layoff?
9. Are your workers ever offered a choice of lower pay or layoffs?
10. Were these people surprised when they were asked to leave?
11. Are there any differences with international workers?
12. Have you had to deal with unions? Would you treat anything differently?
13. Do you have a legal staff that deals with layoffs? Are you concerned about impacts on particular groups women/older workers?
14. Are there particular severance benefits or outplacement services you provide?
15. How is the layoff actually executed? Do you send them right out door? Is there a safety or security issue? Is someone from HR involved?
16. Do you ever use consultants or have you used consultants to help with your layoffs?
17. Is there anything else about the layoffs in your firm or in other firms you have been with that you think might be important?

COMPARING VIRTUAL TEAMS TO TRADITIONAL TEAMS: AN IDENTIFICATION OF NEW RESEARCH OPPORTUNITIES

Jane Webster and D. Sandy Staples

ABSTRACT

A growing body of literature exists on virtual (i.e., geographically dispersed) teams; however, few summaries of this knowledge are available. The purpose of this paper is to help fill this gap by reviewing empirical research that addresses the effectiveness of virtual versus traditional (i.e., co-located) teams. Based on the typical input-process-output model of team effectiveness, we classify almost 200 empirical studies on virtual teams according to key dimensions of the model, including tasks and group characteristics, contextual factors, and supervisory behaviors. We develop propositions to address neglected research areas regarding the differences between virtual and traditional teams. There is still much to learn about virtual teams and how the physical dispersion of team members affects team effectiveness. It is our hope that our review and propositions will guide future research efforts and will help human resource professionals realize the potential for distributed teams in their organizations.

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INTRODUCTION

Many organizations use virtual teams to enhance the productivity of their employees. These teams are becoming more prevalent in organizations due to inter-organizational alliances, globalization, outsourcing, and alternative work arrangements, such as job sharing and telecommuting (Saunders, 2000). Information technology can support team members' activities by saving travel costs, enabling expertise to be captured where it is located and speeding up team processes. For instance, one study estimated the savings from collaborating electronically rather than face-to-face: over 123 days, the project team saved between 10 and 23 days using information technology tools (May & Carter, 2001).

Virtual work is becoming as common as face-to-face work (Morello, 2005). A significant body of empirical research on virtual teams accompanies this growth in virtual work. Unfortunately, most research has focused on student teams, and there are few studies comparing virtual and traditional teams for employees (Martins, Gilson, & Maynard, 2004). In order to maximize functioning of virtual teams in these distributed settings, organizations want to know what team members need from each other, their leaders, and their organizations (Weekes, 2005). Thus, an important research question for organizations is whether employees in virtual teams function similarly to those in traditional teams.

Although a growing body of literature on virtual teams exists, few published summaries of this knowledge are available: papers by Bélanger, Watson-Manhein, and Jordan (2002), Dube and Pare (2004), Furst, Blackburn, and Rosen (1999), Martins et al. (2004), Powell, Piccoli, and Ives (2004), Saunders (2000), and Saunders and Ahuja (2000) are notable exceptions. However, most of these papers do not compare virtual teams with traditional teams and few develop propositions to guide future research. For instance, Bélanger et al. (2002) examine mostly individual virtual work, rather than team virtual work, in a restricted number of journals and only for a few years. In contrast, the purpose of this paper is to synthesize virtual team research and develop propositions to guide future research.

The paper is organized as follows. First, we define the term *virtual team* and distinguish it from related concepts. Next, we present the methodology used to identify empirical articles on virtual teams and the model used to classify the articles. We then review empirical research on virtual teams, and develop propositions for areas in which virtual teams potentially differ from traditional teams. We conclude by suggesting implications for research and practice.

DEFINING VIRTUAL TEAMS

We define virtual teams as groups of individuals who work together in different locations (i.e., are geographically dispersed), work at interdependent tasks, share responsibility for outcomes, and rely on technology for much of their communication (Cohen & Gibson, 2003).¹ Virtual teams were originally conceptualized as “fully” virtual, in contrast to face-to-face (“traditional” or co-located) teams (Griffith & Neale, 2001). Researchers have since viewed virtuality as a continuum, arguing that many teams in organizations today are characterized by dimensions of virtuality (e.g., Griffith, Sawyer, & Neale, 2003b).

Virtual teams are most often constructed because organizations require skills, local knowledge, experience, resources, and expertise from employees who are geographically distributed. Therefore, virtual teams in organizations are more diverse in general than traditional teams because of geographic differences (Griffith et al. 2003; Hinds & Bailey, 2003; Mortensen & Hinds, 2001, 2002). That is, these location differences translate into other, related differences such as organizational subcultures, nationalities, skills, perspectives, values, and goals that help create greater diversity in virtual teams.

The make-up of virtual teams can vary greatly, ranging from those with members in various locations (and, increasingly, in various time zones), to those with some co-located members and some distributed members (working from offices or from home), to those with members who work either temporarily or permanently for the same organization, and to those with stable or more fluid group membership (Saunders, 2000). Thus, researchers have proposed many dimensions of virtuality, including the number of sites over which the team is spread, travel time between the sites, number of members per site (i.e., isolation), balance of people per site, separation distance, time zone overlap or lack thereof, and proximity to high-status team members, managers, and corporate headquarters (O’Leary & Cummings, 2002). For example, Griffith et al. (2003) suggest three dimensions of virtuality, physical distance, level of technology support, and percentage of time apart on task; Lu, Wynn, Chudoba, and Watson-Manheim (2003) propose “discontinuities” of virtual work, including geography, temporal, cultural, work practices, organization, and technology; and Kirkman and Mathieu (2004) identify three dimensions, the extent of technology use, the richness of the technologies, and the synchronicity of team interactions.

In contrast to these multiple dimensions of virtuality, Hinds and Bailey (2003) contend that all dimensions derive from either distance or technology

mediation. However, they note that only distance is unique to distributed teams because technology mediation may also be experienced by traditional teams. This is because co-located groups in organizations may depend on technology mediation as much as distributed groups do (e.g., Mortensen & Hinds, 2001) and the possibility of pure virtual teams that make no use of technology exists (Griffith et al., 2003). Thus, we propose that all dimensions of virtuality actually derive from distance and consequently our definition of virtual teams hinges on the geographic dispersion of team members.²

REVIEW OF EMPIRICAL RESEARCH ON VIRTUAL TEAMS

As described above, our definition of virtual teams is based on the geographic dispersion of team members. Therefore, when selecting studies on virtual teams for our review, we included any studies that reported empirical results regarding the effectiveness of a team of people working together on an interdependent task who had at least one team member in a different location than the rest of the team.

Methodology

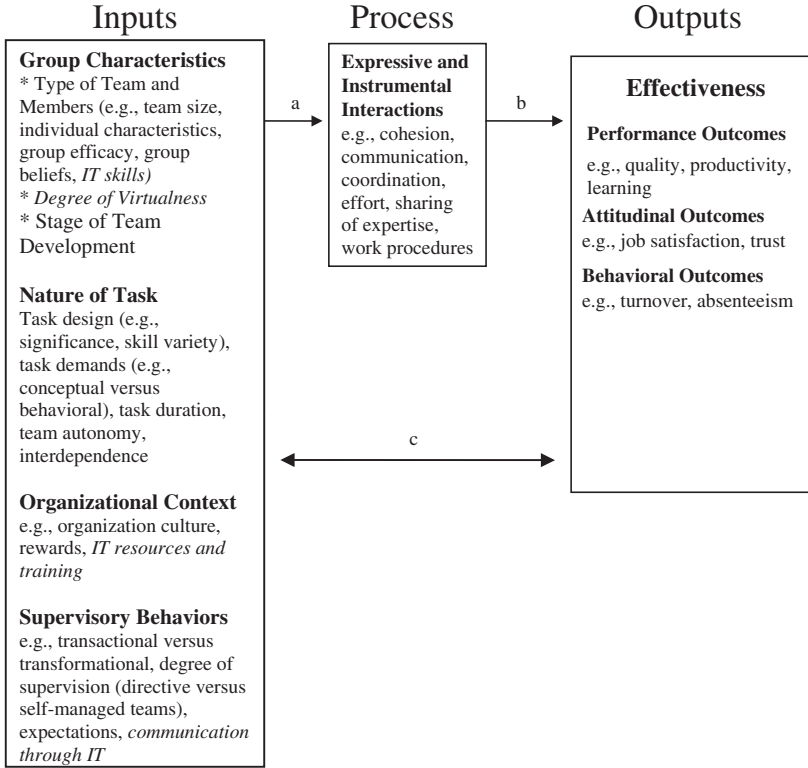
We used several methods to locate empirical studies on virtual teams. Our first source of articles was through searches of the PsycINFO and ProQuest electronic databases. These databases cover many organizational and business journals and periodicals, as well as dissertations. For example, ProQuest covers approximately 1,800 worldwide business periodicals from 1971 to the present time. We used several key words in our searches (*virtual*, *distributed*, *dispersed*, *global*, and *remote* combined with *team* and *group*) to cover the various labels put on virtual teams. Since conference proceedings are not comprehensively covered in the electronic databases of PsycINFO and ProQuest, we also searched conferences held by the Society for Industrial and Organizational Psychology, the Academy of Management, the International Conference on Information Systems, the Americas Conference on Information Systems, the Association for Computing Machinery, the Hawaii International Conference on System Sciences, and Computer Supported Cooperative Work. Given that research in virtual teams is in a relatively young phase, we felt it was appropriate to include peer-reviewed

research that had not come out in print yet. We also searched two Web sites focused on virtual team research, VoNet and virtualteamsresearch.org, five collections of articles on virtual teamwork (Beyerlein, Johnson, & Beyerlein, 2001; Gibson & Cohen, 2002; Godar & Ferris, 2004; Hinds & Kiesler, 2002; Pauleen, 2004), and an annotated bibliography (Sessa, Hansen, Prestridge, & Kossler, 1999). Finally, we did a general Web search using the meta-search engine Google.

As articles were identified, they were read by one author to determine if they met our inclusion criteria (i.e., the paper reported empirical findings on geographically distributed teams relevant to some aspect of team effectiveness). Upon review, we noted that many of the articles did not include empirical results although they offer good insights (e.g., Townsend, DeMarie, & Hendrickson, 1998). Other articles that did include empirical results did not meet our criteria. For example, they did not describe relationships or look at team effectiveness (e.g., Boutellier, Gassman, Macho, & Roux, 1998), they did not include any distributed teams but made comparisons of face-to-face with computer-mediated teams meeting in the same room (e.g., Straus, 1996), or they focused on individuals rather than on groups (e.g., Finholt, Sproull, & Kiesler, 2002). We did examine the references lists in these articles, though, along with those in the empirically based papers that fit our criteria, to identify additional studies. To enhance the reliability of the categorization of the articles, one author and a research assistant read each of the articles.

A categorization scheme was developed to summarize the articles. We developed our scheme based on a model of team effectiveness from the existing body of knowledge on traditional teams and groups.³ In contrast to virtual teams, traditional teams are co-located and have easy access to both face-to-face and electronic communication. These teams have been formally studied for more than half a century, resulting in thousands of studies and a huge body of literature (Guzzo & Shea, 1992). Fortunately, several reviews of the knowledge in this field already exist (e.g., Bettenhausen, 1991; Cohen, 1994; Cohen & Bailey, 1997; Guzzo & Shea, 1992; Holland, Gaston, & Gomes, 2000; Marks, Mathieu, & Zaccaro, 2001; Yeatts & Hyten, 1998) and we used those to develop the model.

The categorization scheme drew from the model illustrated in Fig. 1. An inputs-process-outputs model based on McGrath's (1984) perspective is the dominant way in the literature of thinking about group performance (Guzzo & Shea, 1992; Martins et al., 2004). Inputs refer to things that group members bring to the group, as well as the context in which the group operates. Main inputs are task design, group characteristics, organizational context,



* Adapted from traditional team frameworks (e.g., Cohen, 1994; Cohen & Bailey, 1997; Marks et al., 2001; Yeatts & Hyten, 1998) and extended (variables in *italics*) based on research on individuals working virtually (through telecommuting or distributed work)

Fig. 1. Model of Team Effectiveness.

and supervisory behaviors. Process refers to “members’ interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals” (Marks et al., 2001, p. 357). These interdependent acts among group members are often categorized into either expressive (interpersonal) or instrumental (work) interactions (Guzzo & Shea, 1992). Expressive interactions are affective or socio-emotional, such as showing antagonism or affection, being dependent or asking for support. Instrumental interactions are task-related, including seeking information and making suggestions. Outputs

refer to team effectiveness and include things such as performance, the satisfaction and attitudes of group members, and their behavioral outcomes.

Past models of traditional team effectiveness do not attempt to encompass virtual team members. Therefore, we extended the traditional team models to virtual teams by examining other research on virtual work, specifically research on individuals (see the italicized variables in Fig. 1). We drew on Pinsonneault and Boisvert's (2001) review of individual virtual work to suggest several variables of particular importance to virtual teams that should be included in the model. First, being able to effectively use IT (information technology) is crucial for both team members and their supervisors since communications rely heavily on electronic media. Second, the amount of face-to-face contact possible through periodic meetings has important implications for virtual team functioning (degree of virtualness). Third, virtual teams need both IT resources and training and virtual team training. Finally, effective supervisory communication and modeling of appropriate behaviors through IT are particularly helpful for virtual team functioning. Given these findings, we have extended the traditional models of group effectiveness to include variables of particular importance to virtual teams.

Based on the team effectiveness model, we developed a categorization process and summarized each article (see the table in the appendix). Consistent with Fig. 1, we define the input variables (including type of team studied, degree of virtuality, nature of task, technology used, stage of team development, and organizational context), the type of study and analysis method, the variables measured, and the findings.

Our search efforts resulted in 188 empirical papers that met our criteria (appendix contains the complete references for these papers). Of these papers, some report on the same dataset; in total, we found 176 unique datasets. Many of these papers are highlighted in the review that follows. We start with an overview of the body of knowledge found. A more detailed discussion of the findings is then provided for each set of input categories and their effects on team processes and team effectiveness. Propositions are developed to guide future research by focusing on areas in which we expect virtual teams to be potentially different from traditional teams.

An Overview of the Current Virtual Team Literature

When reviewing the empirical literature, we saw an encouraging trend from older studies that examined simulated teams of students toward more recent

investigations of ongoing employee teams. Of the 176 empirical studies, 105 investigate university students, 64 investigate employees, 6 investigate both students and employees, and 1 does not indicate the type of participant. However, the student teams differ in many ways from the employee teams. The majority of student teams were ad hoc, temporary groups. Of the 105 teams, students in 87 participated for course credit or monetary rewards, 65 were located at one university, and 76 were located in one country. The majority of these were experimental studies (88), with 53 of the studies being cross-sectional. Fifty-seven of the studies included a comparison group of face-to-face teams or assessed the degree of virtuality. Regrettably, the type of student team (co-located versus virtual) was often confounded with the type of technology – that is, co-located teams would often only meet face-to-face and had no technology support, while the virtual teams would often meet through only one type of electronic communication technology (however, as described earlier, both co-located and distributed employee groups typically use a bundle of electronic communication technologies). Further, when the virtual student teams were located at the same university as their co-located teams, we would expect similar levels of diversity in both types of teams; this again varies from virtual employee groups – in which individuals are often brought together because of their differing backgrounds and skills. These dissimilarities result in many student studies being limited in terms of making inferences to organizational teams.

In contrast to the student teams, the organizational studies generally investigate pre-existing, ongoing groups. Of the 64 employee team studies, 44 had members in multiple countries and 32 represented teams from one organization. A variety of methods was used (e.g., 19 case studies, 15 surveys, 19 with multiple methods, etc.). Twenty-five of the studies include a comparison group of face-to-face teams or assess the degree of virtuality of the teams and 31 are longitudinal. The employee studies avoid the technology confound often found in the student studies, since the same technologies are generally available to the virtual and face-to-face teams.

Examining Fig. 1 across both student and employee teams, we found that about two thirds (110) of the studies examine the *a* link (from inputs to process), about one quarter (45) examine the *b* link (from process to outputs), and more than half (87) examine the *c* link (from inputs to outputs). We found no studies that explicitly explore feedback links (from outputs to inputs). The most frequently studied variable relates to team virtuality (85 studies). One set of 14 studies explores the degree or extent of virtuality in teams. However, rather than the degree of virtuality, most studies compare co-located with distributed teams (see appendix for more details on each

study). As described earlier, many of these suffer in terms of external validity as they generally involve students in temporary groups.

One could argue that this model (see Fig. 1) would be equally appropriate for traditional and virtual teams. In support of this, some suggest that the distinction between traditional and virtual teams is no longer needed, as all types of teams in organizations today are characterized by degrees of virtuality, including physical distance, technology support, and time spent apart (Griffith et al., 2003). And, the input–process–output relationships found for traditional groups are generally supported in virtual teams. For instance, consistent with traditional team research, virtual team research demonstrates a positive relationship between a team's processes and its performance (e.g., Hause, Last, Almstrum, & Woodroffe, 2001; Iacono & Weisband, 1997; Knoll & Jarvenpaa, 1998; Lurey & Raisinghani, 2001; Weisband, 2002), satisfaction (e.g., DeSanctis, Wright, & Jiang 2001; Lurey & Raisinghani, 2001; Piccoli, Powell, & Ives, 2004; Ratcheva & Vyakarnam, 2001), and trust (e.g., Ishaya & Macaulay, 1999; Jarvenpaa & Leidner, 1999). However, as described below, we propose that the strength of many relationships in the model will be moderated by the type of team, that is, traditional versus virtual. Next, we summarize the empirical virtual team research and suggest propositions to guide future research where we expect the type of team to act as an important moderator.

Group Characteristics

Types of Teams and Team Members

Several studies examine the relationship of team members' attitudes, skills, and abilities to performance. For example, integrity and propensity to share are significant predictors of trust (Jarvenpaa, Knoll, & Leidner, 1998), interpersonal skills are positively related to team effectiveness (Knoll & Jarvenpaa, 1998; Staples & Cameron, 2004), time management skills are important for success (Larsen & McInerney, 2002), individuals' communication centrality relates to their team roles and status (Ahuja, Galletta, & Carley, 1999), and virtual team members use and are more accepting of computers than face-to-face team members (Yager, 1999).

A few studies address team beliefs and norm development, finding that virtual team members with higher trusting beliefs cooperate more than those with lower beliefs (Galvin, Ahuja, & Agarwal, 2000; Galvin, McKnight, & Ahuja, 2001) and that those with stronger beliefs in the group's efficacy are

more motivated, committed to, and satisfied with their teams (Staples & Cameron, 2004). These results are consistent with those from traditional teams – however, team norms and conventions are more difficult to develop in distributed groups (Mark, 2002).

Diversity in team member characteristics can also affect team processes and outcomes. Virtual teams may be created to access diverse and superior talent, but along with diversity can come different values, cognitive schemas, and behaviors (Hambrick, Canney Davison, Snell, & Snow, 1998). Diversity may be directly observable (e.g., gender, race, or age) or not immediately observable (e.g., values or skills). For newly formed traditional teams, directly observable diversity is more likely to be noticed than less detectable attributes like values (Acar, 2004). Visible diversity is more likely to result in prejudiced or stereotypical responses than diversity that becomes gradually apparent (Milliken & Martins, 1996). This discernable diversity is more likely to trigger categorization, resulting in misunderstandings and discord (Pelled, 1996; Swann, Polzer, Seyle, & Ko, 2004; Van der Vegt, Van de Vliert, & Oosterhof, 2003). Further, the more directly observable diversity there is in a group, the more likely it is that dissimilar team members will be absent or leave the team (Milliken & Martins, 1996).

Little research has explicitly studied the issue of observable diversity within virtual teams. Exceptions include a study finding that the negative effects of ethnic diversity on creativity were ameliorated in computer-mediated (as compared to face-to-face) groups (Bhappu & Giambatista, 2004) and another demonstrating that virtual team members do not accurately perceive the gender of their partners (Nowak, 2003). We suggest that the observable diversity warrants attention because this type of diversity is generally less apparent with virtual teams (unless the teams depend on videoconferencing). We know from traditional group research that diversity that is low in observability, but high in information, positively affects task performance (Pelled, 1996). As Bhappu and Giambatista (2004) suggest for computer-mediated communication, “reduced social cues siphon out enough surface-level diversity to allow for the cognitive value of deep-level diversity to manifest” itself, shifting “the attention of individual team members away from social status and towards information differences that have more relevance to decision-making tasks”. Thus, in virtual teams, the development of shared mental models will not be as adversely affected by observable diversity as for traditional teams (Maynard, 2004). Consequently, due to less visible diversity among team members, we may see fewer biased reactions in virtual teams than in traditional teams, resulting in fewer process losses and less absenteeism and turnover. Fewer biased responses

should translate into more positive performance benefits for virtual teams than for traditional teams. Thus, we propose that:

Proposition 1. The type of team (virtual versus traditional) moderates the relationship between directly observable diversity and team processes and outcomes. Specifically, teams with more directly observable diversity function more effectively in a virtual setting than in a traditional, co-located setting.

Few studies have examined personality characteristics of virtual team members (such as the standard “Big 5” characteristics of extroversion, openness to experience, conscientiousness, agreeableness, and neuroticism). Extraversion has been studied the most, demonstrating that virtual teams with higher extroversion result in more effective team interactions (while teams with higher variance in extroversion demonstrate more passive interactions) but no differences in performance (Balthazard, Potter, & Warren, 2002). We suggest that openness to experience will also be important to consider for team functioning. Although we did not find any existing virtual team studies of this characteristic, it may be crucial to consider. Specifically, individuals who are more open to experience appreciate variety and intellectual stimulation and are better at grasping new ideas and adapting their own ideas (Costa & McCrae, 1988). Team members open to experience may be more willing to recognize and understand the differences among team members and use this to their team’s benefit.

In traditional teams, access to computer-mediated communication improves decision-making performance for teams that are more open to experience (Colquitt, Hollenbeck, Ilgen, LePine, & Sheppard, 2002). This may be because greater openness to experience relates to learning proficiency, and teams with members who are more open to experience are able to learn the comparative strengths and weaknesses of verbal and computer-mediated communication more quickly (Colquitt et al., 2002). However, virtual teams must depend more than face-to-face teams on computer-mediated communication out of necessity, and thus we expect openness to be an important determinant of virtual team performance. We suggest that because team members are distributed, depend on communications technology, and need to learn new ways of working together, high openness to experience would help team members cope better with virtual work. Specifically, we propose the following:

Proposition 2. The type of team (virtual versus traditional) moderates the relationship between team openness to experience and team performance.

Specifically, the relation between team openness to experience and performance is stronger for virtual teams than for traditional teams.

Stage of Team Development

Few studies examine the stage of virtual team development. In contrast, most of the studies look at short-term project teams and do not study teams over time. Exceptions include an eight-month study of organizational teams demonstrating the challenges to virtual team development (Furst et al., 2004), a three-month study of students finding that the storming stage was skipped in virtual teams, and a month-long study of online newsgroups showing that development patterns are similar to those in face-to-face groups (Bordia, DiFonzo, & Chang, 1999). Only one study explicitly varied the stage of team development: no differences were found in the solution quality between highly developed and less-developed teams, but the less-developed teams' solutions were more creative, although team members were less satisfied with the process and solution (Ocker, 2001).

Communication patterns change throughout virtual team stages, starting with unidirectional communication, and ending with mutual communication (Sarker, Lau, & Sahay, 2001). Consequently, new virtual groups exchange information less effectively than do new face-to-face groups (Hightower et al., 1998). However, some research suggests that differences between face-to-face and distributed groups tend to be minimized over time as computer-mediated groups adapt to the technology (Hollingshead, McGrath, & O'Connor, 1993; Walther, 1997). Over time, teams develop more effective communication processes (Burke, Aytes, Chidambaram, & Johnson, 1999) and differences between face-to-face and distributed teams in cohesion (Burke, Aytes, & Chidambaram, 2001) and centralization of task participation (Berdahl & Craig, 1996) tend to disappear. Some even suggest that ongoing virtual groups can be more effective than face-to-face groups since they carry out more task than social communication (Hightower et al., 1998).

Team duration relates to other group processes and outcomes as well. For example, one study finds that virtual teams with longer duration and more tasks demonstrate higher affection for their team members than teams with shorter duration and fewer tasks (Walther, 1997). Just the anticipation of future interactions can affect relational communication in virtual teams (Walther, 1994). Another study demonstrates that long team history has positive effects on information sharing in both virtual and face-to-face teams (Hightower et al., 1998). However, virtual teams take longer to develop shared mental models (Maynard, 2004).

Some of the results above suggest that the amount of time a team works together may be an important variable to examine. Do virtual teams become more like face-to-face ones over time? We propose that team duration influences the amount of time team members have to interact, the perceived benefits of investing in and building social and working relationships, and members' satisfaction and commitment to the team. When team members know that they will be working together for a long time, they may be more willing to make an effort to understand members who are not like them. Thus, teams existing for longer periods of time have the opportunity to develop more effective group processes. Over time, increased interactions and efforts to understand other team members minimize the negative effects of process losses due to diversity. In contrast, when teams have a short lifespan, members may be less committed to investing the time and energy required to understand others' diverse perspectives, ideas, and situations. With a short-time horizon, it is easier for one team member to ignore another member.

As previously reviewed, certain aspects of team diversity decrease over time, as team norms develop and people become familiar with each other and their work contexts. Familiarity makes categories less salient and the relation between diversity and conflict weakens (Pelled, 1996). For instance, new multinational teams are susceptible to the drawbacks of diversity, but develop trust and rapport over time (Hambrick et al., 1998). Similarly, initial difficulties with virtual communication may decrease over time, such that virtual teams can communicate more effectively, at least in terms of task focus (although social communication may still suffer). As time goes by, virtual team members develop ways of working, and their team values, team identity, and expectations begin to align. However, the diversity of skills and resources does not decrease, which can lead to greater productivity. Over time, the process losses decrease, such that the net benefits of the diversity increase. Thus, we propose the following:

Proposition 3. The type of team (virtual versus traditional) moderates the relationship between team duration and group processes and outcomes. Specifically, in the short term, virtual teams experience more negative group processes and outcomes than do traditional teams; however, in the long term, these differences disappear.

Nature of the Task

Only 20 virtual team studies explicitly examine the effect of varying the nature of the task on team effectiveness. Of these, some find results

consistent with traditional team research, such as positive relationships between both task autonomy and significance with team members' attitudes (e.g., Staples & Cameron, 2004). Unlike traditional team research, little virtual team research examines task types, such as McGrath's (1984) generative, intellectual, judgment, and negotiation tasks. Those studies examining task types demonstrate mixed findings, showing that: generative tasks are more appropriate for virtual teams while intellectual tasks are more effective for face-to-face teams (Daly, 1993); there are no differences between virtual and face-to-face teams for intellectual tasks (Tan, Wei, Sia, & Raman, 1999); teams performing a judgment task and using anonymous group support tools to communicate are considerably less polarized than are face-to-face teams, with little difference in polarization for an intellectual task (El-Shinnawy & Vinze, 1998); and intellectual and negotiation tasks are not optimal for virtual teams in the short term, but differences between face-to-face and virtual teams disappear over time (Hollingshead et al., 1993).

Several studies help to shed light on the nature of the task by examining task interdependence. These studies point to the positive benefits of interdependence, relating higher interdependence to team effectiveness (Hertel, Konradt, & Orlikowski, 2004) and to agreement on who is part of the team (Mortensen & Hinds, 2002). In contrast, other studies suggest that work tasks tend to evolve into more loosely coupled arrangements in a virtual work setting, due to the limitations of the communications technology to support tight coupling (Olson & Teasley, 1996; Ramesh & Dennis, 2002).

Although the virtual team research on tasks is limited and somewhat mixed, the findings imply that specific tasks may be more appropriate for virtual team work than other types of tasks and that this may vary depending upon the amount of time members have been working together. Specifically, independent tasks reduce the need for interaction in the early life of a team but do not take advantage of synergies arising from the team's collective abilities. In contrast, interdependent tasks help to create a collective identity (Van der Vegt et al., 2003). Over time (and with appropriate technology support) virtual teams should be able to work out processes for handling interdependent tasks. That is, in order for team members to learn how to interact to reduce process losses, they should be assigned interdependent tasks that require them to step outside their comfort zones to develop shared mental maps, perspectives and language with their colleagues. However, research on traditional teams has demonstrated that interdependent tasks can lead to increased conflict.

Conflict can be detrimental to satisfaction (Jehn, 1995). Nevertheless, a moderate amount of task conflict can be beneficial to group performance

(Jehn, 1995), because conflict provides more information to complete the task (Dooley & Fryxell, 1999). For example, more productive virtual teams have exhibited more criticisms, disagreements and qualifications of members' ideas, than less productive teams (Massey, Montoya-Weiss, & Hung, 2003). For traditional teams, task conflict is most beneficial at the midpoint of the team: high-performing groups demonstrate high task conflict near the midpoint of the group when it is important to team functioning, while low-performing teams experience a dip in task conflict at this stage but high task conflict right before project deadlines when this type of conflict is most destructive (Jehn & Mannix, 2001). Thus, researchers suggest that team members should be engaged in highly interactive exchanges under low division of labor, or interdependent tasks (Acar, 2004; Ratcheva, 2004; Swann et al., 2004).

In sum, independent tasks are appropriate for virtual teams in the short term because the negative effects of diversity on processes can be minimized early in team development. In the long term, interdependent tasks allow teams to develop team norms and ways of working. As described in Proposition 3, this contrasts with traditional teams, who develop norms and ways of working more quickly. We therefore propose that:

Proposition 4. The type of team (virtual versus traditional) moderates the relationship between the type of task (independent and interdependent) and group processes and outcomes. Specifically, both types of teams are most effective (a) doing mostly independent tasks in the short term and (b) doing a mix of interdependent and independent tasks in the long term, but traditional teams become more effective with a mix of tasks more quickly.

We also propose that the amount of variety in tasks relates more strongly to virtual, as compared to traditional, team functioning. Specifically, research on traditional teams suggests that group diversity should match the level of variety in the task (Jehn, 1995). That is, information diversity is more likely to increase team performance when tasks are complex (as compared to routine) because team members need to discuss and debate competing perspectives to identify appropriate task strategies (Jehn, Northcraft, & Neale, 1999). In other words, homogeneous groups are more appropriate for routine tasks while heterogeneous groups handle non-routine tasks best (Hambrick et al., 1998). If teams with greater diversity are used for routine tasks, the diversity losses are greater than the diversity gains. In contrast, non-routine tasks can benefit from greater variety and diversity of skills and opinions; when these types of tasks are executed by teams with little diversity

the team also performs sub-optimally. Thus, because virtual teams are more diverse in general than traditional teams, we propose the following:

Proposition 5. The type of team (virtual versus traditional) moderates the relationship between routineness of the task and team outcomes. Specifically, compared to traditional teams, virtual teams are more effective for non-routine tasks and less effective for routine tasks.

Organizational Context

Few studies examine the cultural and/or reward aspects of organizational context. Consistent with traditional team research, virtual team research shows that a team's environment is an important contributor to team effectiveness (Rennecker, 2002) and effective knowledge sharing, since it provides structures for the team to work within (Majchrzak, Rice, Malhotra, King, & Ba, 2000). Trust in the organization is associated with team cooperation, reinforcing the importance of having a good organizational environment and a supportive culture (Galvin et al., 2001).

Several studies explicitly dealt with the importance of reward systems and, again, their results are consistent with previous traditional research. For instance, one study describes how assessing and rewarding performance can be difficult in a virtual setting, and shows how one company created an effective reward system for its virtual teams (Kirkman, Rosen, Gibson, Tesluk, & McPherson, 2002). Another study found that team-based rewards are positively associated with better performing teams (Hertel et al., 2004). Similarly, a study of best practices in virtual teams found that well-designed organizational support systems, including reward systems, are generally associated with team performance, and satisfaction (Lurey & Raisinghani, 2001). Consistent with this finding, Leonard, Brands, Edmondson, and Fenwick (1998) found that organizational support is a good predictor of team performance. Other potentially important contextual factors are the resources and training provided to virtual teams.

IT Resources

Many studies examine the type of IT tools provided to teams. However, the tools are confounded with the type of team in many of the studies (that is, the face-to-face groups have no communication tools while the distributed groups do). As described earlier, this contrasts with organizational reality.

A series of studies compare face-to-face groups with no tool support to distributed groups supported with IT tools (including asynchronous tools,

group decision support systems, and videoconferencing). For example, compared to face-to-face groups, distributed groups supported with an asynchronous tool are less cohesive and satisfied (Straus, 1997; Warkentin, Sayeed, & Hightower, 1997), are less productive, but communicate more often about task functions than anything else (Straus, 1997), and exhibit a lower level of consensus change, but have no differences in influence equality or post-meeting consensus (Anderson & Hiltz, 2001). Further, compared to face-to-face teams, distributed groups supported with group decision support systems can take longer to make decisions and are less satisfied with those decisions (Gallupe & McKeen, 1990). Additionally, video teams perform comparably to face-to-face and audio teams, and are as satisfied as face-to-face but more satisfied than audio teams (Olson, Olson, & Meader, 1997). Face-to-face teams develop trust fastest, but over time, audio and video groups build equal trust (supporting Proposition 3 concerning the effects of time); text-only computer-mediated communication builds lower trust than do all the others modes (Bos, Olson, Gergle, Olson, & Wright, 2002).

Some studies examine tool use within distributed groups, but do not compare the findings to face-to-face groups. These studies have demonstrated the influence of team members' expectations (Townsend, DeMarie, & Hendrickson, 2001) and richer media (Chidambaram & Jones, 1993; Rock, Pratt, & Northcraft, 2002) on team outcomes. Several of these studies examine the use of newer technologies, such as videoconferencing, awareness tools, and intelligent agents. For example, a detailed analysis of the audio portion of one videoconference found that the one-second delay disrupted turn-taking routines and negatively affected participants' abilities to create shared meaning (Ruhleder & Jordan, 2001). Several studies have examined awareness systems, designed to enhance team members' awareness of their colleagues' activities and availability and thereby reduce their process losses (Jang, Steinfield, & Pfaff, 2001). For example, one study shows that teams agree on a solution more quickly with an awareness tool that lets members know which documents in a repository have been examined; however, teams without the awareness tool have solutions closer to the optimum (Espinosa, Cadiz, Rico-Guiterrez, Kraut, & Scherlis, 2000). This may be because teams with the awareness tool review the material less thoroughly (since they can tell whether anyone else has already reviewed it: Espinosa et al., 2000). Finally, an intriguing study examined the effects of teams having intelligent agents that provide advice of varying correctness. The more that people trust the agents, the more influence the agent has over the team solution; both expert and faulty agents influence team solutions (Thompson & Coover, 2002).

Overall, what do these studies suggest about the effects of IT tools on virtual team functioning? Teams that are more widely dispersed face greater challenges to communicating effectively (McDonough, Kahn, & Barczak, 2001). This is because, unlike traditional teams, virtual teams do not have easy access to face-to-face communication and thus cannot readily build mutual knowledge. A lack of mutual knowledge can lead to process losses due to misunderstandings, non-responses, and lack of contextual information (Cramton, 2001). In contrast, mutual knowledge and shared language help to bridge dissimilar knowledge domains.

We propose that virtual teams need access to a variety of communication media to respond to team members' variability and preferences. In other words, drawing on media richness theory (Daft & Lengel, 1986), we propose that virtual teams need a variety of communication media at their disposal so they can best match the medium to the message. Using richer communication media will be effective in reducing early process losses in virtual teams by creating common understandings, awareness of team members' work contexts, shared goals, and expectations. Leaner communication channels will be essential to supporting more straightforward task-oriented communications. For instance, a study of two virtual teams found that they used a variety of tools: e-mail for group management tasks, application sharing and chat for task work, and chat for interpersonal messages (Graveline, Geisler, & Danchak, 2000). As described earlier, this variety in communication media is even more important to virtual teams, because they have less access to other supports such as face-to-face meetings. Therefore, we propose the following:

Proposition 6. The type of team (virtual versus traditional) moderates the relationship between communication media and team processes and outcomes. Specifically, teams function better with access to a variety of both lean and rich electronic communication media and tools, but the relationship will be stronger for virtual teams.

This proposition might suggest to the reader that face-to-face meetings are important to a virtual team's development, especially in its early stages – and the practitioner literature supports this view. Early face-to-face meetings may be valuable since this is when the greatest diversity of opinions and views occur. Rich, informal face-to-face interactions among team members can aid in the negotiation of a shared language. For instance, one author examined the creative process in virtual teams (Nemiro, 2000, 2001, 2002) using a grounded theory approach to identify four stages: idea generation, development, finalization/closure, and evaluation: although all types of

communication media were used for the four stages, face-to-face communication was thought to facilitate the first stage.

The argument for early face-to-face meetings for virtual teams contrasts with Proposition 1 concerning directly observable diversity. That is, we suggested that teams with higher surface-level diversity would function more effectively in virtual than traditional teams. If it is expected that observable diversity would interfere with group processes and outcomes, then avoiding face-to-face meetings early in teams' development might be wise. Instead, diverse teams should use electronic communication media early in their lives because media characteristics such as visual anonymity will reduce the salience of the diversity, diminishing the creation of in/out-groups (Carte & Chidambaram, 2004). However, teams still need to develop a shared language so that people can understand each other, while avoiding the potential negative effects created by diversity of individuals' backgrounds and knowledge. Thus, richer communication media, but not face-to-face communication, would still be important for virtual teams with high observable diversity.

Training for Virtual Teaming

"Virtual teaming" skills can be learned through training, and research has consistently demonstrated the beneficial aspects of training for virtual team functioning. Specifically, training on communication and group processes results in greater cohesiveness, more positive perceptions of the team's process, greater satisfaction and trust in the team (Beranek, 2000), greater commitment to team goals and more positive perceptions of the openness of the team (Warkentin & Beranek, 1999), improved group processes and team outcomes (Tullar & Kaiser, 2000), more positive perceptions of other team members' integrity, ability and benevolence (Jarvenpaa et al., 1998), and improved relationship building in the team (Pauleen & Yoong, 2001).

Training programs held early in teams' formation are most effective (Hambrick et al., 1998). This may be because the potential for misunderstanding and poor communication is greatest early on; therefore, early training will have the most significant effects on reducing process losses. Early training helps group members not only to focus on performance but also to provide some structure for their interactions (Jarvenpaa, Shaw, & Staples, 2004; Okhuysen & Eisenhardt, 2002). Organizations can improve internal interactions and reap the benefits of diversity by successfully managing differences (Jehn et al., 1999). They can minimize process losses by early interventions into the life of the group, including establishing a common group identity, training group members to embrace differences,

engaging members in highly interactive exchanges, and creating low division of labor (roles) within the team (Acar, 2004; Ratcheva, 2004; Swann et al., 2004).

Early training helps virtual teams reduce process losses more quickly. It is even more important for virtual than for traditional teams. Traditional teams have other sources of organizational support for learning about teamwork, such as co-located team members and supervisors. Therefore, we suggest the following:

Proposition 7. The type of team (virtual versus traditional) moderates the relationship between training and team processes and outcomes. Specifically, (a) the relationship between training programs (that build electronic communication skills and remote coordination abilities) and team processes and outcomes will be stronger for virtual teams. Further, (b) having training programs in the early stages of team development versus later will be more important for virtual teams than for traditional teams.

Supervisory Behaviors

The behaviors of supervisors and team leaders significantly influence the effectiveness of traditional teams, and the small number of virtual team studies on leadership supports this finding. For example, leadership effectiveness in virtual teams relates positively to role clarity, communication effectiveness and satisfaction with team communication, reinforcing the importance of good virtual team leadership (Kayworth & Leidner, 2001/2002). Leader communication becomes even more important for performance for more dispersed teams (Cummings, 2006) and leader modeling of appropriate behaviors, such as choosing technologies (Cohen & Gibson, 2003) and helping team members know when to use particular technologies (Kirkman et al., 2002), is key to the success of virtual teams. Thus, virtual team effectiveness is enhanced by modeling appropriate behaviors and communication patterns, facilitating training for virtual team members, initiating task pressure, and helping team members be aware of the rest of the team's situation and constraints (Kirkman et al., 2002; Weisband, 2002). However, consistent with the reasoning for the previous proposition, traditional teams have other resources and supports on which they can more easily draw. Thus, we propose that:

Proposition 8. The type of team (virtual versus traditional) moderates the relationship between leader modeling and team processes and outcomes. Specifically, the relationship between leader modeling (of appropriate

behaviors such as electronic communication skills, remote coordination abilities, and technology choices) and team processes and outcomes will be stronger for virtual than for traditional teams.

Little research has investigated leadership practices in virtual teams. This may be because a significant number of virtual teams are self-managing and do not have a team leader. However, when leaders do exist, what leadership styles help team members become more effective? Some research suggests that transformational leadership, or charisma, inspiration, intellectual stimulation, and individualized consideration (Yammarino & Dubinsky, 1994), will be as important for virtual teams, as it is for traditional teams (Tyran, Tyran, & Shepherd, 2003). We propose that it will be even more important – virtual team leaders need to be “process facilitators” rather than authority or expert figures (Hofner Saphiere, 1996) with the lateral skills to deal with employees who are different from them (Cohen & Gibson, 2003). In contrast, members of traditional teams generally have much more “face time” with their leaders, making supervisory observations of behaviors and coaching easier.

Transformational leadership will help to reduce process losses in virtual teams by engendering more diligent in-role behaviors, more frequent citizenship behaviors, and more cooperative and helpful interpersonal interactions (Hofman & Jones, 2003). Thus, we propose that if a formal leader is part of the virtual team structure he or she should be a transformational leader (i.e., setting vision and goals, etc.) rather than a transactional one (i.e., controlling members). Similarly, Cascio (2000) proposes that virtual team leaders be results-oriented, rather than focusing on structures and controls. Virtual team research supports this, demonstrating that team effectiveness is enhanced by a leadership style that creates and articulates a vision, promoting initiative and acting as a good role model (Lurey & Raisinghani, 2001). In contrast, managerial controls are negatively related to virtual team trust because they highlight instances when team members fail to meet responsibilities (Piccoli & Ives, 2003). Therefore, we propose that:

Proposition 9. The type of team (virtual versus traditional) moderates the relationship between transformational leadership and team processes and outcomes. Specifically, transformational leadership becomes even more important to virtual than to traditional team functioning. Further, virtual teams with transformational leadership function better than those with transactional leadership.

DISCUSSION AND CONCLUSIONS

Our propositions suggest moderating relationships due to the type of team, virtual versus traditional. These differing relations for virtual teams often arise because virtual team members have fewer mechanisms to gather information informally or to receive informal feedback and advice in order to re-align goals and activities. A virtual team member is typically more reliant on information technology for communication and is more likely to be isolated from the rest of the team. Thus, a virtual team member is less likely to know their colleagues' status and activities unless they are explicitly shared. Therefore, knowing who to go to and being able to get a timely response is more critical for a virtual team member than for a traditional team member who has more options for interacting with other organizational members.

We hope that the propositions developed here will help guide future human resource research and practice, including issues such as selection, training, performance appraisal, compensation, and strategic HR planning. First, the propositions provide several important implications for selection of team members. For example, if an organization knows that a new team will be high in directly observable diversity, selecting virtual members may be a better choice than co-located ones (Proposition 1). Selecting virtual team members based on openness to experience will be useful (Proposition 2); this will be especially helpful when virtual teams are being introduced into an organization for the first time. Members high in openness to experience will help to ensure early virtual team successes on which to build later rollouts of further virtual teams. Co-located, rather than virtual, team members should be selected for short-term teams (Proposition 3) and especially for those short-term teams with interdependent tasks (Proposition 4). However, for more complex tasks, virtual team members should be considered over co-located ones (Proposition 5).

Second, the propositions provide implications for virtual team training and resources. Virtual team members need to be provided with a bundle of leaner and richer electronic communication technologies (Proposition 6) and need to receive early training to build their electronic communications skills and remote coordination abilities (Proposition 7). Virtual team leaders need to model appropriate communication and coordination behaviors (Proposition 8) and demonstrate transformational, rather than transactional, leadership behaviors (Proposition 9).

Third, in terms of performance appraisal, evaluators will want to look at a wider range of outcomes than the traditional ones, including timely

communication and feedback to fellow team members. Similarly, team leaders should be evaluated on their communication, coordination, and leadership styles. It is especially important that leaders assess remote team members' performance in a fair and equitable manner. The physical distribution of virtual team members will require that measures of job performance are obtained from multiple sources. This is where 360-degree feedback would be especially useful for team members' and leaders' development.

Fourth, in terms of compensation, reward criteria must be explicitly clear to virtual team members. As in any team, members must be aware of how job performance is rewarded – individually or as a group. This knowledge is especially important for virtual team members given that they may not be aware of the actions of their virtual colleagues. To enhance perceptions of fairness and equity, both individual and team-based rewards must be based on concrete and observable criteria. Every team member must understand why their colleague (or the group as a whole) is being given a particular reward.

Fifth, these propositions have implications for strategic HR planning. Having access to virtual employees allows managers to really tap into their organization's internal labor market, reducing dependence on the external market (such as temps and consultants). Although using virtual teams can be beneficial, central HR would need to ensure that virtual team members are fully supported. For example, HR would need to keep up-to-date job descriptions for virtual team members, profiles of who could serve on what types of virtual teams, including their virtual team experiences, as well as current rosters of virtual team leaders and members. HR would also need to ensure that remote virtual team members are fully supported through online access to HR policies, forms, advice, and so on. For any virtual team members working from their homes, issues of safe work practices and technologies would become especially important. Further, HR would need to ensure that remote team members were not overlooked for career advancement opportunities.

There are many other opportunities for future research related to conspicuous gaps in empirical research (when compared to the model of virtual team effectiveness diagrammed in Fig. 1). For example, as we reviewed the papers, we found that few fully describe the organizational context studied. If this is the most important group of variables for performance, as some suggest (e.g., Cohen, 1994), then it is important to direct more attention to context. For instance, most studies do not examine cross-cultural issues for teams made up of participants from multiple countries, despite these issues

being especially important for virtual work (Pinsonneault & Boisvert, 2001). In the reviewed studies, culture was taken simply to be country of origin, and results were mixed. However, national culture is a complex construct and is typically thought of as being multidimensional (e.g., Hofstede, 1991; Hofstede & Bond, 1988). Future research could investigate what aspects of national culture specifically affect virtual team effectiveness. Knowing this sort of information would be useful for organizations designing training programs and selecting team members.

Few authors have examined leadership in virtual teams and whether it should differ from leadership of traditional teams. Virtual team members, given the potential difficulties of reaching people quickly, may need to work more independently than their counterparts in face-to-face teams and be willing to make decisions on their own. However, some research has demonstrated that virtual teams work more effectively with a leader (Kim, Hiltz, & Turoff, 2002), and other research has found both advantages (Pearce, Yoo, & Alavi, 2004; Piccoli et al., 2004; Ziegert, Klein, & Xiao, 2004) and disadvantages (Alge, Ballinger, & Green, 2004; Crisp, 2002) to shared leadership in virtual teams. Thus, it is important to study whether the role of leadership differs from that of traditional teams (Bélanger et al., 2002).

Many of the studies reviewed here examine students rather than employees. For example, a significant number studies the impact of a specific type of IT through experiments with student subjects. If we are going to be able to have any confidence that the results for short-term student teams can be generalized to the field, research should examine realistic bundles of communications technologies. Most research has focused on e-mail and the World Wide Web as communication tools, but managers also need to know about groupware and knowledge management tools for virtual work. More generally, they need to know which tools are most appropriate for which tasks (Bélanger et al., 2002; Woerner, Orlikowski, & Yates, 2004). We encourage future research in this area to balance studies of student teams with those of existing virtual teams in organizations.

Much of the empirical research overlooks the various types of virtual teams, and, in fact, often mixes different forms of virtual teams in the same study. This variety explains some of the problems with research in this area: apples are often combined with oranges within the same study. For instance, some studies combine results for individuals telecommuting with those doing group work and others do not distinguish completely distributed teams from hybrid teams. Specifically hybrid teams, or those with some co-located and some remote members, provide the potential for the development of in- and out-groups. Some empirical research supports this in/out-group

distinction in hybrid virtual teams, demonstrating an *us versus them* mentality by local members (Armstrong & Cole, 2002), resentment of local members by remote members (Malhotra, Majchrzak, Carman, & Lott, 2001), local members' making situational attributions for their own failures but dispositional attributions for remote members' failures (Cramton, 2001), and higher identity, trust, communication, and perceptions of local than remote team members (Webster & Wong, 2003). Further, although we argued earlier that all other dimensions of virtuality derive from distance, this does not mean that these dimensions are unimportant to understanding virtual team functioning. In contrast, they are very important, and authors such as Cummings (2004), Espinosa, Cummings, Wilson, and Pearce (2003), Lu et al. (2003), Griffith et al. (2003), Kirkman and Mathieu (2004), and O'Leary and Cummings (2002) offer fine-grained analyses of possible virtual team dimensions. Following the lead of these authors should help to build a more cumulative understanding. Thus, future research should carefully describe the types of team members and technology required and present results separately for different types of teams.

Although we found a considerable body of knowledge on virtual teams, the multifaceted nature of these teams makes understanding what leads to high performance very complex. There are many valuable opportunities for more research and opportunities to help human resource professionals improve virtual team functioning. We agree with Saunders (2000) and Martins et al. (2004) that there is still a lot to learn about virtual teams and what makes them different from traditional teams. We hope that our review and suggestions will help researchers meet this need so that organizations can fully realize the potential of virtual teams.

NOTES

1. Our focus is on team work, where two or more people work on interdependent tasks; however, virtual teams represent just one type of virtuality – that is, group work. Virtuality is also used in three other ways in the literature, to describe – individual work performed by telecommuters and remote employees, virtual organizations and virtual technologies (such as virtual reality). Before the term *virtual* came into common use, these teams were often called distributed, dispersed or remote teams. In fact, some scholars argue that the term *virtual* is inappropriate to describe these teams because it means “not real” or “almost real,” while virtual teams are, in fact, real. In spite of this, the term *virtual* is now widely used in many fields, including psychology (e.g., Rosen & Tesluk, 2002), management (e.g., Fiol & O'Connor, 2002) and production economics (e.g., Pawar & Sharifi, 1997).

2. This does not mean that these other dimensions are unimportant; rather, as we argue in the Discussion, they are key to understanding virtual team functioning.

3. While much of the academic research uses the term *group* to describe a set of interdependent individuals who have common goals, collective responsibility for outcomes and a shared identity, the term *team* can be used interchangeably, and has been done so by Guzzo and Shea (1992). Consistent with this approach, we use the terms *team* and *group* interchangeably.

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APPENDIX: SUMMARY OF EMPIRICAL VIRTUAL TEAM STUDIES

The table below summarizes the empirical articles, along with their complete references, found at <http://post.queensu.ca/~ss32/vtrphrm>.

Study	Group	Characteristics		Nature of Task	Organizational Context		Supervisory Behaviors	Type of Study and Analysis Method	Variables Measured	Results/Findings
	Types of Teams and Team Members	Team Structure, Degree of "Virtualness"	Stage of Team Development, Duration, Beliefs		Culture and Rewards	IT Resources and Virtual Team Training				
Ahuja and Carley (1999) (dataset also included in Ahuja et al. (2003))	Virtual organization of academics and corporate researchers interested in artificial intelligence	Involves several universities and corporations nationally and internationally. FTF (face-to-face) meetings twice a year	In existence since 1982	SOAR group – Design and development of intelligent system architecture	Rewards centered around publications	E-mail, electronic bulletin board	Case study over three months. Analyzed e-mail interaction of 66 team members, questionnaires, interviews, and publication archives	Interviews and questionnaires used to assess task routineness and perceived performance. Network structure from e-mails. Objective performance – publications	Fit between task and network structure was related to perceived performance but not to actual perf. Significant hierarchy was found.	
Ahuja et al. (2003)	One voluntary, inter-organizational, team; subjects: corporate and academics, R&D group of disparate areas of expertise. At the universities, subjects included faculty, researchers, and graduate students	Spread among 27 sites in US, Europe and Asia. Each site had collocated groups and weekly FTF subgroup meetings and semi-annual workshops	Well-established; 14 years old; stable structure	Designing a general purpose artificial intelligence system	Culture of cooperation and sharing. Evaluation based on publications.	E-mail, telephone, bulletin board for posting, electronic distribution list; experienced e-mail users	Quantitative field study. Used structural equation modeling (PLS) to test a research model. Examined e-mail records over several months and gathered information directly about individuals' roles. Data were gathered and the model was tested at two time periods	Functional role, status, and communication role (information provider versus seeker), centrality, individual performance = number of publications weighted for quality of journal	Only communication role had a direct effect on performance in both time periods – information providers had higher performance than information seekers. Centrality did have a significant mediating role for all three role variables and was a stronger direct predictor than individual characteristics	

A CONCEPTUAL REVIEW OF HUMAN RESOURCE MANAGEMENT SYSTEMS IN STRATEGIC HUMAN RESOURCE MANAGEMENT RESEARCH

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ABSTRACT

A distinguishing feature of strategic human resource management research is an emphasis on human resource (HR) systems, rather than individual HR practices as a driver of individual and organizational performance. Yet, there remains a lack of agreement regarding what these systems are, which practices comprise these systems, how these systems operate, and how they should be studied. Our goal in this paper is to take a step toward identifying and addressing several conceptual and methodological issues regarding HR systems. Conceptually, we argue that HR systems should be targeted toward some strategic objective and operate by influencing (1) employee knowledge, skills, and abilities, (2) employee motivation and effort, and (3) opportunities for employees to contribute. Methodologically, we explore issues related to the relationships among policies and practices, sampling issues, identifying the

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appropriate referent group(s), and who should serve as key informants for HR system studies.

INTRODUCTION

One of the fundamental principles of strategic human resource management (HRM) research is that the impact of human resource (HR) practices on individuals as well as organizations is best understood by examining the bundle, configuration, or system of HR practices in place. The rationale for this perspective is fairly straightforward. Considering that HR practices are rarely, if ever, used in isolation, failure to consider all of the HR practices that are in use neglects potential important explanatory value of unmeasured HR practices. As a result, while some studies have documented the organizational benefits that are associated with specific HR practices, the general perspective in this area of research is that a systems view is more appropriate. Indeed, Wright and McMahan (1992) noted that strategic HRM is primarily focused on “the pattern of planned HR deployments and activities” that are intended to help organizations to achieve their objectives (p. 298). Similarly, Delery (1998, p. 291) noted, “The basic assumption is that the effectiveness of any practice depends on the other practices in place. If all of the practices fit into a coherent system, the effect of that system on performance should be greater than the sum of the individual effects from each practice alone.”

While researchers may agree that a systems perspective is more appropriate than a perspective that focuses on the role of individual HR practices in isolation, adopting a systems perspective introduces a host of issues and problems that remain to be addressed in the literature. For instance, inconsistencies abound regarding what constitutes a system and multiple conceptualizations of HR systems proliferate the literature (e.g., high performance work systems (HPWS), human capital enhancing HR systems, commitment HR systems, high-involvement HR systems, etc.). A lack of consistency regarding these systems limits our ability to truly understand the form and function of these systems in organizations. Unfortunately, existing conceptualizations offer little agreement regarding the underlying policies that comprise these systems as well as the practices that should be measured to capture these policies and systems. Without a clear understanding of their conceptual logic, we are not able to assess proposed HR systems regarding the extent to which they are potentially deficient in terms of missing key HR policies and practices that inform the system or the extent to which they

are potentially contaminated in terms of including HR policies or practices that are not conceptually consistent or required for the fundamental logic of HR systems. Research that uses deficient and/or contaminated systems confounds empirical investigations regarding the use and effectiveness of these systems.

Perhaps more importantly, a lack of consensus regarding what these systems are, as well as what they should be, substantially limits our ability to build a cumulative body of knowledge regarding how HR systems influence important organizational outcomes. While there is a general consensus that certain types of HR systems such as HPWS (Huselid, 1995) or high involvement HR systems (Guthrie, 2001) are beneficial for organizations, the specific nature of this relationship remains unclear. As a field, we know that different HR systems have been associated with performance measures. We do not know, however, what is really driving this relationship because these systems measure different policies and practices.

In addition, adopting a systems perspective raises the issue of how different components of HR systems are related. Unfortunately, most discussions of these systems read like a laundry list of which practices are included without much discussion regarding why specific HR practices are included or excluded and how these different HR practices are related. For instance, is there a multiplicative effect or an additive effect when we consider HR practices simultaneously? While this is certainly an empirical question; there are also conceptual issues associated with the theoretical rationale underlying the relationships among HR practices. Are some HR practices redundant with others or complementary to others? Without conceptually addressing these issues, our understanding of the use and effectiveness of HR systems is unnecessarily constrained due to failure to understand the mechanisms by which these work and, ultimately, influence performance.

Recently, several researchers have attempted to push the field forward by highlighting a number of limitations and concerns regarding the manner by which, existing studies in strategic HRM have been carried out to improve our understanding of the impact of HR systems. For instance, in a recent exchange, Gerhart, Wright, McMahan, and Snell (2000) and Huselid and Becker (2000) engaged in a debate regarding the relative merits of single source versus multiple sources for data; the manner by which survey data are aggregated and the statistics used to assess their aggregation (r_{wg} versus ICC), the merits of single industry versus multiple industry samples, as well as the level of analysis that is (or should be) emphasized in data collection procedures.

While these are pertinent and critical questions, we believe that discussions regarding research design and data analyses issues are somewhat

premature without a clear understanding of the conceptual underpinnings of HR systems. Without a certain level of agreement regarding *what to measure* from a conceptual point of view, focusing on improving *how to measure* these HR systems is akin to putting the cart before the horse. It is possible that we may be improving the measurement of the wrong thing or only partially capturing what these HR systems are supposed to reflect. Prior to engaging in a discussion of methodology, it is important to focus on the content of these systems or, more directly, what these systems are capturing.

In this paper, we examine what we are measuring in the first place – the conceptual content of these systems. The structure of this paper is as follows. First, we review existing conceptualizations of HR systems in the literature and discuss potential reasons for the variations on these conceptualizations. Second, we propose a shift toward strategically anchored HR systems and argue that a theory-driven approach to conceptualizing and measuring HR systems is to consider HR systems for a specific organization objective and only include the HR practices relevant for achieving that objective. Third, we discuss the mechanism through which HR systems work to achieve strategic objectives. Building on the arguments of [Batt \(2002\)](#), [Delery and Shaw \(2001\)](#), [Huselid \(1995\)](#), and [MacDuffie \(1995\)](#), we argue that HR systems consist of three distinct HR policy domains that are oriented toward influencing employee knowledge, skills, and abilities, employee motivation and effort, and opportunities allowing employees to contribute. Further, we discuss how the objectives of HR policy domains are achieved through the use of specific combinations of HR policies and practices. Fourth, we explore the methodological implications of this strategically focused HR systems approach with particular focus on the measurement and sampling issues in studying HR systems. Finally, we turn toward future research and offer suggestions regarding the design and collection of data, implications for our current knowledge of HR systems, and offer insights regarding the understanding of conceptualization, composition, use, and implications of HR systems.

HR SYSTEMS: CONCEPTUAL BACKGROUND AND LOGIC

Prior to reviewing existing literature, it is important to note the differences among HR systems, HR policies, and HR practices. [Becker and Gerhart](#)

(1996) and Schuler (1992) noted that HR activities may be conceptualized along several levels of analysis. At the lowest level, *HR practices* reflect specific organizational actions designed to achieve some specific outcomes. There is a wide array of HR practices (e.g., behavioral interviews, hourly pay, employee socialization, 360 degree performance feedback) from which organizations may choose to manage employees. At a higher level of abstraction are *HR policies*, which reflect an employee-focused program that influences the choice of HR practices. For instance, an HR policy might reflect a commitment to pay-for-performance while a number of different HR practices (e.g., profit sharing, piece rate systems, and commission) might be implemented to attain this policy. An *HR system* operates at an even higher level of analysis and reflects a program of multiple HR policies that are espoused to be internally consistent and reinforcing to achieve some overarching results. For instance, a high commitment HR system might rely on policies of selective staffing, comprehensive training, and pay for performance in combination to encourage employee commitment toward the organization and also maximizing their contributions toward organizational performance.

While researchers tend to agree on what HR systems are in the abstract (a bundle of HR practices or HR policies oriented toward some overarching goal), there is a noticeable lack of agreement regarding the nature or composition of HR systems. Nearly 10 years ago, Becker and Gerhart (1996) and Youndt, Snell, Dean, and Lepak (1996) highlighted the considerable lack of consensus in literature regarding what exactly these types of HR systems are as well as the HR policies and practices that comprise them. Unfortunately, this issue remains prominent in literature.

As shown in Appendix A, there are many variations of HR systems in literature such as HPWS (Huselid, 1995), human capital enhancing HR systems (Youndt et al., 1996), high involvement HR (Lawler, 1992), sophisticated HR practices (Koch & McGrath, 1996), and commitment oriented HR systems (Arthur, 1992; Lepak & Snell, 2002), to name a few. Looking over this list of studies examining HR systems, several important questions emerge. Conceptually, an important question is why there are so many differences in how we conceptualize HR systems in the literature and can we arrive at some consensus regarding both the form (their composition) and the function (their objective) of these systems? Methodologically, there are questions regarding the implications of how we conceptualize HR systems for how we measure and study HR systems. We turn to a discussion of these issues below.

Why the Differences in HR Systems?

There are several reasons for variations on conceptualizations of HR systems in literature. First, at a basic level, differences in HR systems in literature reflect the practices that comprise the systems. Second, studies differ in their conceptualizations of the objectives for HR systems, which, in turn, may influence how these systems are expected to be designed.

Alternative HR Practices within HR Systems

As shown in Appendix A, studies vary in the degree to which different HR practices are used to comprise HR systems. While many different HR practices are certainly viable candidates for inclusion in HR systems, their inclusion/exclusion varies greatly across studies. For example, some HR systems place emphasis on worker's related practices, such as quality circles, empowerment, participation, and voice (Godard, 1997; Ichniowski, Shaw, & Prennushi, 1997; Kochan, Gittell, & Lautsch, 1995; Pil & MacDuffie, 1996), while others might focus on HR practices related to training, performance management, or compensation (Bartel, 2004; Datta, Guthrie, & Wright, 2005; Gomez-Mejia, 1988; Whitener, 2001; Youndt et al., 1996). Although this list of HR practices is not exhaustive of all possibilities, it highlights the tremendous variability across HR systems and points toward a lack of organizing logic regarding the selection and exclusion of HR policies and practices across systems.

In addition to variation in which practices are considered, there are also some conflicting conceptualizations of the role of the same HR practices for different systems. For example, Dyer and Reeves (1995) noted that incentive bonuses were a component of the "control" HR system in Arthur (1994), but part of the "flexible" production scheme in MacDuffie (1995). Becker and Gerhart (1996) cited differences in the use of variable pay in Arthur (1994), Huselid (1995), and MacDuffie (1995). A low emphasis on variable pay was included as part of a "commitment" HR system in Arthur (1994), while a high emphasis on variable pay was part of HPWS in Huselid (1995) and MacDuffie (1995). Another example noted is the use of internal promotions and access to formal grievance procedures. Huselid (1995) and Pfeffer (1995) described such practices as part of high-performance HR system. However, Arthur (1994) and Ichniowski, Shaw, & Prennushi (1997) included these as elements of more rigid HR systems. Becker and Huselid (1998) termed these two practices as components of "bureaucratic HR" system when viewed in isolation.

These discrepancies clearly raise some issues. For example, why do some studies focus on selective staffing or hours of training while others do not?

Why are participation and voice key components of certain conceptualizations of HR systems in some studies but not in others? HR practices may be used to attain a variety of HR goals, such as building skills, fostering teamwork, and the like. As an area of research, a challenge is to understand, from a theoretical perspective, which HR policies and practices should be included and excluded from HR systems. The problem with this issue, however, is that we do not have a well-accepted conceptualization of what HR systems really are. This leads to the second possible reason for variations in HR systems in the literature – alternative objectives for HR systems.

Alternative Objectives for HR Systems

Reviewing literature, it seems to be implied that there are two ways to conceptualize HR systems. First, it is often implied that HR systems span a continuum of two extremes ranging from high performance or commitment oriented to more control oriented HR systems (Arthur, 1992, 1994; Delery & Doty, 1996, Guthrie, 2001; Huselid, 1995). Essentially, HR systems are either oriented toward high performance through investment in employees or toward a more administrative or controlling approach to managing employees. Guthrie (2001) for instance, created a continuum HR system index with high scores reflecting high involvement and low scores reflecting more a more control oriented HR system. At the same time, however, some researchers have implied that there may be many different types of HR systems that may not be limited to a performance versus a control dichotomy (Lepak & Snell, 1999, 2002; Youndt et al., 1996). The second implicit perspective is that HR systems may be designed to achieve a variety of objectives.

For instance, some authors conceptualize these systems as being comprised of HR practices that focus on enhancing employee commitment (Arthur, 1992), while others conceptualize these systems as a focus to use certain HR practices to maximize employee potential and other practices to maximize administrative efficiency (Youndt et al., 1996). Still others conceptualize these systems as a function of the degree to which different HR practices are oriented toward maximizing organizational performance (Huselid, 1995). As this discussion suggests, differences in the conceptualization of HR systems may be a function of not only what practices are included in the systems, but also of what these systems are espoused to achieve (i.e., the goals of the system). It also raises a critical question for strategic HRM researchers: Is there a higher order – best practice – HR system or are HR systems directional in nature, targeted toward more

narrowly construed strategic objectives?

Research Question 1: Is there some single overarching HR system that is most effective or are there various HR systems that are effective within and across companies for achieving different objectives?

HR System Objectives

In addressing this question, we draw on the organizational climate literature where parallel arguments have been made regarding the different objectives of different types of climates. Climate has been defined as organizational members' perception of formal and informal organizational policies, practices, and procedures (Reichers & Schneider, 1990). James and Jones (1974) pointed out that, at the individual level, *psychological climate* represents an individual's cognitive appraisals, social constructions, and sense makings of the organizational context, which arise from the individual's interactions with the context. It helps an individual to determine what behavior is appropriate in a given work environment and serves as a guideline in molding employee behavior towards the standard and goals of the organization (Schneider, 1983). When there is a high consensus among employees regarding their climate perceptions, *organizational climate* emerges at the organization level. Theories such as social information processing (Salancik & Pfeffer, 1978), socialization (Ostroff & Kozlowski, 1992), and attraction-selection-attrition (Schneider, 1975) provide the theoretical underpinnings for the bottom-up emergence (Kozlowski & Klein, 2000) of shared climate perceptions.

Organizational climate has been positioned as a key intermediate variable between organizational context and work outcomes. Specifically, organizational practices, policies, and procedures are argued to influence organizational climate, and organizational climate influences employee collective attitudes and behaviors, which in turn influence organizational effectiveness (e.g., for reviews see Ostroff & Bowen, 2000; Ostroff, Kinicki, & Tamkins, 2003). However, reviews of the early empirical work revealed that there were only weak relationships between global measures of organizational climate and organizational effectiveness (Campbell, Dunnette, Lawler, & Weick, 1970; Payne & Pugh, 1976). Schneider (1975) pointed out that the global concept of climate was too amorphous and had no focus as it tried to describe organizational context simultaneously using multiple generic facets, therefore its predictive power of any specific organizational effectiveness outcome would be modest at best. Schneider proposed to conceptualize

organizational climate as a specific construct that has a specific criterion of interest. In other words, instead of attempting to include everything, organizational climate should be *for* something, or linked to a specific strategic focus of the organization.

Since the introduction of the notion of strategically focused organizational climate, a thrust of research on specific organizational climates, has explained a significant proportion of variance in specific attitudinal, behavioral, and effectiveness outcomes at the individual, work unit, or organizational level of analysis. For examples, a climate for service (Schneider, 1990) has been linked to employee service performance (Liao & Chuang, 2004), customer-evaluated service quality (e.g., Schneider, White, & Paul, 1998), and customer satisfaction (e.g., Johnson, 1996); a climate for safety has been linked to employee safety behaviors and accidents (e.g., Hofmann & Stetzer, 1996; Zohar, 1980); a climate for transfer of training has been linked to transfer of newly trained supervisory skills (Tracey, Tannenbaum, & Kavanagh, 1995); and a climate for tolerance of sexual harassment has been linked to reports of sexual harassment (Hulin, Fitzgerald, & Drasgow, 1996). Other types of climate, such as climate for technical updating (Kozlowski & Hults, 1987), climate for ethics (Victor & Cullen, 1988), climate for justice (e.g., Liao & Rupp, 2005; Naumann & Bennett, 2000), and climate for innovation (Anderson & West, 1998; Klein & Sorra, 1996), have also been studied. This literature demonstrates that specific types of organizational climate may have more predictive power than generically defined organizational climate. Ostroff and Bowen (2000) concluded that, “for any given domain of effectiveness, the establishment of an organizational climate for that particular outcome will be the key factor that establishes whether people in the organization will enable the organization to achieve a competitive advantage” (p. 241).

Therefore, the criterion validity of organizational climate hinges on the *alignment* of the strategic focus of the climate with a strategic goal of the organization. In addition, in a broad theoretical framework, organizational climate has been proposed to mediate the relationship between organizational context and organizational effectiveness (Ostroff & Bowen, 2000; Ostroff et al., 2003). This bridging role of organizational climate implies that there needs to be an alignment between a specific set of organizational policies, procedures, and practices with a specific type of organizational climate. The policies and practices included in HR systems have been argued to be particularly influential in shaping employees’ climate perceptions (e.g., Klein & Sorra, 1996; Schneider, 1990). If a climate *for* something is determined by a strategic organizational objective, logically then, for an HR

system to influence the achievement of that particular organizational objective, the system needs to be constructed surrounding that objective. As noted by Bowen and Ostroff (2004), the content of HR systems “should be largely driven by the strategic goals and values of the organization,” and “to be effective in terms of content, the foci of the HRM practices must be designed around a particular strategic focus, such as service or innovation” (p. 206). Therefore, one way to conceptualize HR systems is to base the configuration of HR practices directly on the specific objective that the system is designed to achieve. While we certainly do not claim to have the answers as to the entire possible range of objective-specific HR systems that may exist, looking across literature we can see several discernable conceptualizations of HR systems that have been proposed. We briefly discuss these below.

Control Human Resource Systems

In the early stages of strategic HRM research, several researchers suggested that HR practices might be viewed as either control or commitment oriented in nature (Arthur, 1992, 1994; Walton, 1985; Wood & de Menezes, 1998). As noted by Arthur (1994), “The goal of control human resource systems is to reduce direct labor costs, or improve efficiency, by enforcing employee compliance with specified rules and procedures and basing employee rewards on some measurable output criteria” (p. 672). Similarly, Guthrie (2001, p. 181) noted, “In control-oriented HR systems, the thinking and controlling part of the work is separated from the doing of the work” (Lawler, 1992, p. 28). A control-oriented approach to management tends to emphasize narrow, well-defined jobs, centralized decision making, lower skill demands, little training, less interdependence, and so forth. The use of these systems is designed to minimize the impact of labor on the labor process. Thus, workers are more commodity-like and more replaceable.” Extending this logic, it seem evident that a strategic objective of a control oriented HR system is to increase employee efficiency and/or productivity through greater emphasis on rules, regulations, and close monitoring to regulate employee behavior (Wood & de Menezes, 1998).

High-Commitment HR Systems

Rather than relying on compliance by means of rules, regulations, and monitoring to decrease costs and increase efficiency, high-commitment HR systems create conditions that encourage employees to identify with the goals of the organization and to exert effort to achieve them (Whitener, 2001). As noted by Arthur (1994), “commitment human resource systems

shape desired employee behaviors and attitudes by forging psychological links between organizational and employee goals. In other words, the focus is on developing committed employees who can be trusted to use their discretion to carry out tasks in ways that are consistent with organizational goals” (p. 672). Whereas control oriented HR systems focus on compliance, commitment oriented HR systems strive to increase organizational effectiveness by encouraging employees to identify with the goals of the organization and work hard to accomplish those goals (Arthur, 1994; Whitener, 2001; Wood & de Menezes, 1998). As a result, commitment oriented HR systems consist of practices such as intensive training and development, socialization, promotion from within, high level of compensation, and selective staffing to help forge a stronger psychological connection between employees and organizations.

High Involvement HR Systems

Somewhat related to high-commitment HR systems are high-involvement HR systems. Whereas commitment oriented HR systems are oriented toward aligning employees’ interests with those of an organization; high-involvement HR systems focus more on the use of certain HR practices that directly influence the nature and scope of the jobs employees perform. MacDuffie (1995), for example, focused on the use of formal work teams, employee involvement groups, product-related suggestions made and implemented by employees, the use of job rotation within and across teams, and carrying out quality tasks. Similarly, Osterman (1994) examined ‘flexible work systems’ and focused on the use of self-directed work teams, job rotation, employee problem-solving groups (or quality circles), and total quality management. While the exact conceptualizations of high-involvement work systems continues to evolve, Zacharatos, Barling, and Iverson (2005) provide an apt summary of this orientation when they suggested that high-involvement HR systems concentrate on empowering employees through increased information flows and devolution of decision-making power, leading to greater productivity.

High Performance Work Systems

Perhaps the HR system that has received the most attention in literature is HPWS. As noted by Huselid (1995), “high performance work practices ... can improve the knowledge, skills, and abilities of a firm’s current and potential employees, increase their motivation, reduce shirking, and enhance retention of quality employees while encouraging non-performers to leave the firm” (p. 635). As noted by Zacharatos et al. (2005), HPWS

encompass elements of both the high-commitment and high-involvement HR system approach, but are broader in scope. These systems emphasize the potential competitive advantages that might be realized by employees via HR practices that treat workers with respect, invest in their development, and foster trust in management and commitment toward achieving organizational goals. Specifically, it consists of nearly all types of best practices including selective staffing, individual and group incentives, benefits, intensive training and development, performance appraisal, teams, employee involvement, work-life balance programs, and information sharing. Researchers have shown the use of HPWS to be associated with employee turnover as well as financial and market-based measures of organizational effectiveness (Huselid, 1995).

Based on this brief review, it is evident that there are many different conceptualizations regarding HR systems in the literature. The question that remains to be addressed, however, is whether we should focus on striving to identify a single overarching HR system or strive to identify multiple distinct HR systems that are oriented toward distinct strategic objectives. Several researchers have used these conceptualizations interchangeable (Wood & de Menezes, 1998; Zacharatos et al., 2005) suggesting that while terminology may vary, the ultimate objective of commitment, involvement, high performance or some other HR systems are the same. In contrast, we argue that adopting a strategically focused, directional approach of conceptualizing HR system may provide a closer alignment of HR system with specific types of organizational climate as well as specific organizational objectives. While there are certainly conceptual differences among commitment, involvement, HPWS, and cost-reducing HR systems in terms of their strategic objectives, a limited set of studies have taken this approach further to examine HR systems “for” a more narrowly conceptualized strategic objective.

HR System for Occupational Safety

Given the enormous costs of occupational injuries and fatalities (e.g., see the statistics reported in Zacharatos et al., 2005), it is important for organizations to manage occupational safety. Building on the logic of HPWS and Pfeffer's (1998) framework, Zacharatos et al. (2005) proposed and designed a high-performance work system for occupational safety, which included a set of 10 HR practices. In addition to Pfeffer's seven factors, employment security, selective hiring, extensive training, teams and decentralized decision making, reduced status distinctions, information sharing, and contingent compensation; Zacharatos et al. (2005) added three factors which were deemed equally important in affecting occupational safety, transformational

leadership, high-quality work, and measurement of management practices. They found that safety-oriented HPWS enhanced employee trust in management, and enforced a positive safety climate, which in turn improved employees' safety orientation and lowered injury incidences.

HR System for Customer Service

Researchers have begun to examine the relationship between HR practices and customer service. An emerging body of research has suggested that customers are one of key stakeholders and companies, particularly in service industries, can achieve competitive advantages by increasing customer satisfaction. HR can play an important role in achieving high-quality service by enforcing a climate for service and facilitating employees' service delivery. For example, [Schneider et al. \(1998\)](#) found service climate and subsequent customer evaluations of service equality rested on a set of "foundation issues," which included internal service, efforts of removing obstacles to work, supervisory behaviors, and HR policies of employee participation and training. Extending this research, [Liao and Chuang \(2004\)](#) proposed the notion of high-performance HR practices for customer service and identified employee involvement, training, and performance incentive as the most relevant for employee performance in service settings. They argued that, "These practices, on the one hand, provide employees with the skills, resources, and discretion they need to meet customer demands, making them *able to* deliver high quality services. On the other hand, these practices may motivate employees to be more *willing to* provide good performance These practices also closely capture the 'foundations issues' specified by Schneider and coauthors (1998) that provide the fundamental support employees require to deliver service effectively" (p 45). They found that employee involvement and service training were positively correlated with store-level employee service performance, which in-turn positively predicted customer satisfaction and loyalty.

Last but not the least, [Jackson, Chuang, Harden, and Jiang \(2006\)](#) propose developing HR systems to support and facilitate knowledge-intensive teamwork. While still in its infancy, this line of research suggests a promising way of conceptualizing and measuring HR systems that is to consider HR systems for a specific organization objective and only include the HR practices that serve specifically to achieve the objective. Future research may examine what other types of "HR systems for" may consist of, such as HR systems for innovation, diversity, and so on. Yet, while we might be able to identify a wide array of potential strategic objectives of HR systems, the

question still remains regarding how HR systems work to influence these objectives.

Research Question 2: How do HR systems work to realize an organization's strategic objectives?

Achieving Strategic Objectives: How Do HR Systems Work?

In the previous section, we built on Ostroff and Bowen's model and suggested that HR systems influence organizational climate, which influences employee attributes which, in turn, influences organizational performance, i.e., HR → climate → employee attributes (including collective attitudes, collective behaviors, and human capital) → organizational performance. While we believe that climate perceptions certainly play an important role in the HR system – organizational outcome relationship, strategic HRM researchers have proposed several additional mechanisms by which the influence of HR systems on employees and, ultimately, organizational performance is realized.

Fig. 1 depicts an integrated framework linking HR system to organization performance. We propose that organization effectiveness and performance objectives determine the strategic focuses of the organization, and the strategic focus influences the strategic objective of the HR system. In addition, HR systems contribute to organizational effectiveness by enhancing employees' collective performance. This proposition is based on the argument that organizations do not "perform" and that it is the individuals in an organization who perform in ways that allow the organizations to achieve desirable effectiveness and performance outcomes (Kozlowski & Klein, 2000).

Further, we argue that there are several key mechanisms through which HR systems influence employee performance. First, HR systems directly influence employees' *ability to perform* by influencing their knowledge, skills, and abilities. Second, HR systems directly and indirectly influences employees' *motivation to perform* by shaping their climate perceptions as well as providing direct incentives and rewards to work toward certain work roles, therefore providing guidance regarding what behaviors are expected, supported, and rewarded in the organization.

This logic has been incorporated into several conceptualizations of HR systems in literature. Indeed, several scholars have suggested that HR systems influence organizational performance by influencing both the ability (in this case, the overall aggregate level and/or type of human capital) and the

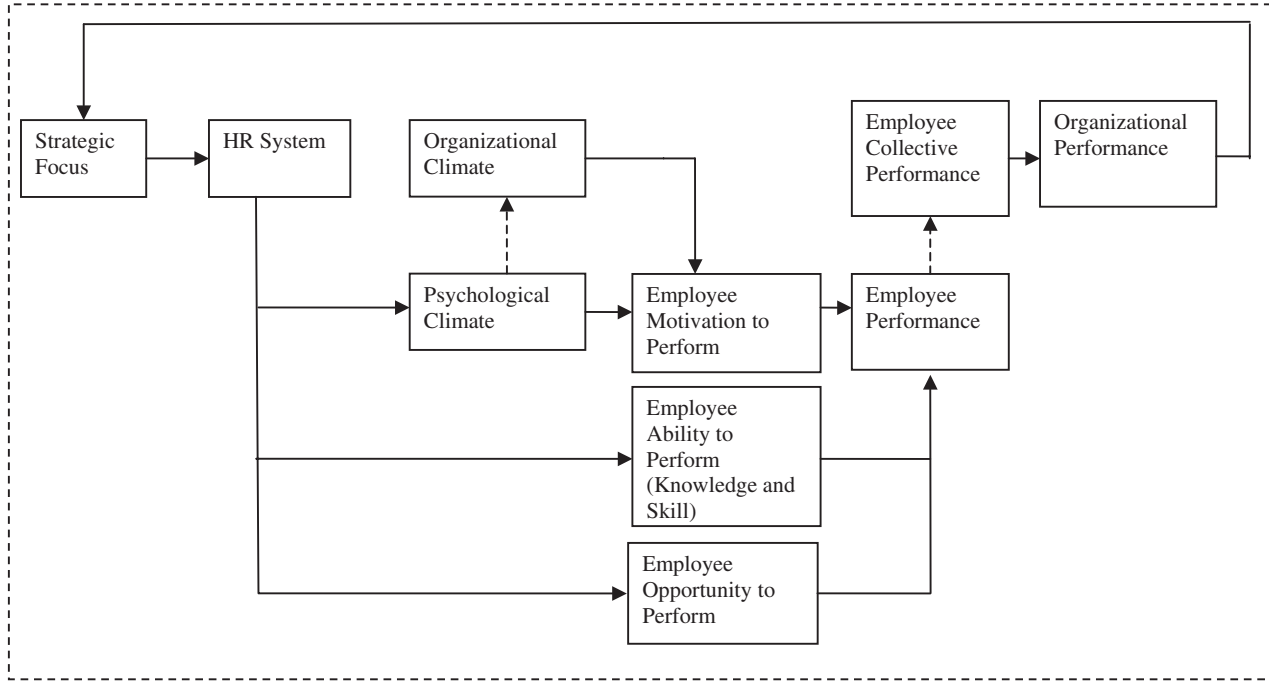


Fig. 1. An Integrated Model Linking HR System, HR System Mechanisms, and Organizational Performance (Dashed Lines Indicate Bottom-up Emergence of Compositional Constructs).

collective attitudes and behaviors of employees to use their human capital for the benefit of the organization (Huselid, 1995; Wright & Snell, 1991). For instance, Wright and Snell (1991) noted that HR practices may be oriented either toward building employee competencies (competency management), or toward motivation or behavior management. Huselid (1995) also arrived at a two-factor logic suggesting that HPWS encompass two HR components that are related to building employee skills and enhancing motivation impact of employee skills and motivation, after analyzing a host of HR practices.

The logic underlying a focus on employee skills and attitudes is parallel to the well-established argument that individual performance is a function of the ability and effort/motivation at the individual level of analysis (e.g., Austin, Villanova, Kane, & Bernardin, 1991; Wright, Kacmar, McMahan, & DeLeeuw, 1995). Employee performance refers to behaviors that are relevant to the organizational goals and that are under the control of the individual employees (Campbell, McCloy, Oppler, & Sager, 1993). According to the prominent theory of performance proposed by Campbell and colleagues (Campbell, Gasser, & Oswald, 1996; Campbell et al., 1993), the direct determinants of job performance are declarative knowledge, procedural knowledge and skill, and motivation. Declarative knowledge refers to knowledge or facts, principles, and procedures needed to carry out work tasks. Procedural knowledge and skill refer to skills in actually doing what should be done, therefore is a combination of knowing what to do and how to do it. Motivation consists of an individual's direction, intensity, and duration of effort. Motivation manifests in the individual's choices to exert effort, choices of how much effort to exert, and choices of how long to exert the effort. Individuals' knowledge, skill, and motivation combine and interact with each other to determine job performance. Other individual differences factors such as cognitive ability, experiences and personality, and contextual factors such as task characteristics and training are said to indirectly influence job performance via their impact on the individuals' knowledge, skills, and motivation.

Researchers focusing on strategic HRM explicitly incorporate the notion that both ability and effort are critical determinants of individual performance but focus on these dimensions at a higher collective level of analysis. While the ability of employees or the level of collective human capital (the aggregate level of employees' knowledge, skills, abilities, etc.) determines the potential contribution, a workforce could make to an organization's performance; employees must also possess appropriate attitudes and motivation in order to realize that potential. As noted by MacDuffie (1995),

“skilled and knowledgeable workers who are not motivated are unlikely to contribute any discretionary effort. Motivated workers who lack skills or knowledge may contribute discretionary effort with little impact on performance” (p. 199).

In addition to these dimensions, researchers have suggested a need for a third dimension for workforce performance – *opportunities for employees to perform*. The argument is that even if employees have the ability and are motivated to work toward organizational objectives, organizations must provide them with appropriate opportunities to use their skills. While there is no clear cut description as to what these opportunities are, researchers have tended to emphasize the structure of work and the level of employee involvement, participation, and empowerment. For example, **Pil and MacDuffie (1996)** suggested that certain high-involvement work practices such as shop-floor “online” work teams, “off-line” employee involvement or problem-solving groups, job rotation, suggestion programs, and decentralization of quality efforts are important for organizational functioning for production workers. **Osterman (1994)** examined four innovative work practices related to the structure of employee’s jobs – the use of teams, job rotation, quality circles, and total quality management. **Batt (2002)** suggested that in addition to skill requirement and the use of incentive structures, high-involvement HR systems require that employees “have discretion and opportunity to use their skills in collaboration with other workers”(p. 587). **Jackson and Schuler (2000)** suggested that HR practices, such as staffing, training and development, performance measurement and feedback, and recognition and monetary rewards are used to accomplish four major HR tasks: managing behaviors, managing motivation, managing competencies, and managing opportunities.

Consistent with this logic, HR practices may be grouped into policy domains targeting employee skills, motivation and empowerment, and the structure of work. Extending these arguments, we can conceptualize that HR systems, regardless of their strategic objectives, are comprised of three distinct HR policy domains that are each instrumental in the composition and effectiveness of HR systems.

1. HR policies that focus on employee knowledge, skills, and abilities
2. HR policies that focus on managing employee effort & motivation
3. HR policies that focus on employees’ opportunity to contribute.

Conceptually, organizations that are able to provide employees with the necessary skill levels to successfully perform their jobs, encourage employees to use the appropriate level of discretionary effort toward organizational

goals, and provide opportunities to maximize their potential contributions will outperform organizations that fail to do so. Unfortunately, while this logic may be straightforward in the abstract, additional issues emerge regarding which specific HR policies and practices are aligned with these three policy domains. There are two specific, but related, issues related to this discussion that influence the appropriate composition of HR systems.

First, what are the specific functional objectives or requirements for each of the policy domains? For example, what types of knowledge, skills, and abilities are necessary for different HR system strategic objectives? It might be the case that certain HR systems require high levels of employee capabilities. It might also be the case that certain HR systems require certain types of employee capabilities. In an R&D setting, for example, employees may require specific technical knowledge to function effectively in their jobs. For an HR system with a strategic objective oriented toward creativity and knowledge creation, employees may require certain competencies related to collaboration and knowledge sharing. The same issue applies to the policy domains of employee motivation and opportunities.

With regard to employee motivation, what are the specific implications for how employees add value? Is it that employees simply need to work harder or are there some more specific objectives that employees must work toward? Returning to an HR system oriented to creativity and knowledge creation, it may be the case that the key motivational requirement is that employees are willing to share their knowledge and expertise and to collaborate with others. In an HR system striving for customer service, the HR motivation domain may require a focus on employees to attend to and meet the needs of distinct customer groups.

Turning to the HR policy domain for opportunities to contribute, it is important that the HR policies used are aligned with the relevant requirements for the strategic objective as well. Even if employees have the needed capabilities and motivation for knowledge sharing and knowledge creation and if jobs are designed in a way that preclude or limit the abilities of employees to actually share their knowledge, their success in contributing to knowledge creation is likely to be stifled.

Though hypothetical, this discussion does highlight the need for research that explicitly recognizes the primary objectives for HR policy domains prior to discussion of the HR practices that are most appropriate to meet those domains. Our view is that the HR systems strategic objectives are only likely to be realized to the extent that appropriate HR practices are used, which help realize the more grounded functional objectives for each of the three policy domains that comprise HR systems. Simply, the policy

domain objectives should vary based on the strategic objectives of the HR system.

This emphasis on ‘relevancy’ for HR practices in terms of HR system objectives leads to a second critical issues regarding the composition of HR system, i.e., even if we can identify the necessary objectives for each policy domain, it is also imperative that we have a firm understanding regarding which specific HR policies and practices are most appropriate to realize the objectives of each HR policy domain.

Research Question 3: Which specific practices are most influential in realizing the objectives of the three HR policy domains?

While addressing this question is certainly a daunting task given the myriad of HR practices that are available for organizations to choose from; several researchers have taken valuable steps toward this end. In reviewing and discussing the effects of HR practices on employee attributes and work process, [Ostroff and Bowen \(2000\)](#) summarized that employee knowledge and skills (human capital) can be acquired by recruiting and selecting employees with high ability, or be developed by formal and informal training, providing performance appraisals and feedback, use of work teams, job enrichment, skill-based pay, and internal labor market. On the other hand, employee commitment, intrinsic motivation, and reward motivation can be enhanced by HR practices, such as job security, good labor-management relations, training, skill-based pay, teams, job enrichment, empowerment, participation, merit-based pay, organization-based pay, contingent pay, and advancement opportunities within the company. [Delery and Shaw \(2001\)](#) provided a similar framework in which certain HR practices are related with one or more of the HR policy domains. Staffing, training, and compensation-related HR practices were argued to be associated with both employees’ level of knowledge, skills, and abilities as well as their motivation. In contrast, performance appraisal as well as job design policies were argued to be associated with both employee motivation and employee empowerment (opportunity). Likewise, [Batt \(2002\)](#) suggested that selection and initial training activities are directly related to the relevant skill level of employees; the design of work, participation in “off-line” problem-solving groups and “on-line” groups sets the parameters for opportunities for individual discretion and ongoing learning, and HR incentives such as ongoing training, employment security, high relative pay, and performance management systems build trust toward the organization and encourage employees to work toward its long-term objectives.

The implications of this body of work are two-fold. First, while there is certainly variability in the specific HR practices that are argued to be associated with each of the three HR policy domains, it is possible that there are some patterns that emerge across these studies. For example, we can conceptualize that staffing related HR policies such as recruitment, selection processes and decision criteria, as well as training related HR policies, such as ongoing training, comprehensive training, and hours of training that would logically be associated with both the level and type of knowledge, skills, and abilities among the workforce. Similarly, performance management criteria and processes, the level and type of compensation, as well as the nature of rewards and incentives are likely to serve as mechanisms to motivate the discretionary effort employees' display at work as well as the activities that employees emphasize while performing their jobs. Finally, the structure of work, the level of participation and empowerment, and participation in teams and quality circles are likely to influence the opportunities employees have to contribute to their organization's objectives.

At the same time, however, while HR practices may tend to be associated with certain policy domains, it is important to recognize that HR practices may be associated with more than one HR policy domain. Therefore the second implication is that HR practices may be used to achieve multiple and potentially different policy domain objectives. For example, training may enhance employee knowledge, skills, and ability, and at the same time be used as a tool to enhance employee feelings of intrinsic motivation and fulfillment from work. For another example, employee participation in decision making may provide employees both the opportunity and motivation to perform. Since HR practices must be considered not in isolation but in concert with other practices – this might explain why a particular HR policy or practice such as the use of incentive bonuses might be part of a control oriented HR system in one study, but part of a flexible production system in another study. The practices are not linked to a particular HR system per se, rather, their use, in combination with other HR practices, ultimately dictates their influence on the HR policy domains. For example, when paired with narrowly defined jobs and a strong emphasis on regulations and procedures, individual incentives might encourage employees to comply with pre-established rules and procedures necessary to achieve cost reductions. In contrast, when paired with broadly defined jobs, extensive discretion and substantial training investments, individual incentives may encourage employees to explore alternative methods of performing their jobs and helping their co-workers to realize some other strategic objective. In short, we would argue that a single HR practice is not tied to any specific type of policy

domain objective or, ultimately, any HR system objective. Rather, HR practices are context dependent, their impact and effectiveness depends on other HR practices with which they are paired.

Fig. 2 depicts these possible relationships among HR systems, HR policy domains, and HR policies and practices. Moving forward, the challenge is to identify both (a) the relevant HR policy domain objectives that are necessary to realize HR system objectives as well as (b) to identify which HR policies and practices are most effective in realizing the HR policy domain objectives. While addressing this specific issue is beyond the scope of this paper, we strongly encourage researchers to focus more explicitly on addressing these two issues. In addition, research is needed to examine which specific combinations of HR policies and practices are most effective in achieving the relevant objectives for employee skills, motivation, and opportunities that are necessary to realize HR system objectives.

While we believe that explicitly addressing the conceptual logic underlying the rationale for the inclusion of various HR policies and practices in HR systems through their influence on HR policy domains will certainly help strategic HRM research build a cumulative body of knowledge, there are several methodological issues that influence the extent to which this is likely to be realized. Next we turn to a discussion of these methodological issues in measuring HR systems.

HR SYSTEMS: METHODOLOGICAL CONSIDERATIONS

Up to this point we have suggested that the field of strategic HRM research might benefit from a shift in our focus toward a strategically anchored view of HR systems. Specifically, we argue that there are myriad possibilities regarding the strategic objectives, which HR systems might be designed to achieve and that explicitly considering these objectives may provide grounding for conceptualizing HR systems. In addition to a shift toward strategically anchored HR systems, we concur with the conceptual arguments of [Delery and Shaw \(2001\)](#), [MacDuffie \(1995\)](#), and [Batt \(2002\)](#) that HR systems are comprised of three distinct HR policy domains that are oriented toward influencing employee knowledge, skills, and abilities, employee motivation, and the opportunities afforded employees to contribute. Moreover, realizing the relative objectives of HR policy domains is achieved through the use of specific combinations of HR practices. In the remainder of this paper, we explore the implications that this conceptualization of HR

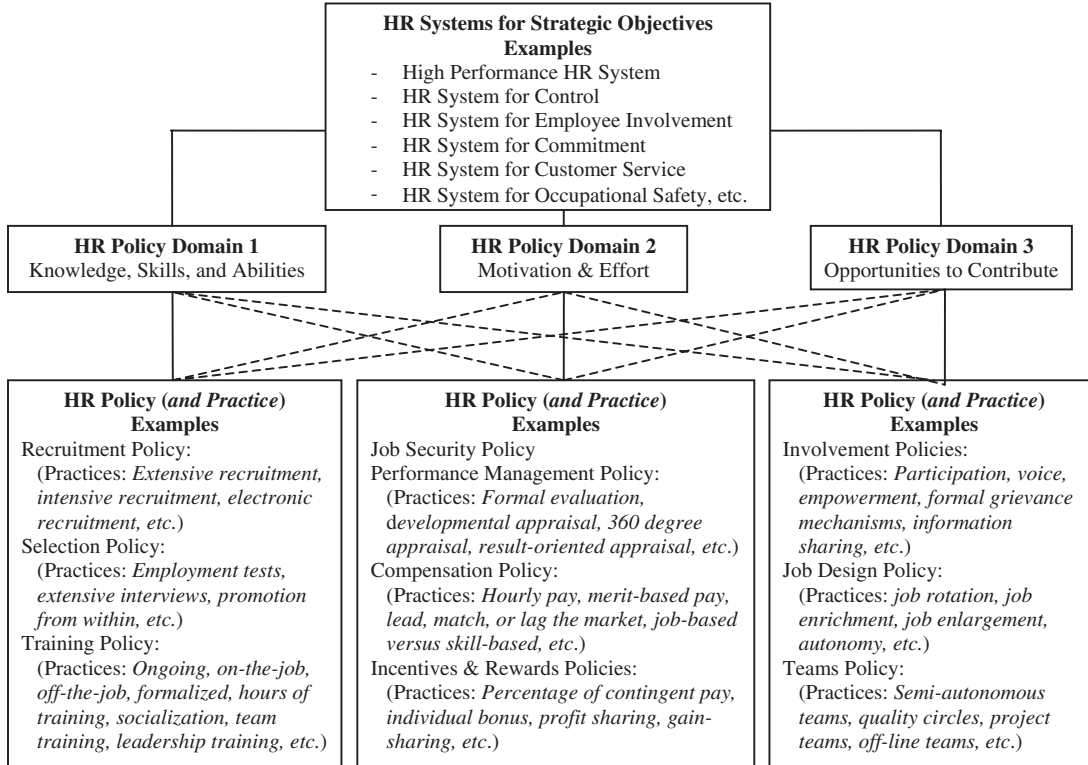


Fig. 2. HR Systems.

systems has and for how we examine HR systems. Specifically, we focus on two specific sets of methodological issues for studying HR systems namely measurement and sampling issues.

Measurement Issues

A key feature of strategic HRM research is the notion that it is more appropriate to examine a system of HR practices rather than single practices in isolation. Since employees are exposed to multiple practices simultaneously, a system of interrelated practices is expected to have more influence on performance than individual practices in isolation (MacDuffie, 1995). In order to analyze and determine the role of HR activities, researchers need to define and operationalize the concept. However, much of the current literature has failed to come to a consistent agreement on how to measure HR systems. One particularly important issue relates to the key question: should we measure HR policies or HR practices within an HR system?

Policies Versus Practices?

As noted earlier in this paper, researchers have distinguished between HR policies and HR practices. This distinction essentially has two related interpretations. First, as noted by Wright and Boswell (2002, pp. 263–264), “HR policies represent the firm or business unit’s stated intentions about the kinds of HR programs, processes, and techniques that should be carried out in the organization. HR practices consist of the actual programs, processes and techniques that actually get operationalized in the unit” (Gerhart et al., 2000; Huselid & Becker, 2000). In other words, we can differentiate HR policies as designed by organizational decision makers from HR practices that are implemented by organizational members to manage employees. While these are likely to be related, there may be a disconnection between what is espoused to be done and what is actually carried out by managers.

A second distinction between policies and practices represents the level of abstraction noted by Becker and Gerhart (1996) and Schuler (1992). As noted above, HR practices are specific HR activities, which are employed to implement an HR policy. There is a wide array of HR practices (e.g., behavioral interviews, hourly pay, employee socialization, 360 degree performance feedback, etc.) from which organizations may choose to manage employees. At a higher level of abstraction are HR policies, which reflect an employee-focused program that influences the choice of HR practices. For instance, an HR policy might reflect a commitment to pay-for-performance

and a number of different HR practices (e.g., profit sharing, piece rate systems, commission) might be implemented to attain this policy.

While HR policies create boundary conditions in which HR practices should be implemented, researchers may choose to measure HR activities at either the policy or practice level of analysis. For example, selective staffing is an HR policy which informs HR managers and line managers the organization's guiding principle when hiring employees. Measuring the extent of selective staffing may be carried out at the policy or practice level of analysis. For example, at the HR policy level, researchers have focused on general orientations toward selective staffing such as

- Great effort to select the right person (Snell & Dean, 1992; Bae & Lawler, 2000)
- We have gone to great lengths to establish the best staffing procedures possible (Snell, 1992).

Alternatively, under the policy of selective staffing there are different HR practices that can be employed to achieve the selective staffing policy. Some examples of how such practices have been measured in the literature include

- The recruitment/selection process for these employees emphasizes their ability to collaborate and work in teams (Lepak & Snell, 2002).
- We use problem-solving aptitude as a criterion in employee selection (Ahmad & Schroeder, 2003).
- The proportion of new hires for which an analysis of the desired personal skills/competencies/characteristics had been carried out prior to the selection decision (Becker & Huselid, 1998; Bjorkman & Xiucheng, 2002).

While this distinction between policies and practices may seem fairly innocuous, each approach does have strengths and weaknesses that have implications for how we study HR systems. The advantage of the assessing HR policies over HR practices is that researchers may be able to understand the general approach to particular HR activities (e.g., selectiveness of staffing, comprehensiveness of training) across an entire organizational unit or particular referent group. Additionally, since a single HR policy may be achieved through a myriad of HR practices, it reduces the likelihood of miscalculating an organization as "low in selective staffing" if a single specific HR practice used by an organization is not included in some HR survey instrument. In this regard, focusing on policies allows for equifinality across organizational units or referent groups regarding the specific means used (HR practices) to achieve the policy. Equifinality suggests that among the HR practices or policies that comprise and HR system, there is a broad

range of combinations of their use that may be effective in realizing the HR system's objectives (cf. Becker & Huselid, 1998). The downside to focusing on HR policies is that (a) policies do not provide detailed information of the specific manner by which employees are managed, and (b) there may be a fundamental disconnect between the policies of what are intended to be implemented and how those HR practices are actually carried out (Wright & Boswell, 2002).

In contrast, measuring more fine grained or specific HR practices provide much greater accuracy regarding how employees are actually managed. For example, rather than focusing on the policy of selective staffing, measuring HR practices requires examination of the specific staffing practices that are selective in nature. This approach has conceptual appeal. As Wright and Boswell (2002) recently noted, "because employees can only respond to actual practices, any research attempting to demonstrate a relationship between HRM and firm performance stands on firmer ground when assessing the actual practices rather than the intended policies" (p. 264). At the same time, however, the reality is that there are an infinite number of combinations of HR practices that companies might employ, creating considerable challenges for capturing HR systems. It is conceivable that two or more organizations may follow a policy of selective staffing but implement different HR practices (e.g., extensive recruitment, comprehensive interviews, employment testing) to realize this objective. Moreover, HR practices may work in multiple ways to realize an HR policy. Delery (1998) noted that from a systems perspective, HR practices might be viewed as additive (independent) in nature or interactive (interdependent) in nature.

Additive Versus Interactive Effects?

When viewed from an *additive* perspective, the assumption is that the influence of HR practices on realizing some HR policy objective are independent and using more of these practices should result in increased levels of the objective. At the same time, however, some practices may be *interactive* such that their ultimate influence depends on what other practices are in place. As noted by Delery (1998), some interactive effects may be *substitutes* while others may be *synergistic*. When two HR practices function as substitutes, they have an equivalent impact on the outcome of interest (i.e., policy domain objective) and using either practice should be effective. At the same time, if one practice is in use, adding the second practice "will add nothing except the expense associated with its implementation" (Delery, 1998, p. 293). Two HR practices are synergistic "when together they result in a substantially different effect than the sum of their individual effects

would lead one to believe.” Interestingly, the nature of this synergistic effect may be positive or negative (Delery, 1998; Becker, Huselid, Pickus, & Spratt, 1997).

This discussion highlights some of the tradeoffs for examining HR systems at the policy or practice level of analysis as well as the complexity of how we conceive the relationships among HR practices and/or policies when used in combination. There is certainly no clear answer for this question and identifying which approach is most appropriate is an empirical as well as a conceptual question. It may be the case that the relationship among specific HR practices that are oriented toward achieving a particular HR policy are additive in nature or substitutes for one another. For example, intensive interviews may be redundant with comprehensive employment testing or, alternatively, the use of these two together may have an additive effect, such that using both is better than using either in isolation. Looking at HR practices that are oriented toward different HR policies, or looking at HR policies working toward different policy domains, however, may present a different story. Because these are intended to realize different objectives, it is unlikely that they would be redundant or substitutes for one another. The question, then, is what is the nature of their relationship? For example, when considering an HR system, are policies of pay-for-performance and job security additive or synergistic? Conceptual arguments could be made for either approach. The key question is whether the influence of one practice is dependent on the presence of the other practice, and, if so, what is the nature of that interdependence.

The previous discussion highlights that across HR systems studies, researchers vary in terms of whether they focus on an additive approach, or a unitary index of HR practices, versus a more synergistic approach in which HR policies interact. It may be the case that there are merits to both perspectives, but perhaps for different levels of analysis of HR activities. Moving forward, the challenge is three-fold. First, research is needed to explicitly identify which HR policies are most appropriate for the three HR policy domains and their various objectives. Several researchers have proposed a number of HR policies that are likely to be oriented toward specific HR policy domains. Additional theory and empirical examination is needed that examines this issue in the context of specific HR system objectives to provide greater clarity in terms of the effectiveness of various HR policies and practices for the HR policy domains. Second, research is needed to identify which HR practices are most effective for achieving the HR policies that comprise the policy dimensions. Third, research that explicitly examines how HR practices work in isolation and in combination would prove

particularly valuable to develop a body of knowledge-linking HR practices and HR policies. As a field of research, once we are able to establish a firm foundation for the specific HR policies that are most effective in achieving different HR policy domain objectives, we can focus on identifying which specific HR practices and which combinations of HR practices are most effective to realize each specific HR policy.

Sampling Issues

While our previous discussion focused on issues related to how to measure HR systems, there are several additional considerations that must be taken regarding sampling or data collection procedures for studying HR systems. Specifically, from a sampling perspective, it is important to examine issues related to (a) the *level of analysis* at which HR systems are expected to operate and be measured, (b) the *referent* or specific group(s) of employees that are expected to be directly influenced by the HR system, and (c) the most appropriate *source for data* on the HR system and policies in place to manage this employee group.

Level of Analysis

Strategic HRM research has tended to focus at examining HR systems at the corporate, firm/enterprise/business unit, or establishment/facility/workplace levels of analysis. Appendix B shows the level of analysis for the empirical investigations reviewed for this paper. If a study focused on two levels of analysis (i.e., included both corporation and firms), it was classified under the highest level of analysis.

Looking across the data, researchers have examined HR systems at all levels of analysis with 7% at the corporate level, 5% at the business unit level, 31% at the firm/enterprise level, 38% at the establishment/plant/facility/workplace level, and 9% at the individual level of analysis. The disparity in the levels of analysis used to examine HR systems raises the questions – what is the appropriate level? Unfortunately, there is no clear-cut answer to this question since there are clear advantages, as well as disadvantages, involved with each level.

Becker and Huselid (1998) identified the advantage of *corporate* level of analysis for strategic HRM when they stated that corporate performance is the “*raison d’etre*” of strategic HRM research because HR policies and systems can be tied to meaningful performance data, such as market performance and accounting measures of performance (e.g., sales, ROA, ROE,

ROI). Moreover, because many corporations are required to report these data, researchers may be able to access relevant performance measures from a secondary source of data. These are certainly advantages for reducing common method bias concerns and increasing practical applicability of study results. These advantages, however, must be considered in light of the limitations for examining HR systems at the corporate level of analysis. Since corporations may own multiple businesses, each of which may pursue vastly different strategic objectives and utilize different HR systems to realize those objectives, attempts to identify, and measure HR systems at a corporate level of analysis may be difficult to realize due to the potential presence of multiple, potentially competing, HR systems in use within organizational units.

In contrast, because *establishments* are a single organizational entity, they do not present the potential problem of multiple business units pursuing distinct strategies. As a result, it may be more feasible to identify a unified or dominant HR system in use. In addition, because establishments may be smaller in scope, an additional benefit of this level of analysis is that key informants may be more familiar with the specific HR practices used for different employee groups. As a result, it may allow researchers to gain more accurate data regarding the specific HR practices used to manage employees. While less common in strategic HRM research at the *individual* level of analysis (e.g., Allen, Shore, & Griffeth, 2003; Vandenberg, Richardson, & Eastman, 1999; Zacharatos, et al., 2005) may be especially useful to directly capture employee reactions and behavioral and attitudinal changes due to the adoption or use of HR systems. At the same time, however, conducting strategic HRM research at the individual level of analysis imposes a challenge for data collection, because it requires significant effort to recruit enough respondents from each organization as well as collecting data from individual employees across a wide range of organizations to enable the examination of organizational variability in performance. Further, individuals may not be able to reflect on the entire spectrum of HR policies or practices used to manage all employees throughout a corporation, firm, or establishment.

So, which level of analysis is most appropriate? We do not suggest that there should be the one right or wrong level of analysis to utilize when examining HRM activities. Rather, this choice reflects tradeoffs such as increased accuracy in measuring HR systems at lower levels of analysis (e.g., individual, establishment) versus increased generalizability of results or greater accessibility to organizational level performance metrics (e.g., firm, corporate levels of analysis). Moreover, this discussion should rest on

several considerations when deciding which level of analysis to examine HR systems and their outcomes.

Specifically, the theoretical perspective or boundary conditions of a domain of interest are likely to provide insights into the appropriate level of analysis. For example, if a study aims to capture the variance of the impact of HR system(s) on customer service in the retail or food service industries, HR systems measure that are captured at the level of retail stores or restaurants rather than a higher level business unit or corporation would like to provide greater insights into the extent to which HR systems for customer service achieve their desired outcomes among employees. Similarly, research on HR systems at individual level of analysis may prove most appropriate to provide insights into the black box or the intervening mechanisms of how HR systems relate to organizational performance measures. And research that strives to examine the financial implications of HR system use may be most appropriate at higher levels of analysis. At higher levels of analysis, however, the possibility of organizations pursuing multiple strategic objectives may be greater than at single business units, and different groups of employees may be oriented toward different objectives. This is not to say higher-level research should not be pursued, rather, additional considerations must be taken regarding the referent group of focus.

Which Referent Group(s)?

Researchers examining HR systems have focused on a variety of referent groups in their investigations such as the impact of HR systems on core employees (Shaw, Gupta, & Delery, 2005; Batt, 2002; Batt, Colvin, & Keefe, 2002; Den Hartog & Verburg, 2004; Osterman, 1994), top management teams (Collins & Clark, 2003), either managerial or non-managerial employees (Guthrie, 2001; Jackson, Schuler, & Rivero, 1989; Snell, 1992; Cappelli & Neumark, 2001), exempt versus non-exempt employees (Galang, 1999; Becker & Huselid, 1998), specific employee groups within organizations such as production workers or quality employees (Snell & Dean, 1992; Youndt et al., 1996), and distinct employment modes such as core, traditional, alliance partners, and contract workers (Lepak & Snell, 2002).

There are several important reasons why examinations of HR systems must explicitly consider the referent group of focus. First, it is important to recognize that different HR systems may be used within organizations simultaneously to manage different groups of employees (Lepak & Snell, 2002; Wright & Boswell, 2002). More importantly, it may be the case that

these are simply differences in the level of exposure to a particular HR system across employees but rather exposure to fundamentally different HR systems. In this regard, collecting data across different groups of employees may inadvertently exclude the possibility that there are substantive differences in the composition of HR systems used within organizations for different groups of employees. The use of weighted averages may overcome differences in the amount of use of HR systems for employee groups, but this approach does not account for distinct HR systems that may be in use.

Second, it is important to recognize that not all employees are of equal strategic value within organizations and even employees of similar levels of strategic value may add value in distinct ways. This issue has direct implications for studies examining the impact of HR systems on various performance measures. Empirical investigations that focus solely on the group of employees that are critical for a particular performance objective (e.g., sales, productivity) are likely to be more precise and accurate than studies that include multiple groups of employees, some of which may not have any direct impact on the performance measure. For example, focusing on the HR system used for sales associates and its implications for company sales is likely to be more reflective of the value of an HR system than if the referent group also included administrative staff and maintenance employees in the sample. Similarly, in a large corporation, employees may add value in terms of organizational efficiency, teamwork, creativity, sales, and the like. Organizations are responsible for meeting many distinct performance dimensions and empirical examinations that consider all employees together but focus on only one type of performance measure (e.g., financial performance) may be misleading. It is possible that different employee groups are very effective for some particular strategic objective, but not directly responsible for other objectives. If examinations fail to make this distinction, they may dramatically understate the potential value of HR systems because they are testing its relationship for a particular performance measure that is inappropriate for some of the employees in the referent group.

Considering these issues, it is important that HR systems studies explicitly identify the particular strategic objective under investigation, the specific referent group of employees that are expected to make contributions toward this objective, and the performance outcomes that are most reflective of success or failure in achieving this objective. Failing to do so may result in inappropriate or incorrect conclusions regarding the role of HR systems for competitive advantage, while doing so is likely to increase the precision of our conceptual arguments, results, and implications for practitioners. Of course, even when these conditions are met, an additional consideration that

directly impacts the accuracy of HR systems relates to the source of the data on the HR practices or policies.

Data from Whom?

At a general level, raters or key informants must be knowledgeable persons about HR systems or activities in use (Huselid & Becker, 2000; Wright et al., 2001). If raters do not have enough knowledge and understanding about a company's HR policies and practices, measurement errors of HR systems may increase significantly. In part, this issue is related to issues regarding the level of analysis. If the level of analysis is corporate or firms, CEO, or HR, executives may have more knowledge about company-wide HR policies but limited knowledge about the specific HR practices in use for specific groups of employees. At the establishment level of analysis, key informants of HR systems may be plant managers or HR managers. While senior managers or senior level HR professions in corporations may not have as much information regarding variations in the use of HR practices for different employee groups, this concern may diminish at the establishment level of analysis. However, this concern is not negated. Establishments may also have variability in the HR practices used for different employee groups as well, although these variations are admittedly likely to be less extreme than in particularly large corporations.

We argue that the issue is not simply the level of analysis for the sample or the respondent, rather, the primary concern is the ability of the key informant(s) to comment accurately on how employees in general or particular types/groups of employees are managed. We believe that this ability is likely to increase when key informants are intimately involved in the management of the referent employees who collectively work toward a specific strategic objective. In other words, with a clear referent group of focus for a specific strategic objective, it might be more feasible to identify key informants that are in a good position to evaluate the use of HR systems as well as the composition of HR systems for employees working toward that strategic objective.

This issue is directly related to recent discussions in the literature regarding measurement error in strategic HR studies. To reduce measurement errors of HR practices, policies, or systems, two or more raters have been recommended by researchers (e.g., Gerhart et al., 2000; Wright et al., 2001). While one conclusion regarding this issue might be to simply obtain a greater number of raters, Huselid and Becker (2000) noted that simply adding raters does not guarantee an increase in accuracy. Rather, the more critical issue is who are the most knowledgeable persons about HR policies

or practices. This discussion rests on the emphasis placed on reliability versus validity in assessing HR systems. While obtaining more raters may increase reliability, an increase in the validity of assessments of HR systems require consideration of the accuracy of the raters' evaluations. In short, it is not simply how many people respond to a survey that is critical but who responds to the survey that is most important (cf., [Huselid & Becker, 2000](#)).

DISCUSSION

One of the fundamental principles of strategic HRM research is that the impact of HR practices on individuals as well as organizations is best understood by examining the system of HR practices in place. Considering that HR practices are rarely, if ever, used in isolation, failure to consider all of the HR practices that are in use to manage employee's neglects potential important explanatory value of unmeasured HR practices. Yet, while researchers may agree that a systems perspective is most appropriate, adopting a systems perspective introduces a host of issues and problems that remain to be addressed in literature. Our goal in this paper was to take a step toward identifying and addressing some of these issues. Our intent was not to provide all the answers for these questions – doing so would require multiple empirical investigations. Rather, our goal was to hopefully re-orient researchers on several critical issues regarding the fundamental components of HR systems. Based on a review of much of literature that has examined HR systems, we have argued that it might be fruitful for strategic HRM research to build more conceptual logic regarding both the function (objective) and the form (composition) of HR systems.

Regarding the function of HR systems, while a number of different, although related, HR systems have been proposed in the literature, we argue that a more strategic anchored perspective for HR systems may be more appropriate. Because different employee groups within organizations are often tasked with working toward different organizational objectives, identifying those objectives and linking them to the design of HR systems toward some strategic objective might provide greater insights into the potential power and limitations of HR systems. Although we identified existing conceptualizations of HR systems targeting specific objectives such as high performance, commitment, involvement, cost reductions, safety, and customer service, it is likely that there are many additional strategic targets for HR systems. We encourage additional research that explicitly examines the potential specific objectives that HR systems may be designed to achieve.

Regarding the form of HR systems, there are several interrelated issues that warrant additional investigation. Building on the arguments of Batt (2002), Delery and Shaw (2001), Gardner, Moynihan, Park, and Wright (2000), MacDuffie (1995), and Ostroff and Bowen (2000), we proposed a template of HR systems in which HR systems are comprised of HR policies and practices that are oriented toward one or more of three HR policy domains: knowledge, skills, and abilities; motivation and effort; and opportunities to contribute. Essentially, the impact of HR systems on achieving some strategic objective is dictated by how well aligned the HR practices within each HR policy domain are designed toward achieving the relevant policy domain objectives as well as the alignment across the three policy domains. Though there are certainly many conceptual issues regarding the specific policies and practices that comprise these domains, there are also methodological implications for how these HR systems work. Specifically, two closely related issues regarding the form of HR systems relate to whether we should measure HR policies or HR practices as well as how the HR practices that comprise the HR policy domains work in concert.

First, existing studies examining HR systems have varied in their focus on HR policies or HR practices in their measurement approaches. Although there are certainly advantages and disadvantages with both approaches, research is needed to build a more cumulative logic regarding which HR policies are most appropriate to achieve distinct HR policy domain objectives as well as which HR practices are most effective in achieving the HR policies. Second, research is also needed that examines how HR systems actually work. Drawing on the insightful work of Delery (1998), there are several possible relationships that may exist among HR practices within an HR system. Specifically, HR practices may have an independent or additive effect on outcomes of interest or they may have an interactive or interdependent effect in which HR practices may be substitutes for one another or operate in a synergistic manner. Considering the fundamental logic that HR systems are comprised of multiple HR practices that operate simultaneously, a critical area of future research that is needed is to examine exactly *how* these practices work together.

Beyond conceptualizations of the form and function of HR systems, research is needed that more explicitly considers several sampling issues that are likely to impact the reliability and validity of empirical investigations of HR systems. Specifically, there are many issues related to the level of analysis, identifying the appropriate referent group, and who should actually serve as key informants for investigations. While there are certainly advantages and disadvantages to different approaches to collecting data on HR

systems, we would argue that strategic HRM research might prove more accurate and reliable by explicitly identifying the referent group of employees that are most critical for contributing to the strategic objective in focus, identifying the most appropriate outcome measure for that strategic objective, and targeting informants that are intimately familiar with how these employees are managed.

Of course, there are certainly additional issues that warrant further investigation. For example, researchers have adopted multiple methods for operationalizing HR systems such as factor analysis, cluster analysis, and reliability analysis. While others have provided useful overviews of the tradeoffs of these approaches (see [Delery, 1998](#); [Wright & Boswell, 2002](#)), it is important that the operationalization approach used by researchers is consistent with the conceptualization of HR systems in their studies. At a general level, we would encourage strong theory driven arguments for the conceptualization of HR systems and then using these techniques for validation purposes rather than simply relying on empirically derived HR systems from a sample. Even if an HR system emerges through factor analysis or cluster analysis across establishments or firms in a sample, this does not mean that these systems are logical or ideal. Rather, there is more likely to be some level of disconnect between what is happening across organizations and what theory would suggest is optimal to achieve a strategic objective. Building HR systems conceptually, and then examining whether adherence or deviation to these systems impacts relevant outcome measures, would prove particularly helpful in building stronger theory regarding the potential impact of HR systems in organizations.

How we conceptualize HR systems is also likely to have implications for how we think about the relationship between HR systems and performance. Specifically, research is needed that explores the implications of a differentiated approach to HR system used for employees and organizational effectiveness as well as the specific outcome measures that should be linked with different HR systems. It is possible that there are implications related to the extent of differentiation in the HR systems used across employee groups within organizations. Although adjusting HR systems for different employee groups may more accurately reflect the nature of different employee groups' contributions toward various organizational objectives, it is possible that there are negative implications related to too much or too little differentiation in HR system use within organizations ([Lepak, Taylor, Tekleab, Marrone, & Cohen, 2002](#)). Too much variability in the type of HR system used for different employee groups may raise feelings of inequity across employees that may influence how hard employees are willing to

work toward organizational objectives. In addition, high variability in HR systems applied to different groups of employees may reduce the salience, visibility, consistency of HR systems, reduce consensus among employees, and hence discourage the emergence of HR systems as a strong organizational climate (Bowen & Ostroff, 2004). At the same time, failing to differentiate how employee groups are managed to reflect the nature and extent of their contributions to organizational performance may also prove detrimental. In these scenarios, particularly critical or core employees may resent not being treated as “star” employees and being exposed to greater levels of organizational investments, pay, job opportunities, and the like. Though speculative, research is clearly needed that examines the performance implications for different employee groups and organizational performance that stem from implementing different HR systems simultaneously for different employee groups.

Related, if organizations do in fact rely on distinct HR systems for different groups of employees within organizations in pursuit of different strategic objectives, it is important to recognize the possibility that some HR systems may be more appropriate for the pursuit of some performance metrics than others. While strategic HRM researchers have gravitated toward organizational level metrics such as ROI, ROA, market-to-book, and the like, it is possible that HR systems may be effective in meeting some metrics but not others (e.g., sales versus labor productivity) or in meeting more proximal metrics such as employee customer service or safety orientation, knowledge sharing and collaboration, labor productivity, and the like. In short, focusing on strategically anchored HR systems may facilitate a greater degree of accuracy in predicting a more narrow set of performance outcomes which, in turn, may be related to broader or higher level performance metrics. Research is certainly needed that examines how the use of different HR systems, for different referent groups, relates to distinct performance measures.

CONCLUSION

In this paper, we have covered a lot of territory regarding what HR systems are and how they might be studied. And while we have provided a number of suggestions regarding issues for conceptualizing and studying HR systems, it is quite possible that we have raised more questions than we have provided answers. And it is also quite possible that researchers may disagree with the arguments we have offered regarding HR systems. Our goal at

the outset was not to provide all of the solutions as to how best to study HR systems in strategic HR systems; rather, our goal was to explore many of the theoretical and methodological issues that continue to plague one of the key distinguishing issues of strategic HRM research – HR systems. We hope our arguments generate interest and a renewed focus on addressing these issues in future strategic HRM studies.

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APPENDIX A: HR SYSTEMS AND HR ACTIVITIES

Study ^a	HR Systems for Strategic Objectives	HR Policy Domains Referenced in Study	Job Analysis/ Job Design	Recruitment	Selection	Training/ Development	Group Incentive	Other Compensation	Participation/ Empowerment	Teams	Performance Evaluation	Job Security	Employee Voice/ Grievance	Promotion/ Career Development	Information Sharing/ Communication	Others
Agarwala (2003) <i>IJHRM</i>	Innovative HR practices	Introduction		x	x	x	x	x	x	x				x	x	Exit management
		Importance		x	x	x	x	x	x	x	x			x	x	Adopting responsibility for socially relevant issues
		Satisfaction		x	x	x	x	x	x	x	x			x	x	Exit management
Ahmad and Schroeder (2003) <i>JOOM</i>	HRM system		x	x	x	x	x	x	x	x	x				x	Adopting responsibility for socially relevant issues
																Communication of strategy
																Manufacturing and HR fit
																Interaction facilitation (socialization)

APPENDIX A: (Continued)

Study ^a	HR Systems for Strategic Objectives	HR Policy Domains Referenced in Study	Job Analysis/ Job Design	Recruitment	Selection	Training/ Development	Group Incentive Other Compensation	Participation/ Empowerment	Teams	Performance Evaluation	Job Security Employee Voice/Grievance	Promotion/Career Development	Information Sharing/Communication	Others
Batt et al. (2002) <i>ILRR</i>		Cost-cutting HR practices Commitment-enhancing Employee voice				x	x					x		
Becker and Huselid (1998) <i>RPHRM</i>	HPWS		x	x	x	x	x	x	x	x	x	x	x	Attitude survey
Bjorkman and Xiucheng (2002) <i>IJHRM</i>	High-performance HRM system			x	x	x	x			x		x	x	Attitude survey Quality of Work life (QWL) program
Bretz and Judge (1994) <i>JOM</i>	HR system to affect job choices	Rewards Mobility Justice Work-family					x	x		x		x		Justice
Cappelli and Neumark (2001) <i>ILRR</i>	HPWS				x	x	x	x				x	x	
Collins and Clark (2003) <i>AMJ</i>	Network-building HR practices					x	x		x				x	Contacts with external stakeholders
Datta et al. (2005) <i>AMJ</i>	HPWS			x	x	x	x	x	x		x	x		Attitude survey Information strategic plans

Delery and Doty (1996) <i>AMJ</i>	Market type system		x		x		x	x			x		x	
	Middle-of-the-road		x		x		x	x			x		x	
Den Hartog and Verburg (2004) <i>HRMJ</i>	Internal system		x		x		x	x			x		x	
	HPWS		x	x	x	x	x	x			x		x	Written mission statement and HRM strategy
Galang (1999) <i>IJHRM</i>	HPWS		x		x	x		x	x		x		x	
Godard (1997) <i>IR</i>	Progressive HRM				x		x						x	Employer sponsored social or sports clubs
	EI (Employee-involvement) intensity		x				x		x					Employee counseling program
	Worker say		x						x					QWL program
Gomez-Mejia (1988) <i>SMJ</i>	International HRM strategy				x	x			x				x	Power/influence
Guthrie (2001) <i>AMJ</i>	High-involvement work practice system		x			x	x	x			x			Attitude survey
					x		x	x	x				x	QWL program
Guthrie, Spell and Nyamori (2002) <i>IJHRM</i>	High-involvement work practices				x		x	x	x				x	Attitude survey
							x		x				x	QWL program
Huang (2001) <i>PR</i>	Facilitation type		x			x					x		x	Reward equity
	Accumulation type		x			x					x		x	Reward equity
	Utilization type		x			x					x		x	Reward equity
Huselid (1995) <i>AMJ</i>	HPWS	Employee skills and organizational structures	x		x	x	x	x			x		x	Attitude survey
		Employee motivation			x						x		x	QWL program

APPENDIX A: (Continued)

Study ^a	HR Systems for Strategic Objectives	HR Policy Domains Referenced in Study	Job Analysis/ Job Design	Recruitment	Selection	Training/ Development	Group Incentive	Other Compensation	Participation/ Empowerment	Teams	Performance Evaluation	Job Security	Employee Voice/Grievance	Promotion/Career Development	Information Sharing/Communication	Others
Ichniowski et al. (1997) <i>AER</i>	HRM system 1 (high level of innovative HRM practices)		x		x	x	x	x	x	x		x	x		x	
	HRM system 2 (HRM system 3 + training and teams)		x		x	x	x	x	x	x		x	x		x	
	HRM system 3 (traditional system + worker involvement and communication)		x		x	x	x	x	x	x		x	x		x	
	HRM system 4 (traditional system)		x		x	x	x	x	x	x		x	x		x	
Katz, Kochan and Keefe (1987) <i>BPEA</i>	Industrial relations system	(Managerial) discretion and the pace of work (Worker and union) participation	x				x				x					
						x		x				x			x	Attitude survey

APPENDIX A: (Continued)

Study ^a	HR Systems for Strategic Objectives	HR Policy Domains Referenced in Study	Job Analysis/ Job Design	Recruitment	Selection	Training/ Development	Group Incentive Other Compensation	Participation/ Empowerment	Teams	Performance Evaluation	Job Security Employee Voice/Grievance	Promotion/Career Development	Information Sharing/Communication	Others
	involvement in teams and communication)													
	HRM system 4 (traditional system)		x	x	x	x	x	x	x		x	x	x	
	HRM system1 (high level of innovative HRM practices)		x	x	x	x	x	x	x	x	x	x	x	
	HRM system 2 (HRM system 3 + training and teams)		x	x	x	x	x	x	x	x	x	x	x	
	HRM system 3 (traditional system + worker involvement in teams and communication)		x	x	x	x	x	x	x	x	x	x	x	
	HRM system 4 (traditional system)		x	x	x	x	x	x	x	x	x	x	x	
Michie and Sheehan-Quinn (2001) <i>BJM</i>														

Pil and MacDuffie (1996) <i>IR</i>	High-involvement work practices index		x				x	x		x					
	Complementary HRM practices index			x	x		x								x
Preuss (2003) <i>ILRR</i>	HPWS	Work design	x												
		TQM	x		x			x							
Ramsay, Scholarios, and Harley (2000) <i>BJIR</i>	HPWS	High-performance work practices	x		x	x	x	x	x	x	x	x	x		Process templates Monitoring
		Systems work practices 1 (SWP1)		x	x							x			EEO/diversity management
		Systems work practices 2 (SWP2)				x			x	x		x			Family friend management
															Downward communication
Rodriguez and Ventura (2003) <i>IJHRM</i>	Make or market-type system			x	x	x				x	x		x		
	Buy or internal system														
Shaw, Gupta, and Delery (2005) <i>AMJ</i>	HR inducement and investment index				x		x	x			x	x			Procedural justice
Snell (1992) <i>AMJ</i>	HRM control systems	Input control		x	x	x									x
		Behavior control								x					x
		Output control									x				
Snell and Youndt (1995) <i>JOM</i>	HRM control systems	Input control		x	x	x									x
		Behavior control									x				x
		Output control										x			
Teo and Waters (2002) <i>IJSM</i>	HR Environment					x	x	x	x			x	x	x	Work-life balance programs
Vandenberg et al. (1999) <i>GOM</i>	Business practices		x		x		x	x							x

APPENDIX A: (Continued)

Study ^a	HR Systems for Strategic Objectives	HR Policy Domains Referenced in Study	Job Analysis/ Job Design	Recruitment	Selection	Training/ Development	Group Incentive Other Compensation	Participation/ Empowerment	Teams	Performance Evaluation	Job Security Employee Voice/Grievance	Promotion/Career Development	Information Sharing/Communication	Others
Way (2002) <i>JOM</i>	HPWS		x	x	x	x	x	x	x					
Whitener (2001) <i>JOM</i>	High commitment HR practices				x	x				x		x		
Wood (1999) <i>BJIR</i>	High quality/commitment management practices		x		x	x		x	x		x	x		
Youndt et al. (1996) <i>AMJ</i>	Administrative HR system				x	x		x		x				
	Human-capital-enhancing HR system				x	x	x	x		x				
Zacharatos, Barling and Iverson (2005) Studies 1 and 2, <i>JAP</i>	HPWS		x	x	x	x		x	x		x	x		Reduced status distinction Transformational leadership Measurement of management practices (safety climate, trust)
Zheng (2001) <i>IJOB</i>		Market selection			x	x	x	x		x	x	x		
		Performance management			x	x	x	x		x	x	x		

Unionization	x	x	x	x	x	x	x
Social security	x	x	x	x	x	x	x
Incentive management	x	x	x	x	x	x	x

^aAER (The American Economic Review); AMJ (Academy of Management Journal); BPEA (Brookings Papers on Economic Activity); BJIR (British Journal of Industrial Relations); BJM (British Journal of Management); CJE (Cambridge Journal of Economics); GOM (Group and Organization Management); HRMJ (Human Resource Management Journal); IJEB (International Journal of the Economics of Business); IJOB (International Journal of Organisational Behaviour); IJHRM (International Journal of Human Resource Management); IJSM (International Journal of Stress Management); ILRR (Industrial and Labor Relations Review); IR (Industrial Relations); JAP (Journal of Applied Psychology); JOM (Journal of Management); JOOM (Journal of Operations Management); PR (Personnel Review); RPHRM (Research in Personnel and Human Resources Management); and SMJ (Strategic Management Journal).

APPENDIX B: HR SYSTEMS AND SAMPLE CHARACTERISTICS

Study ^a	Level of Analysis As Sample	Sample	Industry	Final Sample Size	Respondent Position for HRM Practice
Agarwala (2003) <i>IJHRM</i>	Individual	Firms in India	Various	422	Executive or manager
Ahmad and Schroeder (2003) <i>JOOM</i>	Establishment	Used the world class manufacturing (WCM) project data from automobile, electronics, and machinery industries in Germany, Italy, Japan, and the USA	Manufacturing	107	Plant manager
Allen et al. (2003) Study, 1 <i>JOM</i>	Establishment	Salespeople in beauty and cosmetics at a large department store	Department store	215	Employee/salesperson
Allen et al. (2003) Study, 2 <i>JOM</i>	Individual	Insurance agents from a national insurance company	Insurance	345	Insurance agent
Arthur (1992) <i>ILRR</i>	Establishment	Directory of Iron and Steel Plants – MiniMills	Steel MiniMills	29	Personnel manager
Arthur (1994) <i>AMJ</i>	Establishment	Directory of Iron and Steel Plants – MiniMills	Steel MiniMills	30	Personnel manager
Bae and Lawler (2000) <i>AMJ</i>	Business unit	Randomly sampled subsidiaries of MNCs and local firms operating in Korea	Various	138	Head of HRM
Bae et al. (2003) <i>IJHRM</i>	Firm	Random sample of firms in South Korea, Thailand, Taiwan, and Singapore from leading business directories	Various	680	HRM professional
Barnard and Rodgers (2000) <i>IJHRM</i>	Firm	Various directory lists used to identify public and private organizations in Singapore	Various	105	Manager
Bartel (2004) <i>ILRR</i>	Establishment	Branches of banks in the province of Ontario	Banking	330	Non-managerial employee General manager
Batt (2002) <i>AMJ</i>	Establishment	Call centers from Dun and Bradstreet listings of establishments	Call center	Not listed	General manager
Batt et al. (2002) <i>ILRR</i>	Establishment	Stratified random sample drawn from the Dun and Bradstreet listing of establishments	Telecommunications	636	General manage
Becker and Huselid (1998) <i>RPHRM</i>	Corporate	Compact disclosure	Various	691	HRM senior manager
Bjorkman and Xiucheng (2002) <i>IJHRM</i>	Joint ventures and wholly owned subsidiaries	Snowballing method used manufacturing Chinese-Western joint ventures and wholly owned subsidiaries	Manufacturing	62	HRM manager

Bretz and Judge (1994) <i>JOM</i>	Experiment	Several upper-level human resources courses at two major US universities in the Midwest and Northeast	Not reported	65	Student
Cappelli and Neumark (2001) <i>ILRR</i>	Establishment	Sample 1: NES I 1993 Sample 2: NES II 1997	Various	Sample 1: 2,945 Sample 2: 4,363 Combined Data Sets: 205–1,155	Plant manager
Collins and Clark (2003) <i>AMJ</i>	High-technology companies	Mid-Atlantic Tech Almanac and IPO's	High-tech	73	CEO
Datta et al. (2005) <i>AMJ</i>	Firm	Publicly traded firms in the manufacturing sector	Manufacturing	132	Vice president or vice president of HRM
Delery and Doty (1996) <i>AMJ</i>	Establishment	Stratified random sample of banks	Banking industry	216	Senior HRM professional
Den Hartog and Verburg (2004) <i>HRMJ</i>	Firm	Netherlands association of personnel management	Various	175	Senior HRM manager, CEO, or member of top management
Galang (1999) <i>IJHRM</i>	Division or plant	Largest HR professional association in the US	Various	242	HRM manager
Godard (1997) <i>IR</i>	Firm	Canadian firms from a randomized Dunn and Bradstreet mailing list	Goods production and services	293	IR senior manager
Gomez-Mejia (1988) <i>SMJ</i>	Firm	Exporting firms registered with the U.S. department of commerce	Manufacturing	388	CEO
Guthrie (2001) <i>AMJ</i>	Firm	New Zealand post direct marketing center	Various	190	HRM executive/manager or senior executive
Guthrie et al. (2002) <i>IJHRM</i>	Firm	New Zealand business organizations from the post direct marketing center	Various	137–164	Senior manager
Huang (2001) <i>PR</i>	HRM professional members	Members of Chinese HRM association and HR development association of the Republic of China	Various	315	HRM professional
Huselid (1995) <i>AMJ</i>	Corporate	Compact disclosure	Various	968	Senior HRM professional
Ichniowski et al. (1997) <i>AER</i>	Establishment	Steel production lines	Steel	36	HRM manager, labor relation manager, operation manager, superintendent, line worker, or union representative

APPENDIX B: (Continued)

Study ^a	Level of Analysis As Sample	Sample	Industry	Final Sample Size	Respondent Position for HRM Practice
Katz et al. (1987) <i>BPEA</i>	Establishment	Plants from an American automobile manufacturer	Automobile	53	Chief IR manager
Koch and McGrath (1996) <i>SMJ</i>	Business unit	Business units in the Compustat II files	Various	319	Business unit executives or managers
Kochan et al. (1995) <i>IJHRM</i>	Firm	Firms in the US, Canada, Germany, and Japan across the automobile, health, computer, and banking industries	Various	588	Not reported
Laursen (2002) <i>IJEB</i>	Firm	DISKO database	Various	726	Not reported
Laursen and Foss (2003) <i>CJE</i>	Firm	DISKO database	Various	1,900	Not reported
Lepak and Snell (2002) <i>JOM</i>	Firm	Directory of corporate affiliations	Various	148	Senior executive, senior HRM manager, and/or line manager
Macduffie (1995) <i>ILRR</i>	Establishment	Motor vehicle assembly plants from 16 countries	Manufacturing	62	Plant manager, departmental manager, or staff group
Michie and Sheehan (2003) <i>CJE</i>	Establishment	UK manufacturing and service sector firms	Various	361	Director of HRM or alternative senior person
Michie and Sheehan-Quinn (2001) <i>BJM</i>	Firm	EXTEL database	Various	361	Director of HRM
Pil and MacDuffie (1996) <i>IR</i>	Establishment	Plants under the auspices of the International Motor Vehicle Program at MIT	Manufacturing	43	Not reported
Preuss (2003) <i>ILRR</i>	Establishment	Acute-care hospital units in 13 hospitals in Minneapolis/St. Paul, Minnesota	Health care	1,117	Nurses and nursing assistant
Ramsay et al. (2000) <i>BJIR</i>	Establishment	Workplace employee relations survey	Various	1339–1548	Management
Rodriguez and Ventura (2003) <i>IJHRM</i>	Firm	Manufacturing firms in Spain's national classification of economic activities	Manufacturing	120	Not reported

Shaw, Gupta, and Delery (2005) Study 1, <i>AMJ</i>	Establishment	Plants from the American concrete pipe association	Concrete pipes	110	Plant manager
Shaw, Gupta, and Delery (2005) Study 2, <i>AMJ</i>	Firm	Trucking organizations from TTS Blue Book of Trucking Companies	Trucking	299	Managerial informant
Snell (1992) <i>AMJ</i>	Corporate	Standard and Poor's directory of corporate affiliations	Various	102	President or vice president
Snell and Youndt (1995) <i>JOM</i>	Corporate	Standard and Poor's directory of corporate affiliations	Various	102	President or vice president
Teo and Waters (2002) <i>IJSM</i>	Individual	Snowballing method used; two White-collar professionals in Singapore used their networks to collect data	Various	109	Various
Vandenberg et al. (1999) <i>GOM</i>	Individual	Insurance companies in the United States and Canada	Life insurance	3570	Various
Way (2002) <i>JOM</i>	Establishment	NES (National Employer Survey) Phase II	Various	446	Plant manger
Whitener (2001) <i>JOM</i>	Establishment	A stratified random sample of credit unions from a credit union association database	Credit unions	185	HRM manager
Wood (1999) <i>BJIR</i>	Establishment	Dun and Bradstreet establishment file	Manufacturing and service	871	Line managers and HRM specialists
Youndt et al. (1996) <i>AMJ</i>	Establishments	Harris Pennsylvania industrial directory	Metal-working	97	General or functional manager
Zacharatos, Barling and Iverson (2005) Study, 1 <i>JAP</i>	Firm	Industrial accident prevention association	Various	138	HR director
Zacharatos, Barling and Iverson (2005) Study, 1 <i>JAP</i>	Individual	Employees in two Canadian firms	Petroleum and telecommunications	189	Employee
Zheng (2001) <i>IJOB</i>	Firm	Chinese small and medium enterprises	Not reported	74	Not reported

^aAER (The American Economic Review); AMJ (Academy of Management Journal); BPEA (Brookings Papers on Economic Activity); BJIR (British Journal of Industrial Relations); BJM (British Journal of Management); CJE (Cambridge Journal of Economics); GOM (Group and Organization Management); HRMJ (Human Resource Management Journal); IJEB (International Journal of the Economics of Business); IJOB (International Journal of Organisational Behaviour); IJHRM (International Journal of Human Resource Management); IJSM (International Journal of Stress Management); ILRR (Industrial and Labor Relations Review); IR (Industrial Relations); JAP (Journal of Applied Psychology); JOM (Journal of Management); JOOM (Journal of Operations Management); PR (Personnel Review); RPHRM (Research in Personnel and Human Resources Management); and SMJ (Strategic Management Journal).

AUTHENTIC LEADERSHIP: MOVING HR LEADERS TO A HIGHER LEVEL

Bruce J. Avolio and Fred O. Walumbwa

ABSTRACT

Exercising human resource (HR) leadership has always been difficult in challenging times, but the unique stressors facing organizations throughout the world today call for a new approach to HR leadership and its development. We propose a multifaceted model that redefines the role of strategic HR leadership and for understanding connections between authentic HR leadership and sustainable organizational performance. We argue that to build enduring organizations and motivate employees to provide superior customer service and create sustainable value for their organizations, we need HR leaders who know themselves, who lead with integrity and demand conformance to higher ethical values.

INTRODUCTION

The challenges facing human resource (HR) leaders in organizations today are unprecedented. These challenges include a shift from a manufacturing to a service economy, shifting preferences in markets, demographic changes, terrorism, mergers and acquisitions, globalization, rapidly advancing technology, generational changes in employee and employer expectations, and

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most recently political, military, and corporate ethical scandals. These strategic inflection points, as described by Burgelman and Grove (1996), have disrupted nearly every organization and institution's plans for the future, placing tremendous pressure on HR leaders to traverse through this turbulence and uncertainty to do something different, but the "right" thing, that will work to be successful over the long haul. Never before has HR leadership been so desperately needed, but the question remains: Is HR ready to lead?

Many HR leaders talk about stepping up and getting a seat at the table of strategic decision-makers in organizations. The Society for Human Resource Management has altered its own focus to challenge itself and 160,000 members to not only serve the profession by making sure that HR leaders can transact their obligations, but to significantly advance the profession as well. They recently adopted the strategic focus of "advancing the profession" meaning that they need to break with past practices that focus more exclusively on the transactional side of HR such as managing benefits, developing performance appraisal systems, and handling labor relations to investigating what it takes to be a strategic HR leader, someone who can work in the top management team to shape the future direction of his or her organization. Currently, many HR leaders do not have a seat at the table, and many would argue that they should not be given one unless they significantly transform their concept of what constitutes their strategic leadership role in organizations.

The Case for a Different Brand of HR Leaders

The challenges mentioned above, requires a radically different brand of HR leadership. That is, for HR leaders and their functions to be relevant in the future, they must be able to convince other strategic leaders of the importance of developing organizational cultures that unambiguously confront complex realities and make the inner workings of their organizations much more transparent to all stakeholders, including employees, employers, customers, and shareholders (Becker, Huselid, Pickus, & Spratt, 1997; Roberts & Hirsch, 2005). This means HR leaders must lead from the front; they must lead with purpose, high ethical values and integrity that build enduring organizations and motivate employees to provide superior performance that creates long-term value for shareholders. This will require not only strategic vision, but the competence and courage to take the lead when others are unsure of the direction being taken (Meisinger, 2005). Peters and

Kabacoff (2000) summarized it this way:

These unique challenges require unique people. They require not just HR leaders, but business leaders who can balance compassion with objectivity, inclusion with forcefulness of purpose, and the co-operative with courage. These are the leaders who are willing to stand up for new ideas, challenge the best in us, stay the course, and drive for results (p. 8).

Unfortunately, many HR leaders have indicated that the current pool of HR practitioners have been poorly prepared to address the levels of complexity required to strategically lead complex people, in complex systems, working in a very complex world. We suggest that the most appropriate role for future HR leaders is to be the force for integration or what has been called the “Chief Integrative Leader” (Avolio, 2005). Specifically, Avolio (2005) argued, “repeatedly, the core problem is not the absence of great vision, technology, people, new markets or even brand. The core problem is the inability to integrate and reintegrate over time which hobbles the growth curves of our best organizations.” There is probably no one currently better suited to assume the role of chief integration officer than the HR leader, if they develop the expertise required to pull together all of the relevant pieces. Indeed, as suggested by Sims and Sims (1994), “Many organizations, in their efforts to address the national and global challenges of unethical behavior, are relying more and more on their HRM function ... HRM professionals are finding that they are increasingly becoming involved in ... because of the key role HRM professionals play in the development of human resources or people policies and programs” (p. 204).

The new brand of HR leadership we are referring to here is what has been labeled as authentic leaders (George, 2003a; Luthans & Avolio, 2003; Avolio, Gardner, Walumbwa, Luthans, & May, 2004; Gardner, Avolio, & Walumbwa, 2005; Gardner, Avolio, Luthans, May, & Walumbwa, 2005; Ilies, Morgeson, & Nahrgang, 2005). Such authentic HR leaders, we believe, will have the ability to work with diverse organizational and national cultures to achieve common points of integration. As Cascio (2005) succinctly states, “the greatest challenge in human resource management today is to get thousands of professionals in this field to strive, to grow, to reach for more than they thought possible” (p. 159). Such HR leaders will also have to have the ability to accurately estimate the combined and integrated value of intangible and tangible assets, the ability to understand how to best link people across time, distance, and cultures via advanced information technology, and the ability to envision where key points of strategic integration will need to emerge, and how to lead an organization to those points

(Avolio, 2005; Meisinger, 2005). To the extent they are required to transform organizations to fully achieve the visions set, we would refer to such leaders as authentic transformational leaders (Bass & Steidlmeier, 1999).

Our goal in this chapter is to propose a multifaceted model that redefines the role of strategic HR leadership, and to explain the various connections between what constitutes authentic HR leadership and sustainable organizational performance. In developing this model, we draw on several key literatures including work on attribution theory, strategic leadership, social cognitive/information processing, identification, and recent ethical literature. In the most basic terms, the essence of our proposed model is that in these challenging and complex times, a more authentic approach that can restore confidence and positively transform or develop associates into leaders themselves is urgently needed to enhance any organization's competitive advantage over time (Avolio et al., 2004; Brown, Trevino, & Harrison, 2005; Luthans & Avolio, 2003; Seligman, 2002). As former head of Medtronic, Bill George (2003b) succinctly states in his address to fellow CEOs: "We need to spend more time developing the next generation of authentic leaders within our companies ... we should be developing leaders who have the character, values, wisdom and depth to lead our organizations in the future." Central to this focus should be on developing authentic HR strategic leadership.

We adopt the perspective that authentic HR leaders will have their impact on performance through two primary sources. First, authentic leaders develop mechanisms to shape the skills, attitudes, and behaviors of an organization's workforce by increasing each employee's awareness of themselves and others and their espoused beliefs and values, and how such awareness facilitates the development of the skills, attitudes, and behaviors required to optimize one's growth and performance. Second, authentic leaders can directly impact employee performance by helping to create an organizational context that places a high degree of importance on transparency and making connections that allows people to continuously learn and grow. Below, we first begin by clarifying what we mean by authentic leadership. Then we offer a general framework for understanding the linkages between authentic HR leadership and firm performance.

Meaning of Authentic Leadership

Drawing from the positive psychology literature (Seligman, 2002; Seligman & Csikszentmihalyi, 2000; Snyder & Lopez, 2002), the term authenticity is

used here to refer to “owning one’s personal experiences, be they thoughts, emotions, needs, wants, preferences, or beliefs, processes captured by the injunction to ‘know oneself’ and further implies that one acts in accord with the true self, expressing oneself in ways that are consistent with inner thoughts and feelings” (Harter, 2002, p. 382). The closer we come to knowing ourselves and acting in accordance with that knowledge, the more genuine or authentic we appear to others.

Avolio, Luthans, and Walumbwa (2004, p. 4) define authentic leaders as “those who are deeply aware of how they think and behave and are perceived by others as being aware of their own and others’ values/moral perspectives, knowledge, and strengths; aware of the context in which they operate; and who are confident, hopeful, optimistic, resilient, and of high moral character” (as cited in Avolio et al., 2004; see also Luthans & Avolio, 2003). In this chapter, we concentrate our attention on the core self-awareness and self-regulation components of authentic leadership, rather than the positive psychological states and positive moral perspective that both contribute to and are enhanced by authentic behaviors (Gardner et al., 2005). Our focus on self-awareness and self-regulation is based on the notion that in these unparalleled times, increased self-awareness and self-regulation are especially important as situations increasingly require HR leaders to develop a mind set and the skills to understand how best to integrate and reintegrate other people’s perspectives and empowering employees for the success of their organizations. Self-awareness may also be more important for HR leaders because they have a disproportionate share of responsibility for developing the human capital that enables their organizations to be more competitive and to operate for maximum effectiveness (Becker et al., 1997).

Bennis (1989) underscored the importance of self-awareness or self-knowledge as one of the critical characteristics of successful leadership; and we would add leadership development. We will argue that by being true to their core beliefs and values and exhibiting authentic behavior, HR leaders can foster the development of their associates to take greater responsibility for developing human capital. This is because leaders displaying authentic behaviors are more likely to apply a positive moral perspective to lead by example as they communicate through their words and deeds, high moral standards and values (May, Chan, Hodges, & Avolio, 2003). Again, to do so takes the courage of one’s conviction that leaders know themselves well enough to act consistently with what one believes and values. This may be a significant challenge for human resource leaders, who are used to consulting with “the leaders” in their organizations, providing advice and support as opposed to being out front on what they believe in and value.

Along with the basic meaning of authentic leadership outlined above is that their espoused values/beliefs and their actions become aligned over time and across varying situational challenges. Associates come to learn what such leaders identify with and the importance they give to certain ways of interacting with each other. The consistency between espoused values and behaviors builds deeper levels of trust in such leaders. These leaders also recognize that they have weaknesses, which they work to accommodate by surrounding themselves with extremely able followers and building an engaged positive organizational climate. The goal is to build a transparent and positive organizational climate that promotes followers who are constructive dissenters. It supports the notion that we should not entrust leadership just to leaders, as it is too important to do so!

The foregoing discussion suggests that being authentic represents a complex, multi-level process involving self, those being led (at individual, group, unit, and organizational levels), and the organizational context that results in sustainable growth and performance. We discuss how these individual and group level attributes interact and accumulate to influence employee performance.

A GENERAL FRAMEWORK FOR AUTHENTIC LEADERSHIP

Fig. 1 depicts our conceptual framework that drives our discussion of the linkages between authentic HR leader behavior and firm performance. Specifically, we propose that authentic HR leader behaviors mediated by the process of self-awareness and self-regulation, and moderated by positive organizational context drives individuals and organizations to sustainable growth and performance. This multilevel model depicts leadership at an individual level in terms of behaviors having a strategic impact on organizational performance through the development of followers. We include peers in the model as a target of leadership impact, which could represent an HR strategic leader positively impacting his or her peer leaders in the organization, but concentrate our discussion below on followers, as the developmental process would be the same.

Leaders' and Followers' Self-Awareness

As shown in Fig. 1, a leader's self-awareness is the starting point for interpreting what constitutes authentic leadership. Such self-awareness occurs

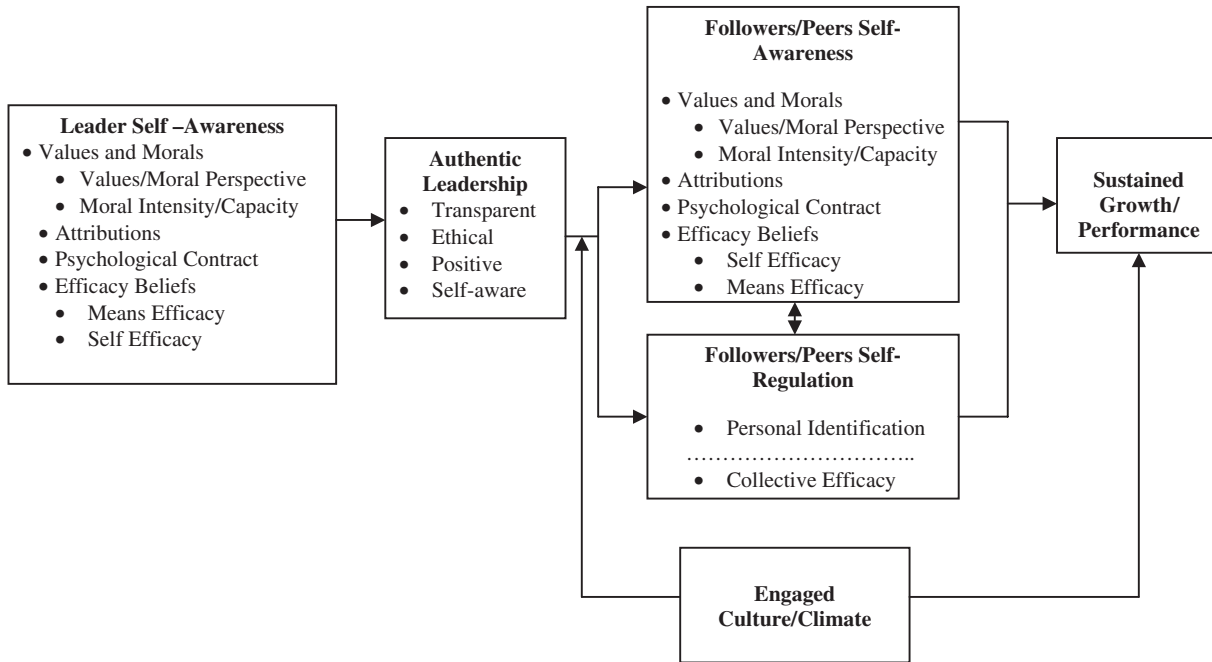


Fig. 1. Conceptual Framework for Authentic Leadership Process.

when individuals are cognizant of their core values and beliefs, and are keenly aware of the context in which they are operating in over time (Silvia & Duval, 2001). Self-awareness is not a destination point, but rather a process where the HR leader continually comes to understand his or her unique talents, strengths, sense of purpose, core values, beliefs, and desires. It can include having a basic and fundamental awareness of one's knowledge, experience, and capabilities (Day, 2000; George, 2003a; London, 2002). We identify four core components and processes in authentic leadership that are especially important to HR leaders' and followers' self-awareness: moral values, attributions, psychological contract, and efficacy beliefs.

Leaders' and Followers' Values and Moral Perspective

The leadership literature has paid relatively little attention to understanding the role of self and followers' moral values in the leadership influence process. Values refer to "desirable states, objects, goals, or behaviors transcending specific situations and applied as normative standards to judge and to choose among alternative modes of behavior" (Schwartz, 1992, p. 2). Values specify modes of behavior that are socially acceptable, and thus serve as a normative regulatory guide for individuals or groups (Meglino & Ravlin, 1998), which at the individual level may also represent self-regulation. Values influence self and followers' motivational, affective, and cognitive processes, which guides how acts of leadership are ultimately interpreted by others (Lord & Brown, 2001; Walumbwa & Lawler, 2003; Walumbwa, Lawler, & Avolio, in press).

Research by Lord and colleagues (e.g., Lord & Brown, 2001; Lord, Brown, & Freiberg, 1999) has demonstrated that leaders can impact on followers' cognitive processes by influencing their working self-concept. Indeed, transforming a follower into a leader as suggested by Burns (1978) and Bass (1985) fundamentally begins at the follower self-concept level. Thus, in our proposed model, we draw on self-concept theory (Brewer & Gardner, 1996) to explain the process by which authentic HR leaders come to know themselves and to affect followers' values and moral perspective.

Self-concept theory distinguishes between two levels of the social selves: the relational (or interpersonal) and the collective-identity (or the self as a group member). Brewer and Gardner (1996) posit that individuals at the relational level largely visualize their roles as being a function of significant others, implying a need for authentic direction. We believe that this dynamic provides an opportunity for authentic HR leaders to play a significant role in not only their own development, but also followers' moral reasoning and efficacy development as depicted in Fig. 1. For instance, by invoking their

moral capacity to judge difficult and complex issues, authentic HR leaders can enhance their own self-awareness and in turn encourage associates to explore difficult dilemmas from all angles and to seek alternative ways of approaching them without the leader being perceived as coercing or forcing their ideas on followers (Luthans & Avolio, 2003). Complex difficult issues can be more thoroughly addressed, leading to a deeper understanding of what constituted the challenge, and alternative ways it could be or has been effectively handled. HR leaders who exercise the process of digging deeper into such difficult challenges and making sure everyone's views are heard, in and of itself would build the organization's capacity and "strength" for handling subsequent difficult challenges, as well as forming decisions based on a more "integrative framework" of decision-making.

In a study of 1,200 HR professionals from 400 organizations and 24 industries throughout the United States and Canada, Peters and Kabacoff (2000) found that one of the distinguishing features between a superstar HR and a typical HR leader is that superstar HR leaders "understand the linkages and politics within the organization, how HR can make a difference, and the importance of integrating activities – they must see around the corners" (p. 5). This means that the function of HR leaders should no longer be the management of human resources alone, but rather the development and maintenance of organizational effectiveness, which constitutes leadership plus management (Armstrong, 2005; Roehling, Boswell, Caligiuri, Feldman, & Graham, 2005). Such leaders must leverage their own and the relational selves of their followers to advance their own and followers' individual self-concept and then connect them to the collective identity of their group and/or organization. Again, each of these areas of focus reinforces the basic notion put forth by Avolio (2005) that strategic HR leaders should assume the role of Chief Integrative Officer, whereby the fundamental task of HR leaders is to integrate knowledge, perspective, beliefs, and values, thus providing a higher level of alignment among the various strategic efforts within any complex organization.

Obviously without the high moral base or perspective underlying authentic behaviors, such HR leaders could take advantage of the relational self of followers by linking it to a collective orientation that satisfies the interests of one group to the detriment of another. In this case, we could describe such leadership behaviors as representing the personalized leader, who may even be charismatic as seen by their "in group", but at the expense of building identification among those in the out group (Howell, 1992; Howell & Shamir, 2005; Varella, Javidan, & Waldman, 2005). Invariably what happens is that portions of the organization grow at the expense of

others, which will eventually diminish the capacity for sustainable growth and performance. Maintaining growth requires maintaining a precarious balance between constantly differentiating to advance each individual's development, while moving to higher levels of integration. It is through this iterative and perhaps spiraling process that individuals, teams, and organizations are said to "develop".

Leaders' and Followers' Moral Intensity and Capacity

Another important theoretical construct that can help explain how HR authentic leaders affects their own and followers' self-awareness concerning values and moral perspective is the moral intensity construct. Moral intensity refers to moral issues that typically would harm or benefit others. Jones' (1991) issue-contingent ethical decision-making model is perhaps the best-known approach to exploring the moral intensity construct (see May & Pauli, 2002 for a review of the literature on moral intensity).

According to Jones (1991), moral intensity is a multi-dimensional construct with six core components, including magnitude of consequences, social consensus, temporal immediacy, proximity, probability, and concentration of effect. These dimensions of moral intensity directly relate to authentic behavior and may be important in explaining how authentic HR leaders may influence their own and followers' self-awareness. For instance, an assumption underlying the authentic decision-making process is that such leaders are free to choose how to act and make a decision that reflects their core beliefs and values, developed through study, introspection, and consultation (George, 2003a; Luthans & Avolio, 2003).

The leader's moral strength/perspective represents an ability to recognize the potential harm or benefits to the stakeholders involved, consider duties and obligations to those stakeholders, and select the alternative that respects stakeholder rights. This presupposes that the leader's view of him or herself, offers the leader a level of self-awareness, which supports exploring from every possible angle the best solution to the problem/issue without being derailed by petty self-interest. Thus, through such self-awareness, the leader's thoughts and behavior are regulated to explore a broader range of alternatives to derive a particular solution.

Deep self-awareness provides the basis for outer exploration. Whereas, a total lack of awareness provides no guidelines for exploring how to figure out what is the best integrative solution given the less than optimal choices available to the leader. Deep self-awareness provides the basis to move beyond one self to explore all of the available options. The question is how many HR leaders are developed to have such deep self-awareness?

Some Preliminary Evidence

A recent study, *The Gallup Organization (2004)* of 100 outstanding HR executives in the United States and around the world, found that most top HR leaders are not as clear about what they offer as other leaders in Gallup's interview database. We suggest that for HR leaders to make a difference, it is critical that they not only seek opportunities for self-knowledge and self-awareness, but they must also "be clear about where the business is trying to go and about what strategies and practices for people will take it there" (*Armstrong, 2005, p. 197*). We have to attract individuals to HR who have greater potential to lead, and we have to develop their self-concepts so that they in turn define themselves as relevant strategic leaders.

It seems logical to conclude that leaders "consumed" by themselves have much less capacity to explore every angle of a problem as they are typically too pre-occupied with how a particular solution versus another affects their self-interests. They too are self-regulated, but in this case they are regulated by their dominant self-interests, which will over time detract from their authenticity in the eyes of others. They can also be "blinded by their own lack of self-awareness," and what the resolution of the problem means for them, their followers and their other stakeholders and constituency.

Authentic HR leaders would be expected to use their base of self-awareness to develop the credibility to explore difficult dilemmas from all angles, seeking alternative ways of approaching them without being perceived as disingenuous or shifting with popular opinion. They know better who they are and over time so do their followers, which provides them with an opportunity for a deeper exploration of the most intractable problems without being viewed as indecisive or manipulative. HR leaders and followers come to a point through reinforcing their mutual self-awareness and regulation where they know how to address opportunities and challenges more effectively through experience in working together, which provides them with the successes that builds collective efficacy and identification. Having such a relationship requires a positive and transparent organizational culture.

In order to be held morally responsible for his or her actions, a leader must have a choice in deciding how to act while being fully cognizant of how that action will produce positive or negative consequences for their followers and organization. The authentic decision-making process assumes that HR leaders are free to choose how to act, and focuses on how a leader comes to a decision that reflects his or her core beliefs and values. The freedom to act and explore against popular opinion or dominant leaders comes from a deep sense of self that the leader has developed. Authentic HR

leaders sense of self and moral capacity allows them to figure out the magnitude of the moral dilemma being confronted, transparently evaluate it and enables them to discuss as broad a range of alternatives with followers as possible, and to choose how best to proceed for the long-term benefit of their group, organization, and/or community.

An HR leader's positive moral perspective is composed of moral capacity and courage to do the right thing when facing pressures to act otherwise. Therefore, when authentic HR leaders and their followers address a moral and/or ethical challenge characterized by moral intensity, they will be more likely to work through it, to learn from it, and resolve it because they believe it is their moral responsibility to do so (Brown et al., 2005; May et al., 2003). How many HR leaders have been developed to this level of capacity and importantly how are they currently perceived by other leaders in organizations?

Perceptions about HR Leaders

Liz Ryan (2005), a CEO of online networking organization – WorldWIT – commented: “Many business leaders have few kind words for the HR division. They just don't understand the vital role it can play” (*Business Week*). Ryan admitted that although she is a zealot for HR, “many HR leaders don't exactly burn the house” (i.e., the level of HR leadership in many companies falls short of what it might be, could be, and should be). Similar views were evident in a report by the Society for Human Resource Management (2004) of how the HR profession is perceived by non-HR executives. The brand of HR may become self-fulfilling in the absence of a significant course correction, as it is likely to attract leaders of similar mind or self-concept, creating a negative spiral in terms of developing strategic, authentic HR leaders.

A certain minimum threshold of moral maturity/capacity is needed for both leaders and followers in order for authentic HR leaders to raise their own and associates' moral values and beliefs to explore the various avenues that could be pursued given the particular dilemma being confronted. As noted above, the way authentic HR leaders build capacity and strength is by taking themselves and their followers deeper into understanding the various challenges and dilemmas confronting their organization, so as to prepare them to thoughtfully analyze future problems in an open and transparent way. The leader models this process in his or her behavior and reinforces that behavior and thought in other leaders and followers.

Luthans and Avolio (2003) posit that authentic leaders have the capacity to operate at higher levels of moral perspective and are able to lead others guided by their explicit and conscious values. They further maintain that such leaders do not try to coerce or even rationally persuade followers, but rather use their articulation of values, beliefs, and behaviors to model the development of self and followers to make the best choices, which they deem appropriate and right. By setting this personal example of high moral standard and integrity, authentic leaders are able to build a deep sense of trust in followers that sustains a more transparent process of dealing with difficult problems and achieving higher levels of performance. Indeed, Jones (1991) suggests that moral intensity is likely to bring forth attributions of greater responsibility, which we propose is a prerequisite for sustaining organic growth and performance. We view that the principle driver of performance resulting from moral intensity is authentic identification with the HR leader, mission, and organization (Avolio et al., 2004). We will also describe below, how the process of trust building facilitates the development of psychological contracts and ownership that support authentic relationships between HR leaders and followers, which provides a base for dealing with morally intense issues.

Leaders' and Followers' Attributions

Attributions reflect how people explain the cause of their own or another's behavior. People tend to make two types of attributions: dispositional and situational (Rathus, 1990). Dispositional attributions ascribe a person's behavior to internal factors such as personality traits, motivation, or ability. With a situational attribution, a person's behavior is attributed to external factors such as equipment or social influence from others. In terms of the authentic leadership process, we suggest that the situational attribution provides a unique opportunity for authentic HR leader behaviors to influence followers' self-awareness. Roberts and Hirsch (2005) provide five key attributes relevant to situational attribution. They suggest that highly successful HR leaders should possess a strong and personal vision for success, engaging others in the process of how to achieve such visions, mustering courage to do what is right and necessary, and to be leaders dedicated to enabling their people to succeed.

Graen and Mitchell (1979) and Calder (1977) note how leaders and followers each make attributions about the other and the concomitant effects on judging the causes of events. Martinko and Gardner (1982, 1987) have discussed the interactive and dyadic effects of the leader/member attribution process. Importantly, they describe how leaders and followers frequently

adopt a causal schema that differs, resulting in different estimates of covariation between the context and individual dispositions in explaining the cause of events. McElroy (1982, p. 416) notes that, "leader-member conflict may be the direct result of a leader taking action based on his/her own causal analysis of the situation, a causal analysis potentially quite different from that of his/her subordinates." This is even more likely to occur when one party has substantially more information than the other. To the extent these "self-based" causal interpretations differ throughout an organization, conflict in views and interests are likely to erode the strength of the organization to tackle its next difficult issue.

We argue that the more transparent the dialog and understanding of the causes underlying challenging events and dilemmas, the deeper one's understanding of oneself becomes, the better both leaders and followers will be able to address future moral challenges and conflicts by knowing where each other are coming from in conflicts. Obviously, such levels of transparency become even more critical the extent to which followers and leaders operate in complex dynamically changing environments, come from different cultures and interact infrequently face to face within such entities as virtual teams.

Martinko and Gardner (1987) further suggest that the closer the leader and followers feel to each other, the more their attributions will be in agreement. This psychological closeness can be built on an honest and transparent exchange of information, ideas, and opinions between the leader and followers. This exchange could then result in more accurate accounts of the events and causal interpretations counteracting the tendency among leaders and followers to error in their attributions concerning the causes of events (Martinko & Gardner, 1982; Schlenker, 1980). However, we also hasten to add that followers and leaders can come to agree with each other and be totally wrong. Bringing back into focus the constructive dissenters becomes critical in terms of developing a balance that will likely result in the best information being exchanged. Nevertheless, the more authentic the leader and followers' relationship, the higher the likelihood they will agree on their accounts and the course of direction to pursue in building a stronger relational base and sense of collective efficacy and identification for future interactions and performance. Hopefully, they will add to this positive dynamic accurate intelligence that will guide them to the best decisions.

Another way to understand the process through which authentic leadership behaviors affect one's own and followers' attributions and subsequent performance is by using social exchange theory. In classic social exchange theory (Blau, 1964), the perceived relationship, that unspecified

obligations based on trust will lead to gestures of goodwill being reciprocated at some point in the future, can make a relevant contribution to the follower's attributions pertaining to the leader. Wayne, Shore, and Liden (1997, p. 103) note that, "the exchange between an employee and his or her direct supervisor is the primary determinant of employee behavior." Moreover, Settoon, Bennett, and Liden (1996) reported that social exchange explains why followers become obligated to their supervisors, and contribute in ways that transcend the call of duty.

As suggested, authentic HR leaders are expected to spend more time in their exchanges with followers building a greater sense of what caused events or outcomes to occur, especially working across boundaries where knowledge from different disciplines can be best integrated. They would also take the lead in modeling such behavior for other top leaders. In such exchanges, followers would come to appreciate that authentic HR leaders are trying to understand and help others understand what can legitimately be attributed to internal versus external causes of performance. Such authentic behavior and actions on the part of the HR leader should help reinforce their own self-awareness and that of their followers about what was accomplished and what could be accomplished with increased effort and development.

Giannantonio and Hurley (2002), in a study of 1,100 HR executives, found that the most important issue facing HR executives today is managing change, which likely comes directly and indirectly from the other leaders they support in their organizations. In our view, one of the best ways to manage change is to develop a solid basis of trust at all levels of an organization upon which exploring different ways to optimize performance are open to inquiry. Organizations fail when they become advocates for their own formulas that no longer apply to the dynamics they are confronting in a new, emerging challenge.

The Psychological Contract between the HR Leader and Followers

We propose that because authentic HR leaders think about the level of transparency in their exchanges and relationships with their associates, the *psychological contract* that is built between the leader and followers has a much stronger base. The followers themselves internalize the leader's values and perspectives, which in turn become internal guide points for their decisions. The psychological contract once formed establishes a common understanding regarding the course of action to be pursued and each party's responsibilities to the contract (see Rousseau, 2001). Meeting each party's expectations builds a base of trust that supports further growth in the relationship, greater exploration of different points of view and ultimately

sustains growth and performance. Growth requires that one goes through learning that causes differences in internal viewpoints that must be integrated into new unique perspectives that stretches individuals beyond their initial ways of thinking.

The formation of a coherent psychological contract depends on trust, transparency, and a full exchange of relevant information. At its initial formation, the psychological contract is based on an incomplete schema, which leaders and followers must enrich over time to develop a common understanding of the tasks or challenges to be confronted (Rousseau, 1995, 2001). Schemas once formed become more coherent and resistant to change because they provide a sense of predictability about how “things work” and become part of the individual’s belief system. To authentically change schemas, which are the foundation for psychological contracts, the leader must provide clear and consistent messages regarding their intentions and to follow-up those messages with behaviors and actions that reinforce those intentions (Poole, Gioia, & Gray, 1989).

Getting the leader and followers to suspend their prior beliefs to examine a better way of proceeding in the future is fundamental to any organization’s organic growth and development. Authentic HR leaders would be expected to promote psychological contracts with followers that are more adaptable, in that followers would be more willing to challenge their own schema to move to a different level of understanding based on their trust in the leader and the strength of their psychological contract. The authentic relationship that results between a leader and follower also facilitates mutual self-regulation in their behavior. Followers learn what is appropriate and thus their actions do not have to be monitored by the leader where followers are deeply committed to the psychological contract. Such self-regulation results because of a desire to keep one’s commitment to a valued relationship, maintaining one’s own reputation for authenticity, and social pressures from others who have bought into the psychological contract (Rousseau, 1995).

To maintain high levels of commitment to the psychological contract, authentic HR leaders must share relevant information needed to make informed judgments, be supportive of critical inquiry, promote understanding their followers needs, encourage positive leadership at all levels working to a common purpose and values, and show how the psychological contract not only fulfills the organization’s interests, but also the follower’s interest and in turn sustainable performance (Armstrong, 2005). How have HR leaders been prepared thus far to do so? The true test of HR leaders is the direction of their leadership and their ability to foster creative innovations, ability to

develop and maintain a performance-oriented culture and results, communicate effectively, and lead from the front (Avolio, 2005; Cascio, 2005; Joyce, 2005; Meisinger, 2005; Roberts & Hirsch, 2005; Ulrich & Smallwood, 2005). Authentic HR leaders not only have the character, integrity, determination, and passion to lead, but also the willingness to make the sacrifices associated with these challenges.

Leader's and Followers' Self-Efficacy

Self-efficacy refers to a person's belief in his or her capability to perform a specific task within a given context (Bandura, 1997; Maddux, 2002; Stajkovic & Luthans, 1998b). Prior research indicates that self-efficacy is positively related to a number of attitudes and behaviors, such as adjustment to new environments, commitment, learning, goal aspiration, and goal attainment (Bandura, 1997, 2000; Karl, O'Leary-Kelly, & Martocchio, 1993; Maddux, 2002; Martocchio, 1994; Martocchio & Judge, 1997). Importantly for work-related implications, a meta-analysis ($N = 114$ studies) found self-efficacy had a strong positive relationship with performance (Stajkovic & Luthans, 1998a).

There have been a couple of attempts to conceptually (Luthans, Luthans, Hodgetts, & Luthans, 2002; McCormick, 2001) and through research (Chemers, Watson, & May, 2000; Chen & Bliese, 2002; Walumbwa, Lawler, Avolio, Wang, & Shi, 2005) link self-efficacy and leadership. Because self-efficacy is supported by theory and research to be a psychological state (as opposed to a fixed trait) and thus open to development (Bandura, 1997, 2000; Luthans, 2002a, 2002b; Maddux, 2002; Karl et al., 1993; Martocchio, 1994; Martocchio & Judge, 1997; Stajkovic & Luthans, 1998a, 1998b), we propose that authentic leader behavior can play a significant role in developing self and follower self-efficacy and subsequently performance over time.

Bandura's highly developed theory and extensive research findings over the years have clearly identified four sources of self-efficacy: (1) enactive mastery (experienced success); (2) modeling (vicarious success); (3) persuasion and positive feedback; and (4) psychological and physiological arousal (Bandura, 1986, 1997). Bandura's theory recognizes and considerable research supports that self-efficacy affects the choices to get involved, the effort put forth, and the persistence one exhibits when meeting obstacles or even failure. These qualities are certainly represented in a profile of an effective authentic leader.

Maddux (2002) also suggests that efficacy beliefs are influenced by what others say to us about what they believe we can or cannot do. He identifies two interacting factors that contribute to self-efficacy with leadership

implications: the development of the capacity for symbolic thought and the responsiveness and supportiveness of the social context in which leaders and followers are embedded over time. In the terms we have used above, the capacity for unencumbered symbolic thought would certainly relate to what we have termed deep self-awareness. The positive, ethical and engaged climate is parallel to what would be considered a supportive social context.

Followers' Means Self-Efficacy. Although there is a considerable body of knowledge about self-efficacy (Bandura, 1997), the *means efficacy* construct was only recently introduced to refer to the belief one has in the utility of the equipment, techniques, and procedures available for performing a task (Eden & Sulimani, 2002). All other things being equal, if employees believe they have the best equipment and techniques to do their work, they will perform at higher levels. Although relatively new, recent experimental studies by Eden and colleagues (e.g., Eden & Granat-Flomin, 2000; Eden & Sulimani, 2002) provide support for means efficacy as a way of producing significant performance improvements independent of the effects of raising levels of self-efficacy.

In Eden and associates' first experiment, employing computer users sampled from a public sector organization, one group of employees (i.e., experimental) was told they were getting a computer system proven to be the best and the other group (control) were given the same new system, but were told nothing about the new computers (Eden & Granat-Flomin, 2000). Results indicated that the experimental group surpassed the controls in posttest service performance. A second study was conducted within a military setting to replicate and generalize the findings from the first study (Eden & Sulimani, 2002). These results showed that means efficacy had a sizable effect on performance, while self-efficacy had none. Yet, the understanding of how means efficacy can be raised to optimize performance is still limited. Moreover, there is a need to explore the interaction of means efficacy with self-efficacy in terms of their impact on effort, persistence, and especially performance (Eden & Granat-Flomin, 2000).

An authentic HR leader can sustain a gap between a follower's self efficacy, and what the leader knows the follower is capable of, but does not yet realize. The authenticity of and the psychological contract with the leader should help to keep the follower engaged, and over time growing in his or her belief that perhaps the leader does recognize something in the follower that the follower has not yet realized. It is the sustaining of the self and follower's focus on what is possible that facilitates growing of the leader's and followers' level of self-efficacy. Obtaining and sharing information

about the tools, techniques, and processes available to accomplish a task will help the HR leader and followers feel they are valued, and this would be expected to increase their commitment and trust, and in turn their means efficacy, or that they know they have the means to accomplish what needs to be accomplished. Indeed, authentic HR leaders would be by our definition seen as more trustworthy, because you know who they really are and where they are coming from, making their followers feel they are being told the truth about what works and what does not work, enhancing their self and means efficacy.

With respect to the points of integration, most organizations have much more capacity than typically utilized due to the creation of silos and inter-departmental conflicts. The authentic HR leader needs to take the role in helping to formulate key points of integration, as through these points of integration, greater capacity can be achieved as well as growth and performance. Pfeffer (2005) argued that HR leaders should focus more on helping organizational leaders see and change their mental models. Specifically, he suggested that “the ability to identify and help others discover their mind-sets and mental models, and the capability to change those mind-sets when necessary, are possibly among the most critical capabilities for an HR professional” (p. 125).

HR Leader's and Followers' Self-Regulation

Although the relationship between efficacy beliefs and work-related performance has been found to be quite robust (Stajkovic & Luthans, 1998a), and has considerable theoretical support for the role of self-regulation (Bandura, 1986, 1997) in the authentic leadership process, we propose that focusing on self-regulatory identification can provide added theoretical understanding to the relationship with sustained performance. According to Pratt (1998), there are two types of self-regulatory identification: personal identification with the leader and social (or collective) identification with the organization. The core to the identity approach to leadership effectiveness is an understanding of the way that we perceive ourselves or identity that strongly informs our feelings, beliefs, attitudes, goals, and behaviors (Leary & Tangney, 2003). Van Knippenberg and colleagues (e.g., Van Knippenberg, Van Knippenberg, De Cremer, & Hogg, 2004; Van Knippenberg, Van Knippenberg, De Cremer, & Hogg, 2005) argued that “leadership is more effective if it engenders identification with the leader as well as builds identification with the collective” (p. 496).

Personal Identification

Kark and Shamir (2002) defined personal identification as the “process whereby the individual’s belief about a person [a leader] becomes self-referential or self-defining” (p. 6). One way authentic HR leaders are able to influence followers is by creating a sense of personal identification with himself or herself and identification with the group such as a top management team or organization (Shamir et al., 1993). Authentic leaders are guided by a set of end values that represent an orientation toward doing what is right and fair for the leader and for their followers, organization, and community (Luthans & Avolio, 2003). Specifically, authentic leaders come to know themselves (i.e., are true to their core values) and by knowing themselves they are better able to develop an agenda and, as noted above, psychological contract, that associates will see as more authentic.

Such authentic HR leaders also encourage the same exploration process in followers, so they too come to know themselves and the leader better. Creating a deeper sense of each individual’s self and how to proceed from that understanding (i.e., self-regulation) is a strong platform upon which authentic leaders can connect group members together (i.e., their collective identification and efficacy), ultimately building greater collective identification in what’s important for the group to consider and successfully accomplish. Exhibiting a positive orientation toward the future helps to facilitate and sustain the level of engagement exhibited by followers, even when faced with difficult challenges and dilemmas, possibly resulting in higher levels of sustained performance (Joyce, 2005).

Thus, although our model emphasizes the individual-level process of enhancing followers’ self-regulation, which is the essence of the authentic leadership process, we also recognize that a collective process can contribute to this individual process, but differentiate it in our conceptualization as being at a higher level of analysis. Specifically, we identify two specific collective processes: collective efficacy and collective identification as especially relevant to the followers’ self-regulatory contribution to the authentic leadership performance process.

Collective Efficacy

Although Bandura originally defined efficacy beliefs as occurring at the individual level, his and other more recent conceptualizations suggest that efficacy beliefs can also occur at the group or collective level (Bandura, 1997). *Collective efficacy* can be defined as the “extent to which we believe that we can work together effectively to accomplish our shared goals” (Maddux, 2002, p. 284). Although lack of agreement exists on its measurement

(Bandura, 1997; Maddux, 1999), a review of the literature offers strong support for the relationship between collective efficacy and performance.

Mulvey and Klein (1998) in testing the impact of collective efficacy on group goal process and performance reported collective efficacy positively related to group goal commitment. Walumbwa, Wang, Lawler, and Shi (2004) using a sample drawn from the financial sector in China and India found collective efficacy positively related to organizational commitment and job satisfaction. Zellars, Hochwarter, Perrewé, Miles, and Kiewitz (2001) reported collective efficacy was associated with higher levels of job satisfaction among nurses, even after controlling for age, gender, and self-efficacy. Similarly, Bandura (2000) argued that when faced with obstacles, groups with higher levels of collective efficacy are more likely to persist in trying to solve such problems.

Recently completed meta-analyses have found a strong relationship between collective efficacy and work-related performance (Gully, Incalcaterra, Joshi, & Beaubien, 2002; Stajkovic & Lee, 2001). We suggest that by building enduring relationships with associates and sharing information transparently about effective performance, authentic HR leaders could increase follower collective efficacy, and in turn sustain growth and performance, while overcoming challenging events and circumstances. More importantly, when followers feel they have the right tools to do their jobs (means efficacy), they each have the capability to be effective (self-efficacy) and work in an organization where they can best figure out how to pool their efforts and capabilities together (positive organizational climate), they collectively have the capacity to create the best integrative effort for achieving optimal growth and sustainable performance.

Collective/Social Identification

Besides collective efficacy, another group-level process that runs deeper in terms of the connection of individuals and might account for the proposed effects of authentic HR leader behavior on followers' self-awareness and regulation resulting in sustainable performance is social or collective identification. Collective identification is defined as a process whereby an individual's belief about a group or organization becomes self-referential or self-defining (Pratt, 1998). The social influence process associated with leader and follower exchanges is central to most current definitions of leadership (Avolio, Sosik, Jung, & Berson, 2003) and more specifically to authentic leadership (Avolio et al., 2004; Gardner et al., 2005). For example, Burns (1978) posits that exemplary (i.e., we would say authentic) transforming leaders willingly sacrifice for the collective good of the leader's work

unit, organization, community, or entire society. By emphasizing the group mission, stressing shared values and ideology, and connecting followers' individual interests with group interests, authentic HR leaders provide self and followers with more opportunities to appreciate group accomplishments and other group members' contributions, building a broader base for group-level identities and in turn enhancing each follower's belief in his or her capacity to succeed (Kark & Shamir, 2002).

Contrast this type of situation with the alienated workforce that feels everything HR and other leaders in the organization do is to protect their self-interests at the expense of their mutual interests. We see that in the worst situations there is no common sense of identification, and the net result is a failure of the organizational system from the inside out, where external challenges exceed the internal capacity of the organization to sustain performance.

We suggest that authentic HR leaders can influence followers' social/collective identification by sharing a sense of purpose, as well as the collective purpose of the top leadership of an organization, while explaining to followers how their actions as individuals count toward accomplishing successful individual as well as collective outcomes. Followers come to identify with the HR leader and other top organization leaders because they learn what each stands for, and what each is trying to accomplish with them, and how they ultimately contribute to optimizing performance, again reducing erroneous attributions. It is this clarity of identification that fosters a deeper sense of efficacy that helps attain sustained performance and growth over time. Such clarity requires the leadership of the organization to consistently remind its workforce why they are doing what they are doing. This is a key responsibility that the HR leadership can take ownership for being the most likely to span all of the leadership boundaries in an organization.

Moderating Role of Context

The Direct and Moderating Role of Positive Organizational Context

Because all leadership interactions occur in a dynamic, emerging context, it is important researchers integrate the context into predictions of leadership (Boal & Hooijberg, 2001; Day, 2000; House & Aditya, 1997; London, 2002). By integrating the moderating positive organizational context into authentic leader behavior–follower performance link, there is recognition of the opportunity for authentic behavior to be sustained and integrated into the context, while also potentially altering the context itself to make it more authentic (Avolio, 2003).

Many years ago, Perrow (1970, p. 6) succinctly stated: “leadership style is a dependent variable which depends on something else.” That “something else” is “the historic context in which they [leaders] arise, the setting in which they function ... They are an integral part of the system, subject to the forces that affect the system ... In the process leaders shape and are shaped” (Gardner, 1993, p. 1). As shown in Fig. 1, we propose that an engaged organizational climate will moderate the authentic HR leader behavior–follower performance relationship and also can directly contribute to the HR leader’s and followers’ self-awareness.

To the extent HR leaders are responsible for monitoring and developing the organization context and culture with respect to the organization’s core organizing value, principles, governance and so forth, the authentic HR leader can play a critical role in promoting the right context for maximizing organic growth and performance. The question remains how able are HR leaders to assume this responsibility?

The Role of an Engaged Organizational Culture/Climate

As shown in Fig. 1, the other most relevant positive contextual factor for the authentic leadership process is an engaged culture/climate. Specifically we propose environments that provide open access to information, resources, support, and equal opportunity for everyone to learn and develop, and will both empower and enable HR and other top leaders and their associates to accomplish their work. This suggests that for self and followers to be effective, organizational leaders must provide an inclusive organizational climate that enables themselves and followers to continually learn and grow. This is an essential area that most in organizations already look to HR leaders to monitor, fix, and control.

The value to authentic leader behavior of a positive organizational context is supported by considerable research suggesting that when associates are treated in a fair and caring manner, they are more committed and more likely to engage in positive attitudes, and this in turn leads to trust in the leader and the system as a whole (Cropanzano & Greenberg, 1997; Dirks & Ferrin, 2001, 2002; Rhoades, Eisenberg, & Arneli, 2001; Zaheer, McEvily, & Perrone, 1998). Indeed, many years ago, Argyris (1964) noted that trust in the organizational system by associates is likely to result in a positive impact on group problem solving, decision-making, and openness to new ideas.

More recently, Mayer, Davis, and Schoorman (1995) proposed a model specifying that when followers trust their leaders to have requisite ability, benevolence, and integrity, they will be more comfortable engaging in more trusting and risk-taking behaviors, including sharing sensitive information.

If followers believe they cannot trust their leader (e.g., because the leader is lacking in honesty, integrity, etc.) they will divert energy toward other less productive behaviors. These views have received support in the recent emerging positive psychology literature, which suggests that people (i.e., both leaders themselves and their followers) who are open to experience perceive themselves as having a broader and deeper scope of awareness, are imaginative, aesthetically responsive, empathetic, exploring, curious, and unconventional (Brackett, 2002).

As we have stressed throughout, to be authentic, HR leaders and followers need to have developed a deep sense of self-awareness; that is, they have to be aware of themselves and how they engage their surroundings. By encouraging and building a realistic social relationship based on cause and effect relationships, followers are expected to be more motivated to spend time on the required tasks and will be willing to go above and beyond their typical job role (Konovsky & Pugh, 1994), resulting in sustained performance. As they come to trust the authentic leader, they are more willing to make themselves vulnerable which allows them to explore areas about themselves and their organization that will no doubt contribute to further development and growth. One of the very powerful keys to growth is the willingness to make one self-vulnerable and it also is essential to leadership development (Avolio, 1999).

In addition to self-awareness, we propose that authentic HR leaders can raise their own and followers' self-efficacy, regulation, and collective efficacy and identification through an engaged environment encouraging totally open communication, sharing critical information, and sharing their perceptions and feelings about the people and system they work within over time. For instance, because authentic HR leaders are transparent in their dealings with others, followers will feel they are being told the truth about what works and what does not, enhancing over time both means and self efficacy. This can be done by providing an environment where leaders are able to build trust, honesty, and integrity in and among followers (Dirks & Ferrin, 2001, 2002).

Authentic HR leaders can also enhance self-efficacy, self-regulation and collective efficacy, and identification through an engaged climate by identifying the barriers, and highlighting the group member's unique strengths that can overcome those barriers, thus helping them move forward from a position of strength, rather than divisive conflict (Kark & Shamir, 2002). As a result, followers will feel more comfortable and empowered to do what it takes to do their work and a sense that their leader can be trusted to do whatever is necessary to ensure high-quality performance. Thus, it follows

that in order to raise efficacy and elicit extraordinary levels of performance, authentic HR leaders should develop and reinforce an engaged climate that gives full access to information, resources, support, and the equal opportunity to learn and develop. This process of empowering and information sharing between the leader and follower coupled with a sense of justice and inclusion created by authentic process is likely to fuel the leader's and follower's growth toward a true sense of self. As a consequence, the leader and the associates will feel more up to the work challenges, which should increase efficacy levels and result in sustained performance. Indeed, there is beginning evidence that suggests that an organizational context or culture that is highly developed in the way we have described will be supportive of the type of self-regulation required for HR leaders and followers to develop to higher levels of authentic behavior (Luthans & Avolio, 2003).

Finally, an engaged climate and culture can directly impact the effectiveness of authentic HR leaders and followers and play a moderating role in their performance. However, the authentic HR leader also serves as the agent who embeds the values and beliefs in an organizational system that becomes the climate and culture that will guide self and followers' expectations and performance. An engaged climate and culture created by the leader becomes part of the internal culture of the leader's and follower's beliefs and values (i.e., their awareness), which are sustainable over time, even for the followers if the leader is no longer present.

At the opposite end are inauthentic HR leaders, who manipulate the environment, which obfuscates their intent, causing followers' self-awareness to suffer and to guess the appropriate direction and course of action to pursue. Such HR leaders may even manage the impression of authenticity, but over time, followers eventually come to see discrepancies between what the HR leader has espoused and what the leader's actual intent appears to be. Thus, working with an inauthentic leader is bound to lead to deterioration in the relationships within a group, unit, organization, community or society, which ultimately deteriorates performance.

CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

HR leaders are looking for "a seat" at the decision-making table. We have proposed a model linking authentic HR leader behavior and follower performance by suggesting the underlying processes and factors by which authentic HR leaders can positively impact sustained growth and performance.

Grounded in the confluence of earlier leadership and recently emerging positive psychology, we propose that the authentic HR leader behavior–sustained performance relationship is mediated by the followers’ self-awareness/regulation and moderated by the organizational context.

First, our model suggests the need for research on the relationship between authentic HR leader behavior and the levels of self-awareness of HR leaders and followers. For example, can authentic HR leaders singularly (or simultaneously) activate and contribute to the enhancement of themselves and the “selves” representing followers, and then to what extent do they jointly (and/or independently) contribute to changes in motivation to challenge what one believes in to improve, grow, and sustain the highest levels of performance? Second, our model suggests that it would be beneficial to conduct research on whether positive organizational contextual variables such as engaged culture/climate have a direct effect on the individual selves and moderating effects on the authentic behavior-sustained performance relationship. For example, although our proposed model suggests that authentic behavior can help develop and shape an engaged organizational climate, it is also possible that the relationship between authentic behavior and sustained performance is moderated and shaped by the organizational context. Specifically, does the effect of authentic behavior on sustained performance vary as a consequence of organizational context? Such a study could be done within the same firm, and also across different industries and cultures (as it is likely that individual, organizational, or national cultures may affect the way followers view authentic behaviors). Of course, the effects of other contextual factors such as information technology or type of organization (e.g., profit or not-for-profit, small or large, task complexity, etc.) also deserve attention.

In sum, we believe that our proposed multifaceted model has potential for explaining how authentic leader behavior can relate to sustainable performance in the context of a transforming focus on HR leadership. In particular, our model suggests a brand new approach to looking at the strategic role of the HR leader and the HR function in our organizations today so that the profession can be seen to be adding *real*, economic value.

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PERSONNEL SELECTION OF INFORMATION TECHNOLOGY WORKERS: THE PEOPLE, THE JOBS, AND ISSUES FOR HUMAN RESOURCE MANAGEMENT

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ABSTRACT

The impetus for this paper was the recognition, based on recent surveys and our own experiences, that organizations face special challenges when designing and validating selection procedures for information technology (IT) workers. The history of the IT industry, the nature of IT work, and characteristics of IT workers converge to make the selection of IT workers uniquely challenging. In this paper, we identify these challenges and suggest means of addressing them. We show the advantages offered by the modern view of validation that endorses a wide spectrum of probative information relevant to establishing the job relatedness and business necessity of IT selection procedures. Finally, we identify the implications of these issues for industrial/organizational psychologists, human resource managers, and managers of IT workers.

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INTRODUCTION

Selection is a major component of the work of industrial and organizational (I/O) psychologists and human resource (HR) professionals and can be seen as an essential foundation for other HR activities (Hough & Oswald, 2000). Many of the most common selection techniques and processes are applicable across a wide variety of industries and jobs. However, the challenge of using appropriate HR processes in the employment of information technology (IT) workers requires careful attention, and in some cases, modifications of standard practices given the youth of this industry, the complexity of IT jobs, and the rapidity in which the field is impacted by economies and technological change.

Although the state of the IT labor market has changed markedly in the past 10 years, much concern and confusion still remains about the most effective ways to hire and staff IT positions. A variety of factors that will be discussed below continue to result in the need to frequently hire IT professionals. In addition, even in a slow growing economy, organizations that employ IT workers are likely to be faced with a shortage of applicants in some high demand IT areas, such as database management and analysis, specialized application development, advanced networking, technical support, network systems development, programming, security, and web service (Eckle, 2005; ITAA, 2004; META Group, 2002). Furthermore, the issues surrounding selection of IT workers are likely to affect the majority of organizations, because 79% of all IT workers are employed in non-IT companies (ITAA, 2004).

In Fig. 1, we present a model illustrating several of the forces that influence the selection of IT workers. Knowledge and models from general I/O sources about the changes in the modern workforce and best practices in how to deal with these concerns intersect with the particular elements that define the IT industry. These elements include the nature of the work and workers, rapidly changing technologies, fluctuations in the labor market, and a lack of consensus on developing a taxonomy of IT jobs. The resulting combination is a set of circumstances that make selection in the field of IT somewhat different from other industries, even those that also experience rapid change.

In this paper, we will examine the characteristics of IT work and workers, and then sequentially review the traditional steps in the selection process (planning the selection process, job analysis, identification of attributes, choice of assessment methods, validation of measures, and general administration issues), discussing the special issues that must be addressed when

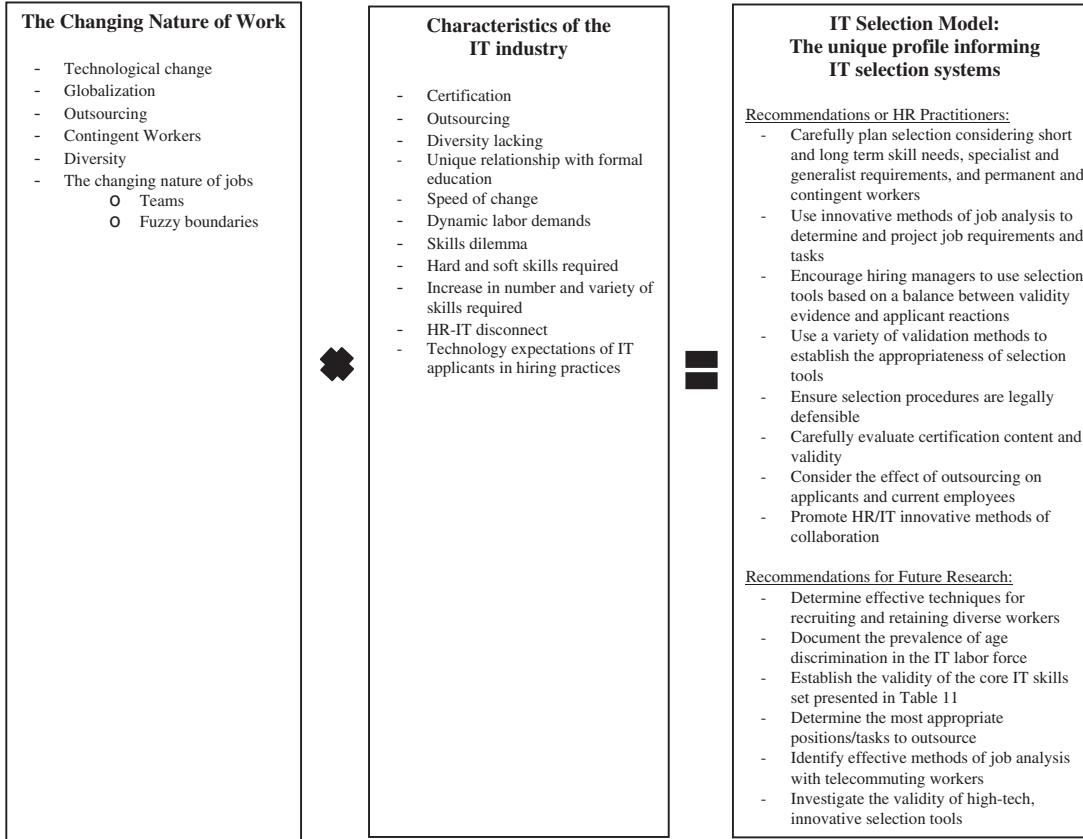


Fig. 1. Model of Factors Influencing IT Selection.

selecting IT workers in both IT and non-IT firms. We will highlight the traditional methods of selection that have stood the test of time and discuss areas where these methods might fall short in selecting IT employees with dynamic skill sets. We will also explore emerging trends within the field of personnel selection that show promise for use with IT workers, pointing out areas in need of future research and practice that will allow the field of I/O psychology to adapt along with this ever-changing workforce.

To fully understand the uniqueness of the IT industry and the many HR issues that emerge when selecting individuals for these types of jobs, it is helpful to first discuss the industry in its broader historical context. In the next section, we will briefly describe how both the IT industry and the IT labor market have evolved over the decades.

HISTORY OF THE IT INDUSTRY AND LABOR MARKET

In the 1950s, the IT workforce was in its infancy. Although scientists had made significant advances in computer technology, there were only about 500 computers in existence (USDLBLS, 1979),¹ and thus the field of IT had little impact on the overall economy. During this time, computers were used to solve scientific and engineering problems (Grantham, 2000). In the 1960s, although computers were still extraordinarily expensive and relatively weak (compared to today's standards), technology had advanced such that the business sector began to embrace the potential that IT provided (USDLBLS, 1981). Organizations with fewer resources contracted out their computer services, while many other organizations, unable to justify the cost, did not use computers at all. During this time, computers were used primarily to centralize business data resources (Grantham, 2000).

By 1976, over 300,000 computers were in use in the U.S. (USDLBLS, 1981), and the first PC was introduced. Between 1970 and 1978, employment rates of IT workers increased at 2.5 times that of the overall employment growth rate. During this time, IT workers no longer worked only for organizations manufacturing hardware and software or selling IT-related products/services. Rather, IT employment increased in all industries due to the incorporation of IT into business processes. Labor economists recognized a shift in the IT labor force in the early 1980s (USDLBLS, 1981). Although once relatively low-skill jobs, IT occupations were beginning to require more complex skill sets, and this trend was only expected to increase.

In the 1990s, public, private, and governmental organizations alike began to invest a great deal of resources into IT in an attempt to find the right computerized solutions to enhance their business productivity (USDLBLS, 1994). Given its pervasiveness within all other industries, the IT industry was beginning to be viewed by the U.S. government as more of an economic factor than an industry per se (USDLBLS, 1994).

As expected, IT jobs of the 1990s began to require more advanced skill sets (Kutscher, 1995). Industry saw some loss of lower-skilled jobs due to streamlined processes that advanced technology provided, but more high-skilled jobs were beginning to exist due to the opportunities these technologies created (USDLBLS, 1994). The sum of these gains and losses was the growth of IT jobs in excess of one million over the course of this decade (Judy & D'Amico, 1997).

The IT labor market became much more formalized with the increased success of private IT companies such as IBM, Intel, and Texas Instruments (Meares & Sargent, 1999). These organizations served as the training ground for what became known as the highly skilled IT workforce. Individuals working in these firms moved on to smaller, more entrepreneurial firms, which significantly fueled America's IT Industry. Between 1976 and 1996, the IT workforce became six times larger, and during this time, jobs changed at a rapid pace to keep up with the rapidly changing technology and HR planning for these jobs became increasingly difficult (Grantham, 2000).

IT talent became so valued in the 1990s that states began implementing large-scale recruiting efforts in order to create concentrated IT labor pools in their regions. In addition, the U.S. began looking overseas for foreign talent through the use of H-1B temporary work visas.

The late 1990s and early 2000s brought a highly unstable environment, both specific to the IT industry and in general to the entire U.S. workforce. First, after a drastic increase of purchases by Internet start-up companies in the late 1990s, intense market saturation led to what has been referred to as the "dot-com bubble burst" (Business Week, 2001; Hilton, 2001). Large IT companies over-sold server power to organizations, leading to a sharp decline in revenue after most of the world had equipped itself with enough hardware and software to last several years. These factors, coupled with a recession of the U.S. economy, caused IT organizations to suffer. However, the IT labor market was somewhat less affected because the majority of the IT workforce was nested within other industries (ITAA, 2004) and technology management was still needed within all aspects of the economy.

During the IT "boom" in the late 1990s, much was written in trade publications about the labor shortage. Many companies and industry

representatives claimed that there were not enough qualified workers to fill the available IT positions (Meares & Sargent, 1999). However, other constituents, particularly employee advocates, proposed that the situation was caused more by a failure to tap into the existing sources of labor, or possibly temporary skills shortages in particular IT domains (Sears, 1998). While the labor market since this time has changed significantly, the lessons learned during this period of tumult remain useful. Capelli (2001) examined the IT labor market by applying economist Richard Freeman's model examining the engineering labor market. This model lays out a cycle in which increasing wages attract many new students to the field, which causes the labor pool to be increased and wages to decrease approximately four years later when the students enter the labor market. The lowered wages cause a smaller number of students to enter the field, resulting in a labor shortage when the second group of students graduates. Wages then increase, allowing organizations to attract qualified workers. This series of trends occurs again and again, with the labor market belatedly adjusting to conditions and potentially failing to stabilize. In the IT domain, there is evidence of such a lack of stabilization for some skill areas, which are still developing or in consistent demand (ITAA, 2004). This situation may be compounded by the speed of technological change, which constantly causes organizations to seek out employees with different skill sets (Capelli, 2001). It has also been noted that the effects of a small or local labor shortage are essentially the same as a global shortage to the individual organization attempting to hire IT professionals. The implications of the peculiarities of the IT labor force are that organizations can never assume that demand and supply of various types of IT workers will remain stable. The micro-economic effects that cause labor market instability are likely to remain a consistent issue for hiring managers.

In the past 30 years, IT has established a growing importance in the productivity and effectiveness of national and global economies (Cortada, 2004; Jorgenson, Stiroh, Gordon, & Sichel, 2000; Meares & Sargent, 1999; Oliner & Sichel, 2000). In addition, a variety of authors have proposed that IT plays an important role in the success of individual industries and organizations (Brynjolfsson & Hitt, 2000; Stiroh, 2002). The many benefits credited to IT include reducing an organization's costs, differentiating a company's products from competitors, and allowing strategic advantage through incorporation of strategy not employed by competitors (Mata, Fuerst, & Barney, 1995). More broadly, IT may be seen as encouraging "new products and services; creating new companies and industries; revitalizing existing products, services, and industries; providing new venues for

commerce; enhancing our ability to manage information and to innovate; and improving our productivity, quality of life, and national standard of living” (Meares & Sargent, 1999, p. 5). In what Stiroh (2002) calls the optimistic view of IT impact, one can perceive IT as a “transcendent technology” that changes the basic nature of how organizations operate, having important implications for productivity and the use of human resources (p. 21). These continuous changes are driven by continuing developments in technology (such as improvements in mass storage and telecommunications) and by global competition (Benjamin, Rockart, Morton, & Wyman, 1984). The growing importance of IT strongly influences the trends in the labor market, generating an unstable HR situation (Meares & Sargent, 1999).

Overall, the existence and evolution of the IT profession can be traced to rapid changes and revolutions in computer technology and the acceptance and pervasive use of these technologies in homes and businesses. The transformation of IT from a unit which was perceived as providing networks, infrastructure, and technical fixes, to a service industry, has brought about major changes in the ways that IT workers are perceived and the attributes required for success (Segars & Hendrickson, 2000). This has led to the adoption of a “business within a business” philosophy by many IT units, implying that these units possess their own “profit targets, cost structures, mission statements, and most importantly, strategy” and must approach the effort to obtain adequate Human resources in a somewhat different manner (Segars & Hendrickson, 2000, p. 432). Because the role of IT has transformed from merely providing infrastructure to becoming an inherent part of the central purpose of the organization, IT professionals are no longer relegated to a desk in the windowless room next to the servers. While some IT workers remain embedded in the IT unit, other professionals are assigned positions within non-IT departments with roles central to the success of the unit, and they must participate in developing strategy and making decisions with members of all departments within an organization (Segars & Hendrickson, 2000). These situations require them to have knowledge and skills relevant not only to the technical aspects of the decisions and projects under their control, but also to assessing user needs, translating technical information to non-technical people, and understanding the central purposes of the department, the organization, and the industry as a whole.

The picture that emerges from the confluence of factors impacting the IT workforce indicates that the number IT jobs is likely to remain stable or gradually increase within the U.S. in the near future. Within particular sub-fields, growth may occur more quickly and qualified applicants may be more in demand. In order to successfully select workers for positions in IT and

non-IT firms, it will be necessary to understand the labor market dynamics of the sub-fields.

In the following section, we examine the domain of IT work and workers in order to identify some of the challenges relevant to developing and administering selection procedures. We explore the domain of IT and several job classification systems. We also investigate qualities of IT workers, including education, required knowledge, skills, and abilities, and demographics.

DEFINING THE IT WORKFORCE

In order to approach the question of how best to conduct selection within the IT labor force, we must first clarify who is included in this category. IT workers can be defined as those who are involved primarily in “the conception, design, development, adaptation, implementation, deployment, training, support, documentation, and management of information technology systems, components, or applications” (Committee on Workforce Needs in Information Technology (CWNIT), 2000, p. 44).

However, the classification of the IT workforce is plagued by a lack of agreement and substantial ambiguity. As stated by [Shaw, Pawlowski, and Davis \(2005\)](#), “a major barrier to our ability to integrate studies and build comprehensive theory is the lack of consistency in terminology and conceptualizations of the profession, the jobs within the profession, and the salient characteristics of those jobs” (p. 9). On the whole, the effort to understand the HR needs in the field of IT is limited by the failure to develop a commonly accepted taxonomy of jobs, which could serve to streamline the massive undertaking of continuously analyzing jobs, developing and updating job descriptions, and creating and validating selection tools, due to technological change. When practitioners and researchers are unable to determine and document which jobs are similar and in what ways, the opportunity to benefit from existing resources is restricted.

The existing lack of agreement is partly due to the many categorization schemes promoted by various trade organizations and government bodies, which each define the domain of IT work differently. The U.S. Department of Commerce defines the domain to include those workers who “design, manufacture, operate, maintain, and repair information technology products and provide related services across all industries” ([Moncarz, 2002, p. 39](#)) and includes four job categories from the U.S. Bureau of Labor Statistics ([Mitchell, Carnes, & Mendonsa, 1997](#)): computer scientist, computer

engineer, computer programmer, and system analyst. Other classification schemes include the 12 computer-related Standard Occupational Classification System (SOC) occupations, used by Moncarz (2002) and the Occupational Information Network (O*NET), and the classification system developed the National Workforce Center for Emerging Technologies (NWCET) and used by The Information Technology Association of America (ITAA) (ITAA, 2004).

Table 1 presents a summary of these classification systems. Differences appear among the schemes in terms of specificity and breadth of the domain. The U.S. Department of Commerce/Bureau of Labor Statistics proposes the least specific categories, meaning that diverse jobs may be grouped together in one category. The NWCET provides a broad view of the domain, by including jobs such as digital media and technical writing, but fails to

Table 1. Categorizations of the IT Domain.

U.S. Department of Commerce	NWCET	Standard Occupational Classification System/O*NET
Computer scientists	Programming and software engineers	Computer and information scientists
Computer engineers		Computer hardware engineers
Computer programmers		Computer software engineers – applications
Systems analysts	Enterprise systems	Computer software engineers – systems software
		Computer programmers
	Web development and administration	Computer systems analysts
		Network systems and data communications analysts
	Database development and administration	Computer and information systems managers
		Database administrators
Network design and administration	Network and computer systems administrators	
Technical support	Digital media	Computer security specialists
		Computer support specialists
		Computer operators
Technical writing		All other computer specialists

Source: ITAA (2004), Mitchell, Carnes & Mendonsa (1997), Moncarz (2002).

include computer scientists and hardware engineers. The most comprehensive categorization scheme appears to be supplied by the SOC, due to both its specificity and breadth. The SOC categorization encompasses scientists, managers, and computer operators and separates computer engineers and analysts into several more specific categories. The categorization scheme also includes security and support specialists. However, the NWCET dimensions are arguably the most widely used, both by industry researchers and educational institutions.

Education of IT Workers

Many attributes are necessary for successfully performing as an IT worker, yet there is no single path to obtaining a job in the IT domain. Clearly, knowledge of IT is one requirement. However, a multitude of education, training, and experience options are available. According to the Bureau of Labor Statistics, 70% of IT workers had a bachelor's or higher degree in 2001 (Moncarz, 2002). However, 67% of the workers who held bachelor's degrees received them in areas other than computer and information sciences. In addition, the number of IT workers who have some college experience, but no degree, is rapidly rising and now accounts for 16% of the total. Thus, while the majority of IT workers hold college degrees, there are many other options for achieving the skills necessary for IT work (e.g., by obtaining advanced certifications). And while IT knowledge is paramount, employers may not rate education as the highest priority in selection. ITAA (2004) reports that previous experience on the job is the single most important quality employers seek.

Demographic Composition of IT Workers

“Diversity is an integral part of creating a well-rounded knowledge society” (ITAA, 2003, p. 26), and research shows that diversity positively correlates to success in technology (Woszczyński, Beise, Myers, & Moody, 2003). Consequently, diversity is just as complex and important of an issue in the IT industry as it is in the general workforce. However, there exists some uniqueness that makes both the study and practice of diversity within this field especially complex. That is, IT seems to be experiencing a bit of a paradox with regard to diversity (CWNIT, 2001). On the one hand, the industry continues to experience a high-skilled labor shortage and as a

result, has great interest in recruiting talent from less-tapped labor pools (e.g., women and minorities). On the other hand, IT continues to be less diverse as compared to the overall workforce and has been criticized for not placing enough emphasis on the recruiting and retention of diverse employees. In the paragraphs that follow, we will summarize the current state of diversity in the IT workforce. We will then discuss needed research within this realm.

Gender

In 2002, the percentage of women holding IT jobs in the U.S. was 25.3, compared to 46.6% in the general workforce (ITAA, 2003). While there has been a small increase in the proportion of women in the engineering fields, this has not been observed in IT (Von Hellens, Neilsen, & Trauth, 2001). Women earned only 22% of the computer science and engineering degrees in 2000. The lack of representation of women in IT seems to be widespread, as similar data have been reported not only in the U.S., but in multiple parts of the world (Moody, Beise, Woszczyński, & Myers, 2003). In addition, the proportion of women is especially low in higher-level IT jobs, and women are more likely than men to leave the IT field upon entering it (Joshi & Kuhn, 2005). Scholars have argued that the best interventions aimed at increasing the proportion and retention of women in IT would focus on increasing the pipeline of women entering the field, making the field more attractive, and promoting a more female image of the industry (Tapia & Kvasny, 2004).

Race

In 2002, the percentage of African-Americans holding IT jobs in the U.S. was 6.2, compared to 10.9% in the general workforce (ITAA, 2003). Approximately 6.3% of IT jobs are held by Hispanic Americans (12.2% in the general workforce), 0.6% by Native Americans (0.9% in the general workforce), and 11.8% by Asian-Americans (nearly three times as prevalent as in the general workforce). These minority groups earned 13% of the computer science and engineering undergraduate degrees in 2000. One reason for the lack of minorities in the IT industry that has been proposed in the literature is the “digital divide”. This refers to the lack of computer access for low-income groups, which has been shown to be correlated with race (particularly in the African-American community).

Foreign Immigrants

Although far less demographic data is available for this sub-category of individuals, it is necessary to mention foreign immigrants here in that research has recently pointed out that immigrant minorities working in IT today face hostility due to anti-immigrant fervor resulting from the economic downturn and the steep rise in IT offshoring.

Age

Almost 30% of the IT workforce is over the age of 45, compared to the nearly 40% making up the general workforce (ITAA, 2003). However, this issue is somewhat complicated in that the IT industry is far younger than most fields. In 2001, Congress sanctioned a committee to investigate the prevalence of age discrimination in the IT industry (CWNIT, 2000). The committee uncovered profound worker shortages and thousands of long-vacant positions, concluding that the intentional excluding of any social category of individuals would be self-defeating and irrational. Although there were several individual testimonials alleging age discrimination, the data available did not allow the committee to confirm or reject the existence of age discrimination in the IT sector. The committee was able to make three conclusions: (a) the IT workforce is younger than other occupations with similar education levels; (b) IT workers over the age of 40 are more likely to lose their jobs than younger IT workers; and (c) older IT workers are just as likely to find new jobs as are younger IT workers, and the time needed to find a job is comparable to younger workers. Indeed, more data is needed to sort out this issue. Also, as the IT industry ages, so will its relatively young cohort groups, making this an evolving issue as well.

Disability

Between 1993 and 1997, the proportion of individuals with disabilities in the IT/engineering workforce hovered at about 5%, compared to 35% of the general workforce (ITAA, 2003; Moody et al., 2003). There is very little data available on this particular population. However, HR professionals might want to be aware of the Job Accommodations Network, which is part of the West Virginia University International Center for Diversity

Information. This is a free consulting service that matches positions with the needs of disabled people.

Summary

On the whole, the IT industry has not succeeded at creating and maintaining a diverse workforce. The implications for selection inherent in this issue include the possibility of discrimination claiming due to biased-hiring procedures and the likelihood that some IT jobs will go unfilled because of the failure to tap into potential labor pools. In the words of Microsoft strategist Craig Mundie, “America cannot emerge as a world leader economically, socially, or politically while leaving one third of our population outside of the profession that is crucial to our technological infrastructure, essential to our continued economic growth, and fundamental to the evolution of modern life” (as quoted in [Tapia & Kvasny, 2004, p. 85](#)).

A paucity of empirical research exists which explores issues of diversity, stereotypes, prejudice, bias, and discrimination specifically within the IT industry. For example, although anecdotal evidence has been presented blaming the stereotypicality of IT jobs on keeping women and minorities from pursuing careers in IT ([ITAA, 2003](#); [Pratt, 2003](#)), more research is needed in exploring this phenomenon as well as what types of interventions might be effective in changing the public’s perceptions of IT jobs ([Tapia & Kvasny, 2004](#)). Certainly the general bias research could be of great use here (e.g., [Cleveland, Festa, & Montgomery, 1998](#); [Cleveland & Landy, 1983](#); [Dipboye, 1985](#); [Heilman, 1995](#)).

Second, reports of the IT industry being biased against older workers abound in the popular press ([Violino, 1999](#); [Weinberg, 1998](#)); however, there is little empirical evidence to indicate whether employers are indeed preferring equally qualified younger workers over older workers, or whether older workers are misattributing a misalignment between their skill set and current job demands ([CWNIT, 2001](#)). Future research might look to the age bias research (e.g., [Gordon & Arvey, 2004](#); [Kite & Stockdale, in press](#)) to make and test propositions about this issue.

FOUR REPRESENTATIVE IT JOBS

More specific examination of the work conducted by IT professionals reveals the diversity in job categories and tasks present within the IT domain.

ITAA (2004) reports that the largest job category of IT workers are computer programmers (20%), followed by technical support (19%), other (12%), enterprise systems (11%), database development and administration (10%), web development and administration (9%), network systems (7%), digital media (7%), and technical writing (5%). While similarities in responsibilities and tasks are likely across this set of jobs, significant diversity in the tasks exists as well. In addition, positions within the same job category or job title may differ somewhat in job tasks and requirements.

We examine four job categories in detail: Technical Support, Database Administration and Development, Programming/Software Engineering, and Web Development and Administration (see Table 2). For each category, we present example job titles, a brief job description, and example tasks. Technical support personnel work closely with internal and external customers to assist in troubleshooting and solving software and hardware problems. Specialists in Database Development and Administration generate methods to organize and access large amounts of data, and ensure that these tools work effectively and securely. Programming/software engineering professionals generate, test, and maintain the software programs that are used by computers to perform various functions. Workers in the area of Web Development and Administration commonly create sites accessible through the Internet, including designing graphics, conducting programming, and possibly configuring web servers.

While rapid job growth in the late 1990s caused the need for widespread hiring, different factors now influence the need to hire. These include the wide spectrum of industries that hire IT workers, the low tenure of many IT employees, the frequency with which IT workers change occupations, and management policies that favor involuntary turnover above retraining.

The knowledge and skills of IT workers are required by a multitude of industries. This results in IT workers being more able and more willing to change employers than workers in other industries (Freeman & Aspray, 1999). Workers prefer the salary, benefits, and culture of some organizations more than others, with positions in many non-IT and government organizations being rated least desirable (Freeman & Aspray, 1999).

Selection for IT jobs is a frequent experience for organizations due to a low average retention time. Many IT professionals engage in frequent job hopping, which provides a greater scope of experience and training than remaining in the same position (Sumner, 2001). This strategy reveals that job stability is not an indicator of success in the IT domain as it may be in other industries (Meares & Sargent, 1999). A recent survey indicates that the average time that managers consider acceptable to retain IT workers has

Table 2. Representative IT Jobs.

Technical support	<p><i>Example job titles</i></p> <ul style="list-style-type: none"> Call center support representative Hardware test engineer Help desk technician PC support specialist Technical support engineer <p><i>Job description</i></p> <p>Technical support personnel work respond to concerns and questions from users at call centers or help desks; diagnose and correct errors or failures in computer systems, install and upgrade new equipment and software; and perform systems operation and maintenance</p> <p><i>Example tasks</i></p> <ul style="list-style-type: none"> Gather and analyze customer input Identify and interpret customer requirements Perform troubleshooting Provide facilitation and customer service Perform hardware and software installation Perform system and network diagnostics Perform system operations, monitoring and maintenance Document hardware and software problems and resolutions
Database administration and development	<p><i>Example job titles</i></p> <ul style="list-style-type: none"> Data architect Database administrator Knowledge architect <p><i>Job description</i></p> <p>Database administrators and developers create tools, forms, and reports necessary to make data useful and interpretable; organize changes to computer databases; test and implement the database; plan and implement security measures</p> <p><i>Example tasks</i></p> <ul style="list-style-type: none"> Determine target environment/ platform Develop physical database characteristics and define user interface Create database objects Manage on- and off-site backup and recovery Upgrade databases and migrate to new versions Implement and enforce security requirements Plan and deliver user training

Table 2. (Continued)

Programming/software engineering	<p><i>Example job titles</i></p> <ul style="list-style-type: none"> Application developer Java developer Software applications specialist Systems analyst Test engineer <p><i>Job description</i></p> <p>Programmers and software engineers collect project specifications and develop procedures to generate detailed logical flow charts for coding; develop and write computer programs to store, locate, and retrieve specific documents, data, and information</p> <p><i>Example tasks</i></p> <ul style="list-style-type: none"> Gather data to identify customer requirements Define scope of work Develop models Create and test prototypes Write code Lead and/or participate in peer code review Perform tests Train technical support staff
Web development and administration	<p><i>Example job titles</i></p> <ul style="list-style-type: none"> Content manager User interface designer Web designer Web site developer <p><i>Job description</i></p> <p>Web developers create websites that are attractive, malleable, secure, navigable, and capable of delivering complex content, secure transactions, and other services</p> <p><i>Example tasks</i></p> <ul style="list-style-type: none"> Prepare preliminary application Develop site map application models and user interface specifications Select programming languages, design tools and applications Write supporting code Produce graphics, layout elements and applicable code Recommend optimization and facilitate upgrades and improvements Define and implement user interface

Source: ITAA (2004), NWCET (2003).

decreased from an average of 33 months in 2001 to an average of 30 months in 2004 (ITAA, 2004). IT companies anticipate a somewhat faster rate of turnover of IT employees (26 months) than non-IT companies do (32 months). Interestingly, 27% of responding managers indicated that a tenure of less than one year was acceptable. This shorter anticipated retention time means that despite a more competitive labor market, job vacancies are occurring regularly.

The barriers to enter and exit the IT profession appear to be much lower than for many other professional occupations (Joseph, Ang, & Slaughter, 2005). While this circumstance implies that individuals with non-IT backgrounds may successfully enter IT careers through training and job experience, it also results in an unusual amount of turnover in which IT workers leave the field for other occupations. When faced with the obsolescence of their skills sets, many workers realize that they either must constantly engage in retraining or seek out another field of employment (Joseph et al., 2005). For instance, a particularly high level of turnover occurs among programmers (Capelli, 2001). Capelli (2001) presents a compelling statistic: The National Survey of College Graduates reported that only 19% of computer science graduates remained in the field 20 years later, while 52% of civil engineering graduates did so. A study by George Mason University similarly found that career change among IT workers was double that of workers in other fields (Mandell, 1998).

The relatively short tenure of IT professionals may be due to voluntary causes in many cases, but is also mandated by the organization in many circumstances. Organizations that focus on hiring workers who have the skills needed to work on projects immediately may realize after the project is completed that the formerly valuable skills are no longer beneficial. This type of hiring strategy is likely to lead to a greater proportion of involuntary turnover, in which employees are laid off in order to hire others with new skill sets (Meares & Sargent, 1999). Providing additional training to employees becomes an important and contradictory element in this process. While training workers in new technologies may increase the ability of existing workers to contribute to present and future projects, it also is a costly endeavor. As a result, many organizations choose the "buy" strategy of seeking out the necessary skills in new workers rather than retraining (Capelli, 2000; Meares & Sargent, 1999). However, various studies have indicated that one of the most effective means of retaining IT professionals is the provision of training and a wide scope of work experience (Baschab & Piot, 2003; Segars & Hendrickson, 2000). Indeed, IT professionals tend to rate career development and a challenging job as greater than monetary

compensation in determining their job satisfaction (Meares & Sargent, 1999). Unfortunately, such benefits may also lead a well-trained workforce to be more liable to poaching by competitors. This inconsistency makes it difficult for organizations to balance hiring and training to achieve the skill sets they need at the right time.

SPECIAL CONSIDERATIONS OF IT SELECTION

In this section, we discuss three characteristics of the IT workforce with important implications for selection. First, we examine the relevance of the speed of technological change on the hiring of IT professionals. Next, we investigate how certification may affect and whom organizations choose to employ. Finally, we explore the role of outsourcing in the organizational selection strategy.

The Speed of Technological Change

Modern society has generated a plethora of changes that impact the organization and its functioning. Across various industries, the widespread nature and speed of change has become a concern for maintaining organizational effectiveness (Howard, 1995). This circumstance can affect various HR practices, such as selection, training, job design, leadership, and performance appraisal.

The IT industry should be viewed as engaged in an extreme version of this rapid change. Researchers and industry representatives often claim that the rate of change in IT is faster than in other similar industries (Lee, 1999; Meares & Sargent, 1999). In fact, the rate of technological change has been estimated at 20–30% per year (Benamati & Lederer, 1998). This trend has a direct impact on the skills of IT professionals, who are continuously threatened with obsolescence based on IT skills that have an estimated half-life of approximately two and a half years (Joseph et al., 2005).

The identification of attributes important for success is problematic due to their quick obsolescence. The rapid generation of new and more specialized jobs within the IT industry requires that selection systems for IT workers account for rapidly changing tasks and responsibilities and associated skills and knowledge, or be revised at more frequent intervals than for other industries. Determining the necessary qualifications for newly developed jobs is also a common occurrence. In addition, strategic decisions must

be made prior to selection, including whether to outsource some tasks and whether IT workers should be hired based on their specific skill sets (which may quickly become out of date) or based on broader competencies such as the ability to learn, adaptability, and conscientiousness.

IT organizations (those with IT as their core business) are the most likely to be affected by changes in technology. In addition, they experience extreme time pressures to develop and market products and services before their competitors (Meares & Sargent, 1999). The demands caused by this time concern generally cause organizations and their hiring managers to insist on selecting workers that have the set of skills necessary to immediately contribute to the organization rather than those with basic and flexible skill sets (Meares & Sargent, 1999).

IT Certification

Another area within IT that has many important and unique implications for personnel selection is certification. Indeed, it is quite common for organizations to require a unique combination of certifications of its IT applicants that correspond to the focal job. However, the credentialing system within this profession is far from standardized, and an HR professional must deal with a complex set of issues in determining the value of the countless certifications that applicants may hold, as well as which certification to require as prerequisite to hire. In the following sections, we will provide a historical context with which to understand this issue, a summary of the most common industry certifications, a description of how certification in the IT industry is unique from other industries, and a list of issues to be considered by staffing specialists when hiring.

IT Certification: The Historical Context

The IT industry had a tremendous growth spurt in the late 1980s (Rowe, 2003). Large local area networks were being installed within organizations and the companies that produced and installed these systems suddenly realized that successful implementation and maintenance of these systems would only be possible if individuals within the host organizations had the knowledge and skills to use the technology appropriately. The host organizations concurred with a similar need for third-party verification of technical skills, since to that point, the needed expertise did not yet reside in-house (Pierson, Frolick, & Chen, 2001). Thus, in 1990, Novell, who controlled 80% of the Local Area Network (LAN) market share at that

time, created the Certified Novell Engineer (CNE) program, which met their business needs to know that their products would be supported in their client organizations (Dean, 2001; Rowe, 2003; Wilde, 2000). As other IT firms, such as Microsoft and Cisco began developing software and hardware that was mass-implemented into the global workforce, so too did they develop certification programs to verify that IT professionals possessed the requisite knowledge to maintain these new technologies. Vendor-neutral certifications also began to rise in popularity, such as the A+ certification offered by the Computing Technology Industry Association (CompTIA).

By 1997, over 70 IT certifications had been established, making IT certification an industry in and of itself, which in that year showed net earnings of approximately \$1.3 billion (Moretti, 1998; Pierson et al., 2001). By 1998, 55,000 individuals had earned the A+ credential (McGrath, 1998), and by 1999 the certification industry was drawing \$2.5 billion in revenue (Senno, 2001). By this time, 2.4 million certifications of various types had been awarded to over 1.6 million people (Wilde, 2000). Indeed, in less than a decade the IT industry has become exceedingly complex, as did the certification system that sought to compliment it.

With the dawn of the 21st century came an economic recession, which had an especially strong impact on the IT industry. With this recession came a drop in the demand for certification (Hoffman, 2005). Nonetheless, there were over 300 IT certifications available during this time (Wilde, 2000), and the numbers of certified IT professionals remained impressive. In 2000, Microsoft had certified over 350,000 individuals, and Cisco had certified over 200,000 individuals, and 55% of the workforce found themselves working in jobs related to information processing (Karr, 2001). The IT workforce topped 10.4 million, and the IT certification industry topped \$3.1 billion in revenue (Carr, 2002). IT professionals in 2001 had over 400 certifications available to them, 10 of which were seen as essential for career progression (Dean, 2001). The industry was expected to top \$4.1 billion by 2003.

Today, there are over 600 certifications available to IT professionals (McCarthy, 2004). The IT certification industry has become overly complex and many vendor-specific certifications are redundant with one another (Rowe, 2003). Consequently, attention has turned to how various certifications might be clustered to verify a set of skills required for a particular IT job role and weed out redundancies (McGrath, 1998). Integrated systems are being developed to assist organizations in sorting through the multitude of credentials available and web-based certification platforms are being

explored. In addition, more globally applicable certifications are gaining popularity (McCarthy, 2004).

What Makes IT Certification Unique?

Owing to its rapid and vendor-led history, the IT industry has evolved into a system that is quite unique from other industries in which certification, and its government-regulated cousin, licensure, is common (Rowe, 2003). For example, professions such as law, medicine, accounting, and even HRM, are typically governed by a primary professional association (e.g., the American Bar Association, the American Medical Association, the Association of Certified Public Accountants, the Society for Human Resource Management). These associations have been instrumental, as these professions have evolved in establishing an accepted set of role definitions for the industry. From these role definitions, professional standards are developed around agreed-upon job tasks. Only upon reaching this stage in their development, have professions *then* created a primary certification with which professionals can validate their knowledge and skills with regard to this pre-established set of standards. Indeed, this process is often governed by professional associations expert in credentialing, such as the National Commission for Certifying Agencies (NCCA).

This is far from what has evolved within the IT industry. The technology explosion, which can be considered the proverbial “tail” that has wagged the dog, launched a desperate need for skills. Indeed, this third-party skill verification need was so great; simply there was not time for the development of role definitions, professional standards, and the like. Not only were both firms and IT vendors demanding training and certifications to verify that IT professionals could ensure that new technologies would function appropriately, there was not a single overarching industry association overseeing the development of certification programs. Thus, the pace with which technology entered the business world of the 1990s, and the conditions present at that time, launched a certification industry which was destined to be ill-defined, vendor-ruled, redundant, complex, and chaotic.

But this is not the only aspect that makes the IT industry unique with respect to certification. For example, as we have discussed, there exists a very wide range of specialization in the industry (Saunders, 1998). Therefore, not only is it unreasonable for an IT professional to have knowledge of every aspect of the industry, but also, many jobs might only require expertise in a small number of areas (Childs, 2003). Thus, hiring organizations might utilize job analytic information to pick and choose from the many

certifications available in order to identify candidates that are particularly suited for the job of interest.

In addition, whereas many professionals sit for certification exams only after completing their college degree, certifications in the IT industry have come to take the place of college degrees in many selection systems, and many applicants have used such credentials to make up for their lack of formal university education (Senno, 2001). Indeed, Adelman (2000, p. 20) has referred to IT certification as a “parallel universe of post-secondary education”, describing it as an “educational and training enterprise ... transnational and competency based ... based in certification not degrees ... beyond government’s notice or control ... bigger than you think”. Similarly, Dean (2001) referred to IT certification as a “rogue system of IT education”. As we will discuss below, this issue places special challenges on the HR professionals tasked with selecting IT professionals, in that certifications may be the only thing IT professionals have to show their knowledge in a particular area (Moretti, 1998).

Breaking Through the Chaos: Certification Basics

The certifications that an IT professional might opt to obtain can be classified into three major, and somewhat overlapping categories: Vendor-neutral, vendor-specific, and globally recognized (Childs, 2003; McCartney, 2004; Pierson et al, 2001; Poyiadgi, 2002; Senno, 2001). Many of the specific certifications falling into each of these categories, with some general information about each, are listed in Table 3. An IT professional, just starting out in the profession, typically begins by obtaining one or more vendor-neutral certifications. These are certifications provided by professional (not-for-profit) organizations, such as the CompTIA, The Institute for Certified Computing Professionals, the System Administrators Guild, or the Sys Admin Security Certifications Consortium (Childs, 2003). These certifications validate foundational skills thought to be needed for an entry-level career position. These certifications include A+, Network+, and CIW. These certifications are based on industry standards, and the associations offering them often use the National Skill Standards Board (NSSB) model for setting up their certification programs.

Upon receiving these basic-level credentials, IT professionals often then seek a variety of vendor-specific certifications such as those offered by Novell (e.g., CNE), Microsoft (e.g., MCSE), and Cisco (e.g., CCNA). These certifications are tied to the specific hardware system or software application offered by the vendor, and serve as “pieces” of the portfolioc puzzle that an IT professional might build for themselves (McCartney, 2004). Because

vendors often offer similar products, it is within the realm of vendor-specific certification where the most redundancies between certifications reside. There are typically several levels of competence at which an individual can be certified in a given area. For example, Cisco has an associate, professional, and expert level for its certifications, corresponding to increasingly advanced knowledge and expertise. The degree to which tech reports, pass/fail rates, and other test statistics are made available varies from vendor to vendor.

The last category of certifications is that of globally recognized certifications. These certifications include both vendor-neutral and vendor-specific certifications. Recent research has noted the importance of such certifications given the globalization of business and the rise in IT offshoring (McCartney, 2004; Poyiadgi, 2002).

Important Considerations for Personnel Selection

We have already outlined many issues that highlight some of the challenges associated with using certifications as selection criteria when hiring IT professionals. It is important for HR managers to be familiar with how the certification process has evolved in this industry as well as how to match the knowledge, skills, and abilities required for the job at hand with available certifications (McCarthy, 2004). This is indeed a challenge in and of itself. Unfortunately however, there are a plethora of additional issues that HR must consider regarding the use of IT certifications in selection, which we describe below.

First, there is a documented assumption of HR professionals that certifications are valid (Cegielski, 2004; Pierson et al., 2001; Wilde, 2000) when in fact, far too little is known about the validity of IT certification in general, as well as the validity of many of the individual certifications (Murphy & Byrne, 2000). In fact, the small number of validity studies available present grim results (e.g., Cegielski, Rebman, & Reithel, 2003). Indeed, the stringency of criteria across certifications varies substantially (Senno, 2001). Some certifications require experience whereas others do not (Wilde, 2000), and the trade journals often express skepticism about the value/validity of certifications due to the countless “brain dumps” posted on the Internet listing certification exam items and content to be studied, as well as “bootcamps” which provide heavy coaching to test takers (Raths, 2001; Summerfield, 2005). It seems that this informal “cheating” is a marked problem in this sector, and as a result, many IT managers have more negative opinions of certifications than do HR managers (Carr, 2002; Colburn, 2002; Pierson et al., 2001; Summerfield, 2005). Indeed, McGrath (1998) has

Table 3. Common IT Certifications.

Type of Certification	Issuer of Certification	Name of Certification	Points of Interest
Vendor neutral	Computing Technology Industry Association (CompTIA)	A + Network + Server + Linux +	
	Institute for Certified Computing Professionals	Certified Computing Professional (CCP) Associate Computing Professional (ACP)	
	Information Systems Auditing and Control Association	Certified Information Securities Manager (CISM) Certified Information Systems Auditor (CISA)	
	Prosoft Training (CIW)		
	System Administrators Guild (SAGE)		
Vendor specific	National Workforce Center for Emerging Technologies		
	Linux Professional Institute		
	System Security Certifications Consortium		
	Novell	Certified Novell Administrator (CAN) Certified Novell Engineer (CNE) Master CNE	Novell certifications have lessened in popularity and usefulness as the use of Novell systems has denied
	Cisco		Seen as more valid; more accurately predict job performance; do not publish pass rates

		Cisco Certified Network/Design Associate (CCNA)	
		Cisco Certified Network/Design Professional (CCNP)	
		Cisco Certified Internetwork Expert (CCIE)	Seen as the highest certification possible; credential holders can demand lucrative jobs and six-figure salaries
	Microsoft	Microsoft Certified Professional (MCP)	Do not publish pass rates
		Microsoft Certified Systems Engineer (MCSE)	
	Red Hat	Red Hat Certified Engineer (RHCE)	
	Sun Microsystems		Does not release exam statistics
	Oracle		
	System Administration, Audit, Network, Security Institute (SANS)		
	Association of Certified Fraud Examiners		
	International Information Systems Security Consortium		
	Project Management Institute		
	DRI		
	Information Systems Auditing and Control Association		
	CompTIA		
	Microsoft		
	IBM		
	Cisco		
	Ericson		

Source: McCartney (2004), Poyiadgi (2002), Pierson et al. (2001), Carr (2002), Hilson (2002), McCarthy (2004), Rowe (2003), Senno (2001).

referred to certification as a “specious barometer” of knowledge and skills, often leading to over compensation.

Because of this, we recommend that HR managers very carefully evaluate certifications for their content (i.e., ensuring that the certification actually certifies the skills that are needed for the focal job), as well as for their validity. Local validity studies are also recommended. Research might also be conducted on the extent to which brain dumps, boot camps, and other study aids have been made publicly available, and the extent to which practical experience is required for certification. In the case when a certification does not have an experience requirement, care should be taken to assess whether the certification has a “lab” component or other assessment element that are more behavioral in nature. Cisco, for example, is known to have such components, and as a result, their programs are more respected by some. Indeed, HR managers must be able to separate legitimate certifications from those, that are solely profit-driven. Some in the industry have referred to IT certification as “cash cow inventions vendors have designed to dazzle HR people” (anonymous, as cited in McGrath, 1998, p. 20). Certainly, there are both good and bad certification programs out there, and HR staffing specialists should take great care in differentiating the two.

The issues raised thus far might lead readers to ask: if there are so many problems and challenges inherent to certification, why not just develop selection tests in-house that verify that IT applicants have the knowledge and skill required for the job? This is certainly an option, and is not uncommon among large firms with a technical backbone. However, for the average company, keeping up with the technology and keeping exams current is quite costly and often impractical. In this sense, certification fulfills a great need by providing standardized exams for the most current and important technologies. Also, even if completely lacking in criterion-related validity, certifications are often viewed as needed to show credibility in the field (McGrath, 1998; Wilde, 2000). Clients and customers might look for a certified staff of technical professionals and therefore is often seen as a strategic advantage to have a well-certified IT staff. This places a unique set of challenges on the HR professional who must balance concerns for effectiveness, efficiency, and strategy in developing selection systems. Table 4 provides a summary of issues for HR professionals to consider.

The Future of IT Certification

The good news is that as the IT industry evolves, so to does the quality of the IT certification industry in general. Although the negative reputation of IT certification continues to lurk from earlier decades, it seems that slowly,

Table 4. Recommendations for HR Professionals to Consider when Incorporating Certifications into the Selection System.

Know the common certifications and their granting organizations
Understand how IT certification has evolved and how it is influenced by technology demand as well as the for-profit certification industry
Do not make assumptions about the validity of a particular certification; demand tech reports and conduct local validity studies
Obtain as much information as possible on how certification exams are administered
Be aware of “brain dumps”, “boot camps”, and other resources which may give examinees an unfair advantage
Know that even if not valid, certifications may be important for clients & customers
Inquire with the certifying agency
How was the test built?
How were the content areas identified?
How widely accepted is the credential?
How globally acceptable is the credential?

the more legitimate certification programs are focusing on validity and security issues, and the less legitimate programs are going under. [Summerfield \(2005\)](#) recommends that when considering the use of certification in staffing to carefully scrutinize the certifying agency, asking questions such as how exams were built, what the criteria were based on, how widely the certification is accepted, and how globally transferable the certification is. [McCartney \(2004\)](#) also notes that as organizations and their IT demands evolve, IT professionals will need to possess more general project management skills. Thus, many technical workers are adding project management certifications to their portfolios.

Finally, as time moves forward and the IT industry continues to develop, it is hoped that a more integrated set of industry standards will emerge which will allow HR professionals to better understand IT jobs. For example, [Table 1](#) lists a set of eight job clusters that have been proposed by the National Workforce Center for Emerging Technologies. McCarthy calls for job task standards, consistent job standards, value statements, and universal skill standards as a first step in this direction. It is felt that this will allow for redundancies between certifications to be identified and certification programs to be more accountable for mapping onto industry standards. This trend will be further catalyzed as federal regulation continues to be passed, such as Sarbanes-Oxley and the Federal Information Securities Management Act, which will make certifications (especially those involving security) more relevant.

Outsourcing in the IT Industry

Another trend that is especially salient in the IT industry is the large push to outsource IT functions overseas. Outsourcing refers to a process undertaken by an organization to contract-out or to sell the organization's IT assets, staff, and/or activities to a third-party supplier who in exchange provides and manages IT assets and services for monetary return over an agreed period of time (Kern, Willcocks, & Heck, 2002). Firms might outsource their entire IT function (total outsourcing), or just pieces of it (selective outsourcing), although research has shown that the former is far less advantageous than the latter (Barthelemy & Geyner, 2004). Types of IT processes typically outsourced include software development, the integration of business processes, and software maintenance (King, 2005; see Table 5). In fact, even some HR functions, such as payroll and benefits are considered "IT enabled services" and are being increasingly outsourced. Although the primary reason for IT outsourcing has been driven by a desire to reduce costs and focus on core business processes (Mortimer, Waterhouse, & Court, 1993), recent research has uncovered a number of strategic HR-related reasons for IT outsourcing, including the difficulty associated with IT staffing and the ability to shift HR attention to the selection for non-IT jobs or higher-level IT jobs seen as crucial to the organization's strategic mission (see Table 6).

In this section, we will briefly review some of the implications IT outsourcing has for HR selection. To provide some context, we will begin by quickly describing how the mass trend of IT outsourcing came about, as well as the research evidence to date that considers the effectiveness of IT outsourcing as a strategic initiative. We will then point to issues surrounding the practice of IT outsourcing that are particularly relevant to the selection of IT professionals for those jobs that the organization decides not to outsource.

Table 5. Commonly Outsourced IT Functions.

Application development (86%)
Call centers (26%)
System administration/support (23%)
Help desk (17%)
Business processes (17%)

Source: King (2005).

Table 6. HR Reasons for IT Outsourcing.

Difficulty in recruiting, training, retaining IT professionals
Infeasibility for IT staff to grow at the same rate of sales
Tremendous amount of data needing to be processed and backed up (including HR data)
Lack of time to develop human resources necessary to meet the timeframe of IT projects
Growing awareness that outsourcing can support a range of strategies beyond simple cost saving
Allows selection to focus more on staffing job critical to innovation and strategy fulfillment

Source: Erber and Sayed-Ahmed (2005), Hsu, Wu, and Hsu (2005), Leavy (2004).

IT Outsourcing Past, Present, Future

The concept of IT outsourcing was first applied by Ross Perot’s company Electronic Data Systems (EDS) in 1962 (Carmel & Nicholson, 2005), however many trace the trend to the late 1980s (Misra, 2004; Palvia, 2004), with the majority of companies not outsourcing until post-2000 (Erber & Sayed-Ahmed, 2005). Following the European and U.S. labor shortage resulting from Y2K preparations and the rise of dot-coms (Carmel & Nicholson, 2005), IT has become the most outsourced business function (Erber & Sayed-Ahmed, 2005), with most contracts going overseas to countries such as India, China, the Phillipines, and Russia. In fact, IT outsourcing has come not only to be considered an industry in its own right, but it is currently considered among the fastest growing industries worldwide (Mahnke, Overby, & Vang, 2005), with projections that it will be a \$100–160 billion dollar industry by the end of 2005 (Casale, 2001; Vijayan, 2002). Table 7 provides some general statistics about the IT outsourcing industry.

Is IT Outsourcing a Good Idea?

What makes IT functions so easily “outsource-able” compared to other business functions is the ease to which the job tasks and skills are learnable/teachable across borders. The ease in which IT tasks can be outsourced, coupled with the seemingly inexpensive and extremely abundant human resources available to complete these tasks overseas has made IT outsourcing one of the business pop-trends of the 21st century. However, as with most business trends, the proof is not necessarily in the pudding.

The research on the effectiveness of IT outsourcing is mixed and complex. Some research purports upwards of a 50% cost savings by moving basic IT functions offshore. Other research shows that 30–80% of IT offshoring contracts are terminated prematurely, and argue that there are innumerable hidden costs (e.g., vendor search and contracting, transitioning to the

Table 7. IT Outsourcing Quick Facts.

The majority of IT outsourcing contracts are offshored to China and India
China is the largest outsourcee for production
India is the largest outsourcee for services
21% of IT outsourcing work goes to India, where low-cost labor and high-quality work and experience are amply available
IT outsourcing contract times average from 1 to 5 years
\$136 billion in wages and 3.3 million jobs are expected to move offshore from the U.S. over the next 15 years
Software programming is the most outsourced IT function
More than 50% of the Fortune 500 companies outsource IT functions overseas

Source: Carmel and Agarwal (2002), Erber and Sayed-Ahmed (2005), Sahay, Nicholson, and Krishna (2003).

vendor, managing the effort, transitioning after outsourcing, loss of IT staff and their knowledge) which render IT outsourcing a perfectly irrational decision, (Barthelemy, 2001; Erber & Sayed-Ahmed, 2005; Willcocks, Hindle, Feeny, & Lacity, 2004). In a review of the empirical literature to date, Mahnke et al. (2005) concluded that there is little evidence to suggest that outsourcing IT functions improves organizational performance in any way.

The truth is probably somewhere in the middle. Larger firms will probably be more successful when first outsourcing projects and functions (Carmel & Nicholson, 2005), however some learning curve seems to exist in all firms, with outsourcing ventures becoming more successful over time. The bottom line for HR professionals is that this absolutely is a complicated issue and cutting internal staff or reducing staffing rates with hopes that outsourcing will be a golden chalice may prove to be a very unwise decision in the long run. There are many risks involved in outsourcing IT functions, including loss of control, lessened innovation, new taxes, exchange-rate volatility, rapid increases in local wage rates (Barthelemy, 2001; Erber & Sayed-Ahmed, 2005), as well as many challenges, surrounding differences in cultures, accents, languages, time zones, and business application knowledge by offshore teams (Carmel & Nicholson, 2005).

The Implications of IT Outsourcing for HR Selection

The question most relevant to the current paper surrounds the impact IT outsourcing has had on the IT workforce in general, and more importantly how internal IT selection practices have had to change and will need to continue to change due to this trend. First and foremost, it is necessary to

acknowledge that this IT outsourcing trend has caused many U.S.- and European-based IT professionals to fear that their jobs are at risk, and this fear might indeed be justified. Over 500,000 U.S.-based IT professionals have lost their jobs since 2001 (Pfannenstien & Tsai, 2004). With at least one-third of IT work being conducted offshore, IT workers in the U.S. and Europe are feeling threatened, and as a result are organizing themselves for one of the first times in the history of the industry. Indeed, there has been an increase in collective bargaining and organized labor protests within the IT industry, such as a two-day demonstration outside the Strategic Outsourcing Conference in 2002, and the formation of The Organization for the Rights of American Workers (TORA).

Although it is true that organizations are outsourcing a great deal of IT work, it is also very clear that a myriad of IT tasks and functions remain in-house (Barthelemy & Geyner, 2004). Therefore, HR selection practices must be equipped to show sensitivity to applicants' fears, reinforcing that the IT jobs remaining will be stable, and that the organization has a commitment to the well-being and development of its new IT hires during such turbulent times in the industry. The research on and practice of IT selection might draw from the theories and research conducted on layoffs and the impacts of layoffs on layoff survivors (see Brockner, Davy, & Carter, 1985; Brockner, Grover, O'Malley, Reed, & Glynn, 1993; Brockner, Grover, Reed, DeWitt, & O'Malley, 1987; Brockner, Konovsky, Cooper-Schneider, Folger, Martin, & Bies, 1994; Brockner et al., 2004). Indeed, U.S. and European IT applicants can be viewed as the industry-level analog of both layoff victims and survivors. That is, some applicants may be out of work because of their former employer's decision to outsource their job (i.e., a layoff victim), whereas applicants to existing IT jobs are similar to layoff survivors in that they are competing for jobs that have been spared the "outsourcing ax".

For this reason, HR managers need to be sensitive to the needs of applicants. The layoff literature suggests that their self-esteem may be at risk, and that they will respond well to social support, procedural justice, and processes and tasks that will give them a sense of control. Their performance upon hiring may be influenced by the extent to which they feel they can trust the organization and those in authority over them. Thus, in designing selection systems, safeguards should be placed which provide applicant's voice, showcases the fairness of the selection system, and provides a snapshot of a nurturing, supportive, and trustworthy environment. Future research might consider applying the research that has been conducted on selection fairness (Gilliland & Hale, 2004; Goldman, 2001) to

the IT industry in particular to better understand the uniqueness of this field and the implications for selection.

A second major issue critical to IT selection is the fact that as IT functions are outsourced, the jobs of the IT professionals remaining in the organization might change dramatically. This is especially the case for IT managers who must transition from supervising subordinates to managing contractors, monitoring outsourcing agreements, and assessing the benefits of contracting work out to external vendors (Ho, Ang, & Straub, 2003). These types of roles often require a very different set of skills and experiences. Thus, when an organization decides to outsource, it is necessary for HR to reevaluate job descriptions and selection criteria carefully. This may call for updated job analytic data to be collected, job descriptions to be updated, and new selection measures developed and validated. New job roles might also require a different combination of IT certifications as prerequisites, which might include certifications in project management and other broader business skills (McCartney, 2004).

Finally, it is critical that those involved with IT selection are aware of the myriad of issues and complexities surrounding the IT outsourcing trend. An informed HR staffing specialist who is tapped into the broader strategic mission of the organization should know the importance of outsourcing from a variety of vendors and locations (i.e., having an “outsourcing portfolio”) to hedge company/region-specific risks. They should encourage top management to impose stringent security measures in outsourcing agreements, including periodic assessment, audits, and tests (Erber & Sayed-Ahmed, 2005). They should demand to see potential vendors’ selection criteria to ensure that the best possible people will be conducting the contracted work (e.g., what are their certifications?). They should be aware of the metrics available to assess the success of outsourcing agreements (e.g., see Misra, 2004) and encourage management to use them. Finally, they should be aware of the risks (both to human resources and broader business processes) inherent to IT outsourcing and ensure that their executive teams do as well (Beasley, Bradford, & Pagach, 2004; Kleim, 2004).

ESTABLISHING A SET OF FOUNDATIONAL KNOWLEDGE AND SKILLS

At first glance, the effort to develop a set of common fundamental IT skills appears impractical. After all, we have already discussed the diversity of IT work and the speed of change within the field. Indeed, notable changes

in the skill sets demanded of IT workers over the past 30 years have been documented (Byrd, Lewis, & Turner, 2004). During the 1970s, IT was viewed as a technical support function and therefore the focus was placed on technical skills, with managerial and business skills receiving less importance. In the 1980s, organizations began viewing IT as a strategic advantage. During this time, managerial and business skills appeared to increase in importance, although in many cases technical skills remained the priority. By the 1990s and early 2000s, most researchers agreed that successful IT workers were required to possess managerial, business, and interpersonal skills as well as technical skills. Although the specific skills emphasized during these time periods differed, a reasonable amount of consistency in the basic categories of skills can be perceived. Along with the increasing importance and maturity of the IT industry, it is likely that a more stable set of core dimensions can be determined that will remain relevant into the near future. Indeed, the United States Technology Administration echoes this possibility in describing a need for an “umbrella skill set” of transferable IT skills (USDOL, 2005).

The Skills Dilemma

Organizations interested in hiring IT professionals are faced with several contradictions in the effort to recruit and hire IT workers with the necessary skills. The first challenge is the decision to focus on specialists, generalists, or a mixed approach. The second is the increasing number and scope of skills demanded by organizations. Third is the issue of selecting workers on a wide set of skills when educational institutions have not adequately prepared students for these needs.

The Question of Specialists Versus Generalists

The topic of specialists versus generalists is important to the construction of any selection system within the IT domain and thus we will describe it in greater detail. If an organization prefers to hire *generalists*, it typically focuses on the broad skills and abilities that applicants may possess to ensure that new employees are capable of contributing to the organization in a variety of roles and over time, when demands may change. Individuals with such broad skills may be more likely to make long-term contributions to the organization. However, this model also implies that many new employees will likely need to be trained in specific knowledge before

contributing to tasks or projects. Such training requires valuable training time/costs to be efficient and productive.

In contrast, organizations that prefer to hire *specialists* focus on the importance of completing projects quickly. They typically select applicants who already possess the specific skills and knowledge required. This approach eliminates the need for training before the new employee can contribute. Although hiring a specialist reduces the time between hire date and the start of productive work (an issue especially important in the IT industry where time is so crucial), employees with such specific and narrow skills may not be optimal for subsequent projects. Also, given the quick evolution of technology, what qualifies as a crucial skill in today's IT labor force may become obsolete within a very short period of time. The specialist approach may also be supported by employer acceptance of the short-term tenures of many IT employees and the recognition that employees often leave after a short period of time for a better position elsewhere.

The IT labor market emerged and grew very quickly over a period of mere decades, and in ways that were often unexpected and unpredicted by the majority of organizations employing IT workers. As a result of this history, many organizations have scrambled to quickly hire IT workers as they were needed, likely with methods that were less standardized or planned than would be desired. Many workers were then laid off during subsequent periods, when their skills were no longer useful or economic circumstances declined. The history of the IT labor market thus far and the costs associated with rapid hiring and layoff trends during certain periods signifies the need for employers to understand current personnel needs, forecast future needs, and hire an IT workforce that will meet both current need as well as potential future opportunities.

Increase in Number and Variety of Skills Demanded

Previous research on changes in skill demand for IT professionals has determined that over time, organizations have expected that IT workers have more skill sets and more varied skill sets (Gallivan, Truex, & Kvansky, 2002; Todd, McKeen, & Gallupe, 1995). Lee, Trauth, and Farwell (1995) used a Delphi study method (using multiple rounds of written surveys with the same respondent group to achieve greater consensus in response) to examine five IT job categories. Their study concluded that the number and breadth of required job skills were expanding, with respondents indicating that professionals would need more skills three years in the future than at present. Gallivan et al. (2002) examined the skills specified in job ads for IT professionals in 1988, 1995, and 2001, and concluded that the number

of skills mentioned per ad increased by 40% from 1988 to 2001. The desire to locate employees with a wide range of specific skills may be contributing to the challenges in finding qualified workers in some IT sub-areas. In some cases, the combination of skills specified is so extensive as to rule out almost all possible candidates (Capelli, 2000). Similarly, many researchers have suggested that employers searching for specialist IT workers focus so heavily on finding the perfect individual with an endless set of specific skills, that they make it impossible to find an appropriate candidate (Meares & Sargent, 1999). Even in a loose labor market, some organizations may perceive a labor shortage, because they are unable to find many applicants with the set of skills required to immediately and productively join a particular project (Meares & Sargent, 1999).

Hiring managers, organizations, and trade publications commonly express the importance of both hard and soft skills to the success of the IT professional (e.g., Bandow, 2004; Dash, 2001; Wong, 2003; Yager & Schumbach, 2002). “Hard skills” are the technical skills including programming languages and skills, operating system skills, networks/communication, software development tools, etc. Many of these skills change rapidly within the IT industry. What have become known as “soft skills” are a wide variety of non-technical skills not directly related to computer and IT operations, including interpersonal skills, decision-making skills, business knowledge, and intrapersonal/personality characteristics.

Various lists of general and specific soft skills have been presented. One of the more comprehensive and detailed lists is presented by NWCET (1999, 2000). Table 8 summarizes a number of these lists. Several groups of soft skills can be identified, including communication skills, problem solving skills, interpersonal skills, business-related skills, and adaptability.

Communication skills include abilities to speak and write clearly and concisely, using language appropriate for diverse non-IT audiences. Both verbal and written communication have been established as important to effectiveness of IT professionals at both entry level and more advanced levels (Bandow, 2004; Bailey & Stefaniak, 1999; Cappel, 2001).

Problem-solving skills include the abilities to analyze situations to understand the causes of problems, to see customer needs, and to understand complex interactions of functions in an organization; to generate alternative solutions based on past knowledge and creative thinking; to evaluate options in terms of various outcomes including costs; and to make sound judgments. In a survey of IT professionals, problem solving was rated the most important soft skill for success in IT positions (Bailey & Stefaniak, 1999).

Table 8. Taxonomies of Soft Skills.

Gallivan, Truex, and Kvasny (2004)	NWCET (1999, 2000)	ITAA (2004)	Bailey and Stefaniak (2001)	Jiang et al. (2003)	Lee (2005)	Medlin et al. (2001)	Wong (2003)
	Research analysis and synthesis						
	Design and development						
	Testing and validation						
	Quality assurance						
	Project management	Project management	Time management				Negotiation, manage outsourcing
Communication	Oral communication	Oral communication	Listening verbal communication	Oral communication	Social	Communication	Communication
	Written communication	Written communication		Writing			
	Workplace communication						
Interpersonal	Customer relations			Interpersonal	Interpersonal		

Interpersonal	Teamwork Business organization and environment Professionalism Task management Professional development Data gathering, analysis, and organization	Team building Analytic skills	Teamwork		Business Management	Teamwork Business
Creativity	Problem definition Solution Development and testing	Analytic skills Analytic skills	Problem solving		Problem solving	Analytic Analytic
Leadership Independence/ motivation		Multitasking Loyalty	Ability to multitask	Team leadership	Social	Leadership

Interpersonal skills include the abilities to interact effectively with diverse audiences, to work effectively in teams, and to serve as leader. In a survey of IT hiring managers, 52% responded that interpersonal skills were the most important soft skill, above analytical skills, team building, and multitasking (ITAA, 2004). The importance of interpersonal skills across various IT jobs is also supported by numerous other studies (e.g., Bandow, 2004; Lee et al., 1995; Wynekoop & Walz, 2000).

Business-related skills include understanding organizational processes, goals, and environmental constraints and opportunities. Increasingly, IT workers are expected to have general knowledge of business processes and specific knowledge of the organization and industry in which they work (Lee et al., 1995; NWCET, 2000). According to *BusinessWeek* (June 21, 2004), the evolution of IT services is calling for a new set of skills that combine computer science, business management, and sociology. Because the work environment of IT employees now commonly involves direct daily contact with end users and placement within non-IT departments, IT workers must speak the language of the business (not just IT) and clearly understand the goals and strategies of the departments with which they work (Johnson, 1998). The need for business related skills is particularly important when designing custom-made software for unique applications in individual organizations (*BusinessWeek*, 2004). In contrast to writing standardized software for “off-the-shelf” packages, writing customized computer applications often requires an understanding of the total operation of an organization including R&D, manufacturing, marketing, finance, and distribution. One source of personnel with breadth and depth of knowledge of an organization may be non-IT workers currently in the organization who can acquire IT skills (Brandel, 1999).

Other knowledge, skills, and abilities (KSAs) required from IT workers include adaptability and ability to quickly learn new skills and knowledge to remain effective within the short life cycle of IT products (Bailey & Stefaniak, 1999; Freeman & Aspray, 1999). The rapidly changing nature of the IT industry requires employees to be flexible in taking on multiple roles and positions over time. Another important element of adaptability is the need to continuously update and apply new knowledge and skills (Cappel, 2001). This characteristic of work is rated highly across all IT jobs in the O*NET (2003).

Research has generally supported the importance of soft skills to success in IT positions. One study, which asked senior-level IT managers about the use of various attributes in recruitment and retention found that interpersonal and communication skill requirements were reported to be used as

often as technical aptitude, with business knowledge following in importance (Ferratt, Agarwal, Moore, & Brown, 1999). A survey by the ITAA (2004) of 500 managers hiring IT workers revealed that beyond a solid track record including college degree and related experience, employers were looking for persons with interpersonal skills and soft skills such as abilities to write memos, develop plans, and manage projects. Soft skills may be considered even more important if one is concerned about transferability of skills across specialty jobs such as programmers, system analysts, and managers. Lee (2005) found that social skills of communication, self-motivation, and interpersonal relations were among the most transferable.

Few studies have been conducted to assess the impact of IT skills on organizational success. However, there is some evidence of the importance of “soft skills” to firm effectiveness. Byrd, Lewis, and Turner (2004) investigated the importance of IT skills, and found that technical skills, technology management skills, and business skills were related to organizational success, as measured by Information Systems Infrastructure and contribution of IT to organizational competitive advantage. Although this study indicated that the effect of interpersonal and management skills was negative, it should be recognized that the data were based on Chief Information Officer (CIO) survey responses for all variables, thus making it possible that their biases may have influenced the results. In fact, Jiang, Klein, VanSlyke, and Cheney (2003) extended this study to investigate the impact of writing skills, oral communication skills, and interpersonal skills using a different research design. Their study focused on end users rather than CIOs and considered the users’ expectations in connection with the perceived skill level of the IT workers. Their findings indicate that soft skills are positively related to user satisfaction, but that the level of satisfaction is also determined by the user’s pre-existing expectations. System success as measured by user satisfaction was highest when there was a gap between perceived importance and perception of skills of IS staff.

While the dilemma of identifying workers possessing strong hard and soft skills is not unique to the IT industry, the seriousness of the matter may not be as strong in other fields. While in other professions there may be a mismatch in a single skill area, there is not the mismatch in the wide array of soft skills common among IT workers. For example, newly minted physicians may lack interpersonal skills in dealing with patients (“poor bedside manner”), their problem solving skills (i.e. diagnostic skills) are less often found wanting. Similarly, whereas attorneys may be faulted for using arcane language in communications with clients, they typically have a realistic business sense. The more pervasive paradox of strong technically skilled yet

weak soft-skilled (i.e., *all* of the soft skills) applicants poses special problems for selecting IT workers.

The Contradiction between Educators and Practitioners

In many selection situations, the skills of applicants are not sufficient to meet the array of hard and soft skills needed in modern organizations. The characteristics individuals bring to the profession and the skills that are developed as they are prepared for technical jobs often fail to match the wide variety of skills needed for job success and organizational effectiveness. Whereas the typical formal education focuses on specific sets of technical skills, such as hardware and software design, organizations need staff members who are good problem solvers, flexible, highly motivated, and interpersonally competent. Students themselves realize the importance of soft skills, as indicated by a sample of senior information sciences majors who rated soft skills as important as technical skills in predicting success of IT professionals (Medlin, Dave, & Vannoy, 2001).

Many practitioners perceive educators as failing to provide necessary skills to new graduates. In a 2004 survey (Von Dran, 2004), 244 IT professionals reported that IT graduates had shortcomings in interpersonal communication and business skills. A 2003 survey reported that 75% of IT professionals perceived academia as failing to adequately prepare graduates for present and future jobs (Hoffman, 2003). The inadequacies noted in this survey were not related to technical skills, but to soft skills, such as troubleshooting, business skills, project management, and interpersonal communication.

Universities are not unaware of the need to train soft skills. Tang, Lee, and Koh (2000) describe a gap perceived by IS educators between skills taught and skills needed. Five of the eight curriculum gaps they noted were related to soft skills: interpersonal communication, interpersonal behavior, critical thinking, creative thinking, and personal motivation/working independently. Learning objectives and statements of desired outcomes in IT programs often list soft skills. But, instructors often have difficulty assessing these. In response, the NWCET (2000) developed a soft skills assessment program for IT core curriculum. This resource provides guidance to universities seeking to assess soft skills, including a list of 24 soft skills grouped into four main categories: project and process flow skills, communication and coordination skills, business and environment skills, and problems solving. Specific skills in these categories are shown in Table 8. For each

skill, three levels of proficiency are defined: basic, intermediate, and advanced. Two examples will illustrate the elements of the learning components. Analysis and Synthesis is defined as using individual and group projects involving the analysis of requirements and the development of recommendations. At the basic level, the criteria include presenting complete and accurate information, and making recommendations that are realistic and consistent with information presented. Task management is defined as using individual tasks and group projects, where the advanced skill is demonstrated in part by assessing effectiveness of processes and making improvements.

Despite the efforts to clarify core IT curriculum, it is unclear whether students are now being better prepared to meet on-the-job requirements than prior to the development of the curriculum standards (von Dran, 2004). A group of educational institutions that refer to themselves as “information schools” or “I schools” has attempted to address the concerns articulated by practitioners by focusing their programs on people as well as technology. These programs generally have a somewhat broader curriculum and attempt to focus on real-world experience, project-based activities, and active learning (von Dran, 2004). It is hoped that these efforts will lead to generations of students better prepared to meet the technical and non-technical requirements of IT jobs.

While the curriculum materials developed by various industry groups have been designed to help universities clarify learning objectives, organizations hiring IT staff can use the set of learning components in two ways: (a) to examine whether a university-training program has systematically developed and assessed its graduates in areas of interest to the hiring organization, and (b) to guide the development of screening procedures (e.g., questions for a background interview or a situational interview) to evaluate individuals being considered for selection or promotion.

Developing a Set of Fundamental Skills

Although IT workers participate in work that is diverse, all works across the scope of IT relies on a common set of foundational knowledge and skills. All students and individuals interested in participating in IT work are required to obtain this knowledge and skill for success. These core elements are applicable across jobs, companies, and industries. In addition, they maintain their importance through the career path and despite technological change. This foundation is essential for all IT workers to successfully perform their

jobs, but not necessarily sufficient. Use of this foundation in the selection process can provide the hiring of workers who are capable of performing at a high level throughout their careers, particularly for those organizations interested in focusing, at least in part, on generalists.

While the failure to develop a clear taxonomy of IT work makes it challenging to articulate the components of this core foundation, examination of proposals for core dimensions of IT across several sources may provide assistance in developing a tentative set of foundational dimensions. This examination may begin with a consideration of how to categorize or organize elements of the IT foundation. Using a framework developed by CWNIT (2000), it is possible to categorize the necessary knowledge and skills of IT work into four categories (see Table 9). The categories are generated from crossing two dimensions: the level of technical content of the knowledge/skills and the permanence of the knowledge/skills. We recognize that knowledge and skills are not synonymous entities. However, because much of the IT literature does not distinguish between these two elements, we maintain combining them into a common set of requirements, generally referring to them as “skills.” The framework captures the distinction between hard and soft skills, which differ in terms of how they are developed, assessed, and trained. In addition, it acknowledges that some skills are likely to be permanently fundamental to IT work, whereas others may be relevant only for limited periods of time. This matrix is particularly relevant to IT selection, because organizations must clarify their needs for employee skills in terms of the time frame in which they are valuable. Core or foundational skills necessary for hiring generalists or professionals who will be capable of maintaining productivity over changes in technologies and roles will fall under the enduring category, while those skills that will predict an applicant’s ability to quickly contribute to projects based on specific knowledge and skills required will be included in the perishable category.

Table 9. Matrix of IT Skills.

	Enduring	Perishable
Hard	Intellectual abilities Foundational scientific knowledge	Knowledge of particular software Knowledge of particular hardware
Soft	Personality characteristics Social skills Business knowledge	Company knowledge Industry knowledge

Source: CWNIT (2000).

CWNIT (2000) articulates three dimensions of core IT skills: intellectual abilities, knowledge of basic IT concepts, and social skills (see Table 10). Intellectual abilities are composed of skills representing information seeking, problem solving, and managing complexity. Knowledge of basic IT concepts includes algorithms and mathematics, the digital representation of information, and basic concepts of physics and electronics (if hardware is involved). The social skills dimension consists of communication skills, teamwork skills, knowledge of self, and the ability to translate technical information to non-technical audiences.

Another set of core IT dimensions is proposed by NWCET (2003): cybersecurity, problem solving/troubleshooting, project management, and task management. Cybersecurity includes the development and implementation of data/information assurance plans and monitoring performance to ensure integrity. Problem solving/troubleshooting consists of various steps from defining the problem to identifying and testing possible solutions to evaluating problem-solving processes. The project management dimension is composed of several components, including defining the scope of the project, identifying stakeholders, evaluating project requirements, and reporting project status. Similarly, task management includes identifying the scope of the task, designing and developing work procedures, and monitoring work processes.

The Committee on Information Technology Literacy (CITL) specifies a set of three core dimensions of IT fluency: intellectual capabilities, fundamental concepts, and contemporary skills (CITL, 1999). The category of intellectual capabilities is composed of lasting cognitive abilities and skills, while the fundamental concepts category covers basic knowledge related to IT. We perceive the contemporary skills category, which includes skills, such as using basic operating system features, using a word processor to create a text document, and using a graphics and/or artwork package, as possibly representing foundational skills, but not fundamental skills. These skills are easily learned and therefore would more appropriately be trained rather than selected on if applicants are deficient in these areas.

While only one taxonomy indicated security as a fundamental element of core IT knowledge, changes in the nature of IT mandate that all IT workers be concerned with information security and privacy. Even professionals not directly involved in the security aspects of IT often have access to large and valuable deposits of information that must be protected for the benefit of the organization. Many IT employees are entrusted with high levels of responsibility due to the amount of potential damage from system attack or failure. In essence, IT jobs may become more “high risk”, such as those

Table 10. Taxonomies of Core IT Knowledge and Skills.

CWNIT	NWCET	CITL
<i>Intellectual abilities</i>		<i>Intellectual capabilities</i>
Think logically and reason quantitatively		Engage in sustained reasoning
Manage complexity		Manage complexity
Define and clarify a problem, and know when it is solved	Problem solving/ troubleshooting	Test a solution
Understand the advantages and disadvantages of apparent solutions		Manage problems in faulty solutions
Cope with unexpected consequences and troubleshoot		
Conceptualize, gather, organize, and analyze data		Organize and navigate information structures and evaluate information
Observe, and learn from one's observations		Anticipate changing technologies
		Think about information technology abstractly
		Expect the unexpected
	Task management	
	Project management	
<i>Social abilities</i>		
Communications skills		Communicate to other audiences
Teamwork		Collaborate
An understanding of one's own personality and learning style		
Translation competency		
<i>Knowledge of basic IT concepts</i>		<i>Fundamental concepts</i>
Algorithms and finite mathematics		Algorithmic thinking and programming
How information is represented digitally		Digital representation of information
Basic concepts of physics and electronics (if hardware is involved)		
		Computers
		Information systems
		Networks
		Information organization
		Modeling and abstraction

Table 10. (Continued)

CWNIT	NWCET	CITL
		Universality
		Limitations of information technology
		Societal impact of information and information technology
	Cybersecurity	

Source: CWNIT (2000), NWCET (2003), CITL (1999).

of airline pilots, due to the fact that IT professionals are often responsible for the livelihoods, and in some cases lives, of large numbers of people (Venator, 2003; Summerfield, 2005).

The confluence of the information presented throughout this paper allows us to generate a proposed set of core dimensions of IT skill and knowledge. This list was developed by examining similarities across the taxonomies and other research presented above, and is presented in Table 11. The dimensions are all intended to fall within the CWNIT (2000) category of enduring, and are placed into hard and soft skill categories. The hard skill category includes intellectual abilities and foundational knowledge, while the soft skill category includes communication skills, social skills, and other skills. We will return to this model in later sections when discussing our recommendations for selection processes.

Summary of Factors Influencing Selection of IT Professionals

We have now discussed the implications of several factors on hiring of IT workers: the history of the IT labor market, the failure to clearly define the workforce and categorize its jobs, reasons for which hiring remains a frequent organizational activity, the speed of technological change, the widespread use of certification and outsourcing, and the challenge of establishing a core set of IT competencies that balance technical and non-technical needs. These factors are summarized in Table 12, which will help guide our discussion of the development of hiring practices for IT professionals. An additional element that should be considered is the current state of selection of IT workers across organizations. What steps are firms taking to find effective IT personnel?

Table 11. Proposed Elements of Core IT Skills and Knowledge.

Hard	<p><i>Intellectual abilities</i></p> <ul style="list-style-type: none"> Think logically and reason quantitatively Manage complexity Problem identification Problem solving Solution testing Troubleshooting Conceptualize, gather, organize, and analyze data Manage projects <p><i>Fundamental knowledge</i></p> <ul style="list-style-type: none"> Business knowledge Algorithms and finite mathematics Digital information representation Basic concepts of physics and electronics (if hardware is involved) Computers Information systems Networks Information organization Modeling and abstraction Universality Limitations of information technology Societal impact of information and information technology Cybersecurity
Soft	<p><i>Communication skills</i></p> <ul style="list-style-type: none"> Written communication Oral communication Translate technical information to lay audiences <p><i>Social skills</i></p> <ul style="list-style-type: none"> Interpersonal skills Team skills <p><i>Other skills</i></p> <ul style="list-style-type: none"> Adaptability

Murphy and Byrne (2000) provide an overview of the state of personnel selection in the IT domain and assess the use of structured assessment in selecting IT workers in 23 organizations. They concluded that organizations infrequently use standardized assessments in the process of hiring IT workers. Their study documented that standardized ability tests, personality inventories, biodata-scoring systems, work simulations, and assessment centers are rarely used to hire entry-level or experienced employees. Even

Table 12. Major Factors Affecting the Selection of IT Workers.

Rapidly and continuously changing technology
Lack of consensus in job taxonomy and titles
Decentralization of IT departments and workers in organizations
Failure to tap available worker populations
Short average tenure of workers
Unregulated certification industry
Widespread use of outsourcing and contract labor
Hiring primarily conducted by IT managers
Failure to use established and valid selection methods
Desire to promote a casual, trusting culture

the few organizations that reported using structured interviews generally failed to use a standardized scoring system. This is a rather important finding, considering that the methods organizations reported using for selection, such as unstructured or loosely structured interviews and resume screening, have been shown to be less reliable and valid than other methods. Murphy and Byrne cited several reasons that may explain why organizations tend not to use structured assessments when hiring IT professionals. These include the need to make quick decisions, the speed at which jobs change, emphasis on specialists rather than generalists, and a lack of information about the reliability and validity of various assessment techniques. In addition, many smaller companies desired to promote a loose and trusting culture and felt that using structured assessments in selection would be in conflict with this ethos.

An additional explanation for the use of less reliable and valid selection methods is the frequency with which selection decisions are made primarily by IT managers. Murphy and Byrne (2000) found that while the HR departments of some organizations provided assistance with identifying the attributes relevant to a job and suggest means of assessing them, in most cases (92% of entry level jobs and 89% of experienced applicants), IT managers made the selection decision with input from the workgroup or team. Because most managers in IT organizations or departments begin as technical workers and move up the ranks to become managers, they are not as likely to possess in-depth knowledge of selection procedures and their effectiveness. Such a situation might have detrimental effects on the extent to which appropriate KSAs are identified on which to select IT workers, as well as the methods chosen to measure these attributes.

Despite the claims of many organizations that they focus on soft skills, previous studies have shown this not to be true in practice. Gallivan et al.

(2002) examined a set of job advertisements over a 13-year period to assess trends that occurred during that period. Their study reported a “recruitment gap” in which job ads continued to focus on technical skills despite organizations’ statements that individuals with soft skills and business knowledge were being sought. The authors speculated that hiring managers use the advertisements to screen out applicants based on technical skills and then use information on applicant soft skill in later decision-making phases. However, even if hiring managers do use soft skill information in choosing among applicants, it appears that their assessment of soft skills is likely to be unreliable and invalid. Murphy and Byrne (2000) report that 20 of the 23 organizations they examined never used personality profiles in selecting IT professionals. It appears that any soft skills information such organizations would possess is gleaned from resumes or picked up through unstructured interviews. Clearly, such methods are not likely to generate success in hiring workers with high levels of soft skills.

CONSIDERING ALL STEPS OF THE SELECTION PROCESS

Thus far, we have reviewed the uniqueness of the IT workforce, discussed the forces impacting the selection of IT workers, and presented evidence as to the types of selection practices actually being carried out in organizations. As we have done so, we have made several recommendations as to how IT selection might be carried out given these contextual factors. For completeness, in this section we briefly traverse through each of stages of the selection process (i.e., planning the selection process, job analysis, selection of attributes to be assessed, assessment methods, validation of selection procedures, administration issues) in order to round out our list of recommendations.

Planning the Selection Process

Developing a Selection Strategy

Earlier, we discussed the issue of hiring IT workers as generalists vs. specialists. While many of the recommendations in this paper apply for either focus, in order to ensure short- and long-term success it is imperative to develop a selection strategy that meets present needs and forecasts future requirements. Because future skill needs are difficult to predict in the IT sector, organizations should consider using combinations of specialist

and generalist workers to fulfill present needs and provide opportunity for growth and skill expansion. Permanent employees may be best suited for positions that experience less change (Baschab & Piot, 2003). Contingent workers may best be brought on for their specialized skill sets and ability to contribute to projects immediately with little training. Table 9 provides a matrix highlighting enduring vs. perishable skills. It is necessary to predict the continuing importance of these skills over the short- and long-term future.

Tapping Under-Utilized Populations

As discussed earlier, the proportions of women, older workers, racial minorities, and disabled workers in the IT industry is somewhat lower than in the general population. These statistics imply that when organizations are attracting applicants, they may make distinct efforts to target these populations. Scholars and taskforces alike have identified a number of barriers that preclude women and minorities from entering the IT professions (Bayer Facts of Science Education Surveys, 2005; ITAA, 2003). First, there seems to be lack of role models for women and minorities, despite networking groups such as Women in Technology, the Black Data Processing Associates, National Association of Female Executives, Society for Hispanic Professional Engineers, and the National Action Council for Minorities in Engineering (Tapia & Kvasny, 2004). Indeed, it behooves organizations not only to network and recruit within such groups, but also to encourage their current IT women and minority employees to be involved in them in order to receive mentoring from role models they may not have access to in their current organization (Pratt, 2003).

Second, the trend continues within middle and high schools for math programs to be under- and mis-utilized and marketed. Students, especially girls and African-Americans, are simply not being prepared for future study in IT. Although this issue may be out of the hands of HR managers, there exists a great need for educators and policy makers to collaborate in enhancing both the rigor and attractiveness of math curricula.

A third barrier is more psychological in nature. It involves how woman and minorities come to view the IT industry. Sociologically, IT is portrayed through movies and books as being composed almost exclusively of young white males with little social life or skills, who work countless, irregular hours conducting solitary work (ITAA, 2003; Pratt, 2003; Tapia & Kvasny, 2004). Unfortunately, this is counter to the highly collaborative team-based, and social environment existent in most IT departments today. It has been argued that this misrepresentation may be deterring women and minorities

from the field. It is essential that organizations wanting to diversify their IT workforce do everything they can to counter false stereotypes when advertising jobs and recruiting. Of equal importance is ensuring that those conducting interviews and making selection decisions are not biased in their decision making due to stereotypes that woman and minorities are less proficient in math or technical skills.

A final barrier involves corporate buy-in. That is, there is concern across the industry that top management is not as committed to diversity management within IT as it is in other areas. HR should do everything it can to educate upper management in the importance of diversifying its IT workforce. This includes pushing for more compressive recruiting programs which not only tap into specialized schools, but also, for example, historically black colleges and universities (HBCUs), which may make up only 4% of colleges and universities, but yield 28% of African-American graduates and 31% of those in science and engineering.

But diversity awareness is needed at all levels within the organization. Little et al. (2000) recommend building awareness about practices that alienate women and minorities throughout the IT workforce. In fact, they urge organizations to consider incorporating cultural/diversity awareness into current IT competency models and training curricula. They recommend educating employees in workplace demographics, multicultural teambuilding, cultural awareness, gender issues, and stereotypes.

Job Analysis

Because of the need to collect evidence of reliability, validity, legal defensibility, and rigor, many traditional elements of job analysis continue to be essential in analyzing the work of IT professionals (Cronshaw, 1998; Fine & Cronshaw, 1999; Harvey, 1991; Shipmann et al., 2000; Whetzel & Wheaton, 1997). Traditional methods for determining tasks, KSAs and the linkages between the two continue to provide a foundation on which selection methods can be built. However, given the dynamic and boundaryless characteristics of IT jobs, these traditional methods may run the risk of overlooking important information (Brannick & Levine, 2002; Davis, 1995; Lees & Cordery, 2000; Sanchez, 1994). Often, new and transforming tasks and roles are left out of the job descriptions and selection plans of IT positions. Not only does such an oversight quickly render selection methods less content valid and therefore less legally defensible, but excluding essential KSAs from the selection system may reduce criterion-related validity, and

consequently weaken the quality of decisions made about IT job applicants. Therefore, as traditional job analytic methods become less applicable (Sanchez, 1994, 2000), it is essential that job analytic procedures be used that will detect not only current job requirements, but future job requirements and emergent tasks as well.

Innovative methods of job analysis, such as *work analysis*, may address some of the challenges of selection for IT positions (Cronshaw, 1998; Sanchez, 1994). According to Sanchez, work analysis focuses on designing job classifications that are “enlarged and multi-functional” (p. 58) rather than narrow. Work analysis focuses on workflow rather than functional area and uses workflow information to classify similar tasks and KSAs into groups. This approach allows for the identification of *skill blocks*, or groups of meaningfully similar abilities, which may be used for selection, certification, compensation, or promotion (Sanchez, 1994). For example, if the work analysis technique were applied to positions in a software development department, employees’ roles may be described not as separate jobs with defined tasks, but as a flow of work in which each employee contributes tasks and has responsibilities that require certain skills. Incumbents and managers would like be queried about the veracity of the workflow sequence and asked to confirm how jobs are related and classified.

Because of the speed at which IT jobs change, *strategic/forward-looking job analysis* is also becoming common (Sanchez, 1994; Schneider & Konz, 1989). Organizations are demanding that analyses of work include elements that provide links to business goals and strategies, creating a prescriptive element. This goal may be achieved via several methods. Schneider and Konz suggest that subject matter experts (SMEs) be given descriptions of likely future tasks and skills and asked to provide task and KSA ratings of the future job, which are then compared with ratings for the current job. Sanchez proposes that “what if” scenarios including demographic, social, economic, political, and technological factors should be developed and used to identify required changes in staffing patterns due to different task and KSA needs.

The need for flexible workers to take on emergent tasks and roles also may require the use of *competency modeling* (Shipmann, 1999). This strategy enables the identification of KSAs more broadly applicable to a variety of jobs within an organization and places importance on the strategic needs of the organization or on behaviors that have been determined to be useful within the organization. Competency modeling is often considered a “top-down” approach, whereas traditional job analysis is considered more “bottom-up.” Essentially, when determining the competencies necessary for

successful work performance, competency modeling first considers the organization's specific mission, values, strategy, and goals. Such a strategy could be useful for IT job families where focusing on the organizational function may produce more enduring results than a focus on the (ever-changing) specific technical knowledge needed to carry out such functions. Despite still being considered a new technique, competency modeling is gaining popularity among practitioners, although many have warned that the psychometric rigor of the method must be carefully kept in check if using for selection tool development (Shipmann et al., 2000).

Likewise, the emerging roles that IT workers are forced to take on makes it important that job analysis expand its focus from job tasks to include worker characteristics. As a result, job analysis of IT positions should include significant emphasis on personality and value orientations that give indications of person-organization fit and ability to perform a spectrum of jobs within an organization (Cronshaw, 1998; Pearlman & Barney, 2000; Sanchez, 1994). Achieving person-organization fit may require an increased emphasis on understanding the culture, climate, and strategic goals of the organization as well. It will thus become more necessary to identify taxonomies of values and attributes that apply to both individuals and organizations to identify the best fit.

In addition to developments in the job analysis process, new tools have been proposed that may ease the challenges of collecting job analysis information on IT workers. Sanchez (1994) mentions new technologies, including teleconferencing, groupware, and online databases such as O*NET that may minimize the time and effort required of one-on-one interviewing and surveying. Sanchez (2000) also discusses the potential of using mechanical estimations to generate KSA ratings from work activities. This synthetic validity technique uses data across a wide variety of jobs to develop a regression equation relating work activity ratings to KSA ratings. This equation can then be used to estimate KSA ratings for particular jobs on which only work activity information has been collected. Additional research needs to be collected to determine the usefulness of this technique, but it may prove an efficient way to estimate KSA ratings for IT positions. Another potentially useful method involves the use of job- or role-specific surveys, which contain the spectrum of specific tasks and KSAs associated with a job group, such as system administrator. Incumbents complete the relevant survey to determine which specific technologies and skills are required of their tasks and responsibilities. Interviewing a small number of incumbents is also conducted to ensure that the surveys are representative of the job, to identify future job requirements, and to link to organizational goals.

Employing variations of the traditional job analysis method addresses several of the issues that arise in conducting selection in an IT environment. The use of work analysis or competency modeling broadens the scope of the analysis and maximizes the likelihood that newly hired employees will be able to transfer from one project to another successfully by possessing the KSAs underlying a variety of tasks and responsibilities within the organization. The focus on workflow in work analysis assists in understanding the relationships between workers in a team and identifies the KSAs required for successful teamwork, which can be used during the selection process. The use of strategic job analysis facilitates the readiness of newly hired employees to engage in new projects and tasks that require emerging knowledge and skills due to changes in the demographic, economic, or technological environment. Inclusion of tools other than or in addition to one-on-one interviewing and the use of off-the-shelf surveys may minimize the amount of time and effort required of SMEs and practitioners in collecting the necessary data.

Although changes are currently being implemented in the administration of job analysis, many questions remain. It is necessary to develop more standardized competency modeling in order to rigorously examine broader descriptors and contextual variables. Job/work analyses also need to better incorporate team-based indicators for those positions that require teamwork (Hough & Oswald, 2000). Contextual performance (those aspects of performance relevant to organizational outcomes, but not defined in formal job descriptions, such as organizational citizenship) should be examined within a position to determine whether predictors of contextual performance can be identified and considered in selection decisions. The challenge of completing job analyses with off-site and telecommuting employees needs to be addressed and examined. It is imperative that HR research examines the defensibility of new job analysis processes and methods by systematically tracking court outcomes. Finally, the need for speed in completing job analyses and the flexibility to encompass constant change in jobs is required and may be derived from new technologies and real-time HR systems. The bottom line is that failure to analyze work adequately increases the chances that selection systems will fail (Murphy & Byrne, 2000).

Attributes to be Assessed

Earlier in this paper, we described several representative IT positions and reviewed past research, suggesting elements of a core set of IT skills. We hope that these efforts provide insights into the effective determination of

the essential attributes required for IT positions. Whether an organization chooses to focus on hiring generalist or specialist workers, or a combination, we recommend that emphasis be placed on the core dimensions in [Table 11](#).

Databases commonly used by I/O psychologists and HR managers, such as O*NET, may not provide the necessary level of detail about job attributes and requirements applicable to both current and future IT jobs, especially for technical knowledge and skills. Emphasis may need to be shifted to several recently published reports generated from the IT perspective, from organizations such as the NWCET, META Group, and the ITAA. Research from these sources provides information that may assist in identifying the competencies and educational requirements that organizations may need to use for selection of IT workers ([Murphy & Byrne, 2000](#)).

Many questions and issues remain about the best method of assessing non-technical skills and abilities. The first is the difficulty of defining these KSAs and developing reliable and valid measures to assess them. That issue, in turn, leads to questions of legal defensibility of using non-technical skills to make selection decisions. Many of the non-technical skills must be assessed by techniques, such as personality tests and interviews, that may be more difficult to defend in employment litigation.

The wealth of validity generalization evidence for cognitive ability tests and measures of conscientiousness ([Barrick & Mount, 1991](#); [Hunter & Hunter, 1984](#); [Reilly & Chao, 1982](#); [Tett, Jackson, & Rothstein, 1991](#)) is focused more on broad attributes, which may be more applicable to the selection of generalists than to specialists ([Murphy & Byrne, 2000](#)). These broad attributes are likely to represent enduring traits, rather than static attributes such as knowledge, and thus serve as better long-term predictors of performance in a changing environment. However, this generalist approach may not be the most effective strategy for IT organizations, especially small ones, because projects often require specific and unique skills within very fast moving time frames. Thus, IT organizations must carefully determine the attributes required for adequate performance while simultaneously considering the level of attribute specificity that best fits with the organization's needs.

Earlier in the paper, we reviewed the trend to outsource IT work offshore. The trend toward offshoring certain aspects of IT work ([Beauprez, 2003](#); [Kessler & Armour, 2003](#)) puts pressure on IT organizations to identify the particular components of work that should be contracted to workers in foreign countries and what components should be retained in the U.S. It has been assumed that most of the tasks transferred to workers in countries such as India and China, where the cost of IT labor might be less expensive,

require lower-level skills and less innovation (Beauprez, 2003). This trend may be true in some organizations, which leave complex tasks and responsibilities for U.S. teams. However, recent survey findings have found that organizations transfer a wide variety of tasks, both simple and complex, offshore. The future need, then, is to develop finely tuned job analytic tools to differentiate among the many skills comprising IT talent, and to identify the skills that may be obtained offshore at lower costs and those that must be obtained in the U.S., at higher costs.

Assessment Methods

The importance of using effective methods in the selection of IT workers remains no matter what economic circumstances may exist. The availability of IT workers is beneficial to organizations, but only if the selection procedures assist in hiring the best applicants for the position and organization in question. In some cases, this may require complicated or expensive selection procedures to achieve.

Many established methods of assessment continue to be useful for the selection of IT workers. These methods include assessment centers (Spychalski, Quiñones, Gaugler, & Pohley, 1997; Thornton & Rupp, 2005), interviews (Campion, Palmer, & Campion, 1997; McDaniel, Whetzel, Schmidt, & Maurer, 1994), cognitive ability tests (Campbell, 1996; Levine, Spector, Menon, Narayanan, & Cannon-Bowers, 1996), personality inventories (Barrick & Mount, 1991; Hough, 1997; Hough, Eaton, Dunnette, Kamp, & McCloy, 1990; Tett et al., 1991), resume screening (Brown & Campion, 1994; Quible, 1998), biodata (Carlson, Scullen, Schmidt, Rothstein, & Erwin, 1999; Mumford, Uhlman, & Kilcullen, 1992; Stokes, Mumford, & Owens, 1994), tests of specific skills (Murphy & Byrne, 2000), integrity tests (Murphy, 1993; Ones, Viswesvaran, & Schmidt, 1993), and knowledge tests (Hough & Oswald, 2000). In addition, construct-oriented biodata may emerge as a new and useful technique (Allworth & Hesketh, 1999; Mumford & Stokes, 1992), and personality assessment shows additional promise through advances in the detection and avoidance of faking (Young, White, & Heggstad, 2001).

Despite the many techniques available to those hiring IT workers, most companies currently rely on resume screening and either standardized or non-standardized interviews for both entry-level and experienced job applicants (Murphy & Byrne, 2000). Based on the importance of making sound selection decisions, as well as the expectations of IT applicants, HR or IT managers hiring for IT positions should investigate the available

selection methods and choose those that provide reliability and validity in balance with acceptability to applicants and efficiency, to address the need for frequent selection decisions. Additional selection methods may be especially important for assessing the non-technical skills that have recently been acknowledged as important to IT positions, such as simulation exercises (Thornton & Mueller-Hanson, 2004), situational judgment tests (McDaniel, Morgeson, Finnegan, Campion, & Braverman, 2001), and assessment centers (Thornton & Rupp, 2005). As always, the use of multiple sound methods is always preferable to single assessment models (Nunnally & Bernstein, 1994).

Some organizations have developed and utilized innovative selection methods for IT positions. These methods include elements such as correctly connecting a computer network using a videogame-like display, multimedia knowledge tests, multimedia situational judgment assessments, and assessments administered through interactive voice response (IVR) (Drasgow, Olson-Buchanan, & Moberg, 1999; Mondragon, 1999). While these methods are likely to be met with acceptance and interest by IT applicants (i.e., have high face validity), it is imperative that the rigor in examining reliability and validity of these methods is not overshadowed by their novelty.

Further exploration of these issues will require collaboration between researchers and practitioners in many areas. Only by joint efforts of experts from areas such as I/O psychology, HR management, quantitative psychology, psychometrics, human factors, and of course, IT, will the most job-specific, valid, and technologically sophisticated assessments be able to be developed for the selection of IT workers. Such applications should also be explored within the entire HR context, considering implications for recruiting, training, and retention as well. Advances will certainly come with a high initial price, but costs will most likely be offset by the benefits gained from the increase in decision-making accuracy (Cascio, 1991) and positive applicant reactions (Rynes & Connerley, 1993) such assessment would provide.

Validation of Measures

Faced with the distinctive features of selecting IT workers, the validation of selection techniques is particularly challenging. Some of the traditional test validation methods, including those that are highly desirable, may not be feasible. For example, predictive validation studies may not be feasible because small sample sizes render some statistical findings unreliable, jobs change quickly over time, adequate criterion measures of performance

are not available, and the organization may not be willing or able to wait for the study to be completed (Hamel & Prahalad, 1994; Howard, 1995). In response to this challenge, other methods of gathering evidence to support the use of the selection practice may be necessary. Modern concepts of test validation provide a rationale for alternative approaches, and new principles of test validation provide suggestions for gathering a variety of probative information.

Until recently, the traditional, somewhat narrow, view of test validation classified validity into three separate categories, commonly referred to as content validity, criterion validity, and construct validity (AERA, APA, & NCME, 1985). The modern view of test validation suggests that all forms of evidence about validity are, in fact, construct validation (AERA, APA, & NCME, 1999).

In line with this broader view of validation, a wide range of evidence can be marshaled to support the use of a personnel selection system. In the following sections, we describe some of the types of probative evidence and give examples relevant to the selection of IT workers.

Evidence based on Content of the Assessment

Evidence of validity is demonstrated if the developer of the assessment clearly specifies the content domain to be represented by the stimuli (test items, interview questions, etc.), follows a systematic process of developing the stimuli, and then gathers independent judgments of the adequacy of the stimuli coverage of the specified domain – all with the help of SMEs. In the IT situation, the content domain may include some specialized knowledge of a programming language for which it is necessary to develop a selection test. Experienced programmers or supervisors can be asked to specify the components of the language and its various common applications. After the test questions are written, other SMEs can be asked to sort questions into categories representing the components and applications.

Evidence based on Response Processes

Validity evidence can also be collected by questioning those participating in the assessment about the mental processes they use in responding to the stimuli. Their descriptions can give insight into how closely their actual thought processes match the processes the developer of the assessment intended to elicit. For example, respondents to a job-sample test of logic used to construct a software package using an object-oriented language can be queried about how they went about solving the problem. This approach will reveal whether they are using the logical reasoning the test supposedly

measures, or if they are simply relying on some mechanistic method of coding.

Evidence based on Internal Structure

Analyses of the characteristics of stimuli, such as test items, and their relationships with each other can reveal whether or not the empirical structure of the assessment conforms to its theoretical and rational basis. If test items were intended to measure a single facet, then a high level of coefficient alpha would provide support validity evidence. On the other hand, if the items were intended to measure two distinct components of a construct, then item correlations with each component and across components would be informative. For example, an IT test designed to differentially assess candidate's abilities to interact with others and to be flexible in handling multiple assignments can be evaluated on the extent to which each set of items holds together and does not correlate excessively with the other set of items.

Evidence based on Relations with Other Variables

The relationship of assessment scores to other variables or constructs can buttress the validity argument. Relationships with performance criteria on the job are one source of information, but there are others. Scores on the new assessment with other measures of the same and different variables can clarify what the assessment is and is not measuring. For example, a situational test of problem-solving ability in IT settings would be expected to correlate highly with tests of general mental ability (i.e., IQ), but not necessarily with tests of personality or interests. To establish that the test is not related to irrelevant demographic characteristics, lack of correlation of the test with gender, race, and age would be informative.

In addition to alternate methods of collecting validity information, changes in the choice of performance criterion measures may also be warranted. Contextual performance criteria may assist in validating non-technical skills, but measures of contextual performance will need to be improved (Borman & Motowidlo, 1997; Conway, 1999; Van Scotter, Motowidlo, & Cross, 2000). Other alternative performance criteria, such as 360° feedback and success in training programs (if training can be linked to job success) may also need to be utilized to a greater extent.

Evidence based on Consequences of Assessment

The use of an assessment device may lead to both positive and negative consequences. The developer should foster the former and anticipate and avoid the latter. One positive consequence of using a test of knowledge in a

certification program for system designers may be that all staff members become more familiar with the variety of services the organization offers. A potential, unintended negative consequence may be that persons with limited exposure to certain segments of the organization tend to fail the certification process in greater numbers than desired. To minimize the impact, the organization may want to provide all candidates with some basic information to “level the playing field”. Documentation of the steps taken to foster positive consequences and to mitigate potential, unintended, negative consequences is a part of the package of validity evidence.

In summary, “validity is a unitary concept” (AERA et al. 1999, p. 11) and validation of a test is a process of gathering diverse evidence to support the use of the test. No one type of information is necessary or sufficient to defend a test. Developers of selection tests for IT workers should strive to marshal a wide variety of evidence.

In addition to collecting validation evidence, organizations may want to consider various cost–benefit measures to assess the effectiveness of their selection methods. In the fields of HR management and I/O psychology, this is usually accomplished using utility analyses to provide estimates of the benefits of a selection measure in monetary terms (Brogden, 1949; Taylor & Russell, 1939). Other, more business-related indices may also be considered, such as cost-per-hire.

Administration Issues

Despite the unique qualities of the IT industry, many established principles of selection continue to be imperative, such as standardization, documentation, and an emphasis on ethics. However, the need for integration between selection functions and other HR processes (Cascio, 2000) is especially necessary in this context given the rapid change in skills needed to carry out IT jobs, and the demand for such high-skilled workers. Basing functions such as recruitment, selection, training and development, and retention on the same work analysis or competency modeling foundation will maximize the possibility that the breadth of jobs/roles and the quickly changing tasks and KSAs will be incorporated. Not only will this allow for increased efficiency in administration, but it also best allows HR to recruit, select, train, and retain the best possible workforce.

Using technology to deliver selection systems, such as testing via the web, computer adaptive testing (Sands, Waters, & McBride, 1997), interactive video-based situational judgment tests (Drasgow, Olson-Buchanan, &

Moberg, 1999), and other computerized assessments (e.g., in-baskets; Drasgow & Chuah, 2005) may provide an increase in efficiency. Selection systems delivered with the use of advanced technology may also affect applicant reactions, because in many cases, IT applicants will expect organizations to use such methods (Pearlman & Barney, 2000).

The use of technology-based selection systems generates some concerns as well, such as security issues and finding the balance between speed in administration and validity (Drasgow & Chuah, 2005). Better methods of standardization and interpretation may help to alleviate these issues to some degree. An additional question that remains is the degree to which HR professionals need to understand the emerging technologies in contrast to merely knowing the applications in which they are useful, or how they might be used in HR management (Mondragon, 1999). This presents some serious implications for education, research, and practice of HR selection. First, undergraduate and graduate programs in HR management and I/O psychology need to consider whether the selection specialist of the future needs to be proficient in IT. If the answer is yes, then curricula may need to be altered to allow for such training. HR departments within organizations should consider whether the traditional design of an HR department is best suited to conduct job analyses, develop selection tools, and administer technologically sophisticated screening tools in order to hire for IT jobs. For example, in addition to HR generalists and specialists making up the HR unit, HR departments may benefit from having IT professionals on staff to assist with many of the issues discussed in this paper. Although many HR departments of large organizations are already doing this, smaller HR units may need to consider such a strategy, or outsource some of this expertise when hiring high tech jobs and building high tech assessments.

HR/IT COLLABORATION

Throughout this paper, we have discussed the current state of the IT labor market and industry, while also discussing traditional and more recent trends in selection based on the I/O literature. Selection of IT professionals is likely to be difficult in many organizations because of the challenges inherent in maintaining up-to-date job descriptions and assessment tools when technologies are constantly changing. In general, current HR practices in use with the IT population are lacking in effectiveness (Barr & Tessler, 1997; Schenk & Davis, 1998). This condition may be due in part to the fact that organizational members with selection expertise (HR professionals

or I/O psychologists) and those with expertise about the IT workforce usually inhabit separate domains and are not used to working together. While many jobs can be adequately understood through interview and survey methods, IT jobs are often so complex and highly technical that those with selection expertise may never completely understand their requirements. Conversely, although the responsibility for selection of IT workers is often placed with an IT manager, people in this role are often uninformed about selection processes and fail to use most valid and effective methods (Murphy & Byrne, 2000). Qualms have come not only from HR and I/O practitioners, but also from IT professionals and hiring managers, who are concerned over the lack of knowledge that HR managers have of the IT labor force.

We have discussed three sets of key players in the design, validation, and implementation of selection procedures for IT workers: I/O psychologists and HR scholars, HR managers in organizations hiring IT workers, and IT managers involved in hiring new workers. The findings of this paper have implications for each set of individuals.

I/O psychologists and HRM scholars should focus on conducting research relevant to issues common in the selection of IT workers. Research should be conducted on methods of increasing the standardization and rigor of competency modeling, identifying predictors of contextual performance and taxonomies of person–organization fit, developing standardized dictionaries of technical and non-technical skills common in IT jobs, and examining the validity of alternative assessment methods.

HR managers should focus on practical steps that can improve the effectiveness of selection procedures used to hire IT workers. This may include promoting the use of alternative job analysis strategies, such as work analysis and strategic job analysis, examining new and emerging ways of collecting job analysis information, advocating the use of more effective assessment methods, and conducting validation studies that include a wide variety of validation evidence. HR managers should recognize the need to depend on SMEs for expertise that is beyond their scope of knowledge. Hiring strategies must be aligned with recruitment, retention, and training plans to ensure long-term commitment for generalist employees. HR managers should be well-versed in the appropriate use of temporary and contract workers to ensure a smooth and continuous source of talent and should understand the career cycle common among IT professionals (Sears, 1998). Most importantly, HR managers should assist IT hiring managers in understanding basic research that identifies effective and ineffective hiring practices.

IT hiring managers are responsible for the majority of selection decisions (Murphy & Byrne, 2000), but are using inadequate techniques to determine the relevant performance attributes and assess these characteristics (CWNIT, 2000). A wide variety of available evidence suggests that many selection tools that could serve the needs of hiring IT professionals are available, but not being used. Some IT managers are hesitant to use HR policies and procedures in designing and implementing their selection process. This may be reasonable when HR implements hiring criteria that clearly express their lack of understanding of the IT industry. For instance, Burkett (2004) describes his dealings with what he perceives as ridiculous and fiercely enforced HR rules, such as a cap on the number of jobs an applicant has had in the past five years. While this type of standard may be reasonable for general managers or other professionals, research reviewed above explains why it could be detrimental to hiring IT professionals.

Clearly, greater collaboration between HR and IT professionals would assist in achieving the goal of using reliable and valid hiring techniques to detect and attract qualified new employees in a short period of time. Some possible modifications include developing liaisons between the HR and IT departments, or creating a smaller version of the HR department that works exclusively with IT employees (CWNIT, 2000). IT managers may assist in improving the selection process by developing closer relationships with HR managers to share the unique knowledge that each party possesses. The expertise of IT managers and their incumbents is crucial to the identification of relevant attributes and development of valid selection methods. The openness of IT managers to collaborating and sharing information with HR managers and those designing selection assessments is imperative. Likewise, it is essential that IT managers seek the advice of HR managers in conducting selection assessments and making selection decisions.

CONCLUSIONS

Conducting selection in the IT segment of the workforce requires consideration of the unique aspects of IT work itself, characteristics of IT workers, special features of IT organizations, the dynamic IT labor market, and the complex, global environment of the IT industry. These features of the IT enterprise have implications for each of the aspects of developing personnel selection systems, and suggest needed adaptations of the proven methods of developing selection systems. Some standard methods will work, whereas new methods must be developed to deal with the IT environment. This

paper has articulated many of the special features of IT work and pointed toward new directions for developing effective IT selection procedures and identified several research needs in this dynamic field.

NOTES

1. USDLBLS stands for the United States Department of Labor's Bureau of Labor Statistics.

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