

HR AS A SOURCE OF SHAREHOLDER VALUE: RESEARCH AND RECOMMENDATIONS

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Introduction

The role of the Human Resource Management (HRM) function in many organizations is at a crossroads. On one hand, the HRM function is in crisis, increasingly under fire to justify itself (Schuler, 1990; Stewart, 1996) and confronted with the very real prospect that a significant portion of its traditional responsibilities will be outsourced (Corporate Leadership Council, 1995). On the other hand, organizations have an unprecedented opportunity to re-focus their HRM systems as strategic assets. Indeed, the same competitive pressures that provide an incentive for firms to outsource costly HRM transactions have dramatically increased the strategic value of a skilled, motivated, adaptable workforce, and the HRM system that supports and develops it. Transforming this crisis into an opportunity, however, requires a new organizational perspective on the HRM system, one that is also a perspective *shared* by the CEO and the chief HR officer (CHRO). At its core, this strategic perspective requires that the CHRO be focused on identifying and solving the human capital elements of important business problems (e.g., those problems likely to impede growth, lower profitability, and diminish shareholder value). The tangible evidence of this focus is an internally coherent, externally aligned, and effectively implemented HRM system.

The New Strategic Role for HRM

Pfeffer (1994) describes how changing market conditions have rendered many of the tradi-

tional sources of competitive advantage, such as patents, economies of scale, access to capital, and market regulation, less important in the current economic environment than they have been in the recent past. This is not to argue that such assets are not valuable, but rather in a global economy that demands innovation, speed, adaptability, and low cost, these assets do not differentiate firms the way they once did. Instead, the core competencies (Hamel & Prahalad, 1994) and capabilities (Stalk, Evans, & Schulman, 1992) of employees that help to develop new products, provide world class customer service, and implement organizational strategy are relatively more influential.

Unlike conventional assets, this form of intellectual or organizational capital (Tomer, 1987) is largely invisible (Itami, 1987) and therefore does not appear on the firm's balance sheet.² Although organizational and intellectual capital may well be "invisible," the *sources* of this capital are not. They are found in a skilled, motivated, and adaptable workforce, and in the HRM system that develops and sustains it. Hamel and Prahalad (1994, p. 232) argue that these "people embodied skills" are directly reflected in conventional measures of firm profitability.³ Indeed, as intellectual capital has come to represent an increasing fraction of many firm's total assets, the strategic role of the HRM system has also become more critical. Ulrich and Lake (1990) point to such HRM systems as the source of organizational capabilities that allow firms to learn and capitalize on new opportunities. The HRM function that traditionally focused on transactions, practices, and compliance was,

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and is, appropriately considered a cost center. In contrast, the HRM system that develops and maintains a firm's strategic infrastructure should be considered an investment. It is an essential element of the infrastructure that supports this value creation process, and a potential strategic lever for the organization. Moreover, as one of the more malleable and underdeveloped strategic levers available to most CEOs, the HRM system represents a policy option with very substantial and accessible returns.

What Is the Evidence for the Strategic Impact of HRM?

The strategic HRM literature tends to emphasize the entire HRM system as the unit of analysis, in contrast to the traditional focus on individual policies or practices. This systems-level focus is consistent with the conceptual rationale for the presence of a strategic impact and is a significant departure from traditional work in the field. Such HRM systems, often referred to as *High Performance Work Systems* (HPWS) are generally thought to include rigorous recruitment and selection procedures, performance-contingent incentive compensation systems, and management development and training activities linked to the needs of the business.⁴ Specifically, how does the adoption of a HPWS affect firm value? As Figure 1 illustrates, the essential feature of these strategic HRM systems is that they are linked to the firm's business and strategic initiatives. The result is an HRM system that produces employee behaviors that are focused on key business priorities, which in turn drive profits, growth, and ultimately market value.⁵

Much of the prior research on this subject has been limited to the intermediate relationships depicted in Figure 1. In contrast, Beck-

er, Huselid, and their colleagues have focused on the strategic impact of the HRM system, namely the ultimate effect of the HRM system on both market-based and accounting-based measures of firm performance (Delaney & Huselid, in press; Becker & Huselid, 1996; Huselid, 1995; Huselid & Becker, 1995, 1996; Huselid, Jackson, & Schuler, 1996). The use of market-based measures of firm performance is particularly appropriate in this line of research because these measures reflect the present value of the firm's future cash flows and are, therefore, net of any additional costs associated with implementing these systems. While there is no consensus measure of a HPWS in this emerging literature, based on responses to more than 30 specific questions from a sample of 740 firms, Huselid and Becker (1995) created an index of each firm's HRM system reflecting the degree to which a firm had deployed a HPWS.⁶ Huselid and Becker have consistently found that firms with higher values on this index, other things equal, have economically and statistically significant higher levels of firm performance. They further estimate that plausible changes (a one standard deviation improvement) in the quality of a firm's HPWS are associated with changes in market value of \$15,000–\$60,000 per employee. For a firm with 10,000 employees this increase represents more than half a billion dollars in market value.

The work by Huselid and Becker suggests that a properly designed and deployed HRM system represents a significant economic asset for an organization. It does not, however, provide direct evidence of *how* such a system creates that value. To date there is very little research that "peels back the onion" and describes the processes through which HRM systems influence the principal intermediate variables that ultimately affect firm perfor-

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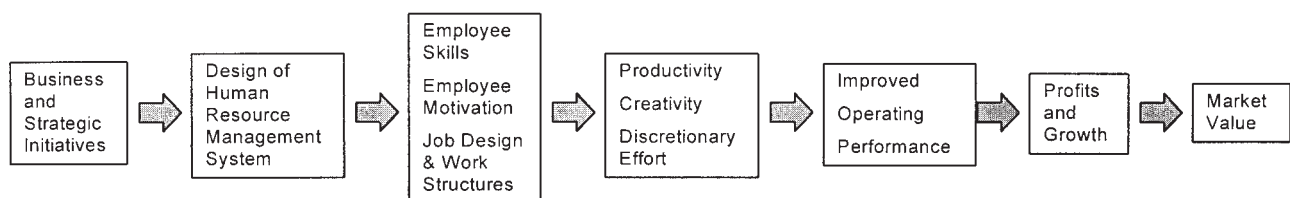


FIGURE 1. A model of the HR–shareholder value relationship.

mance as described in Figure 1. Based on recent work in the field of competitive strategy (Barney, 1991), however, we would expect that if a firm's HRM system is to be a source of sustained competitive advantage, it must be difficult to imitate (Wright & McMahan, 1992). This suggests that organizational HPWS are highly idiosyncratic and must be tailored carefully to each firm's individual situation to achieve optimum impact. In other words, if a properly configured HPWS could be created by simply benchmarking competitor firms, it could be easily replicated by competitors and therefore not likely to provide a source of sustainable competitive advantage.⁷ Cappelli and Crocker-Hefter (1996) state this case very well:

We believe that a single set of "best" practices may, indeed, be overstated . . . there are examples in virtually every industry of highly successful firms that have very distinct management practices. We argue that these distinctive human resource practices help to create unique competencies that differentiate products and, in turn, drive competitiveness. Indeed, product differentiation is one of the essential functions of strategic management, and distinctive human resource practices shape the core competencies that determine how firms compete. (p. 7)

In short, we believe that both the source of the HRM effect on firm performance and its inimitability reflect an "idiosyncratic contingency."⁸ Namely, HRM systems only have a systematic impact on the bottom line when they are embedded in the management infrastructure and help the firm achieve important business priorities such as shortening product development cycle times, increasing customer service, lowering turnover among high-quality employees, etc. The particular form of these problems, and more importantly the appropriate design and alignment of the HRM system with business priorities, is highly firm-specific. To the extent that real value creation occurs as part of these firm-specific alignments, benchmarking will play a very limited role in the development of a HPWS. CHROs might profitably look to other firms for best in class practices, but these practices will only have a strategic impact if they are appropriately aligned with the rest of the HRM

system and with the firm's broader strategic infrastructure.

Thus, we believe that an inordinate focus on "best practices" is misguided and may even be counterproductive to the extent it diverts valuable managerial effort from the difficult and time-consuming job of developing an internally coherent and externally aligned HPWS. Competency-building efforts should focus on the firm-specific relationships described in Figure 1. Best practices (e.g., investments in training, performance management, and incentive compensation systems) are only a point of departure. In other words, if a firm has decided to incent employees with a particular form of team compensation, it should be optimally designed for its intended purposes. Within this context, benchmarking can provide a useful source of ideas; however, while becoming "best in class" may be a necessary condition for ultimately improving firm performance, it is not a sufficient condition. The more crucial strategic decision is how these team incentives align with *other* HRM practices and how the total HRM system is designed such that it supports key business priorities. Without the latter, the HRM system will be just a best in class version of an HRM function in crisis. If the HRM system is not properly aligned, these individual best practices can potentially be in conflict within the HRM system and actually diminish firm value.

As an example of this phenomenon, Huselid and Becker (1995) interpret their empirical evidence of non-linearities in the HRM-firm performance relationship as an indication of roles played by best practices and the alignment of the broader HRM system with business priorities. Based on their HPWS index, Figure 2 describes the relationship between improvements in the relative quality of a firm's HRM system and changes in its market value per employee. A more sophisticated HRM Architecture (defined as higher values on the Huselid-Becker scale) reflects the greater deployment of a HPWS.⁹ Figure 2 illustrates two broad findings. First, the impact of more intensive deployment of a HPWS is associated with substantially greater market value per employee. Second, Figure 2 shows that the *returns* from investments in a HPWS are not linear. We believe the nonlinearity in

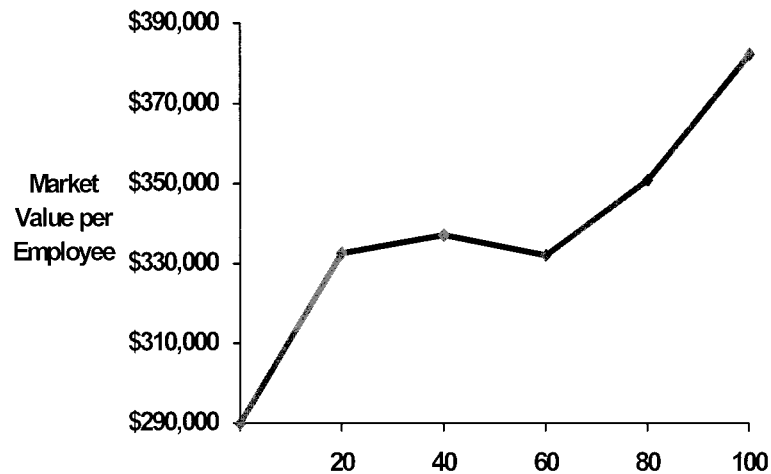


FIGURE 2. The impact of HR on shareholder value.

this relationship emphasizes the linkage between best practices and strategic alignments discussed above. As firms make initial steps toward the development of a HPWS (i.e., moving from the lowest firms in the ranking to the 20th percentile) the HRM system moves from an impediment to a neutral strategic influence. Here the HRM system creates value by getting out of the way. For the broad middle range, improving the relative sophistication of the HRM system (adoption of best practices) has little marginal impact on firm performance. This approach does no damage, but HRM is not really a strategic partner. Finally, firms above the 60th percentile arguably have all the appropriate best practices, but more importantly have begun to integrate this system more broadly into the operational fabric of the firm. Here the marginal impact on firm performance is the same as those HRM systems below the 20th percentile but for different reasons. In short, we believe the impact of HRM on firm performance among these better HRM systems is much more than the payoff for the adoption of best practices. It is the reflection of the payoffs to a competitive advantage that combines these best policies into an internally coherent system that is directly aligned with business priorities and operating initiatives most likely to create economic value. In essence, these results point both to the potential returns from effecting very signifi-

cant changes in a firm's HRM system as well as the potential difficulty of doing so.

Where the Rubber Meets the Road: The System is the Solution!

To this point we have described the theoretical and empirical support for our contention that a new role for HRM throughout the firm is required and have presented evidence to document the magnitude of economic opportunity associated with the adoption of a *High Performance Work System*. How do we begin to capture such returns? Where do we start? An important first step is the development of "systems" thinking among line and HR managers. In contrast to the functional view of HR, a systems perspective reemphasizes such interrelationships as the recruiting function being linked with the selection system, which in turn provides sensible inputs into the training subsystem. Subsequently, the performance management and incentive compensation system must define desired employee behaviors and reward those behaviors in meaningful ways when goals are achieved. Equally important, the goals and desired employee behaviors developed and rewarded by the HR system are entirely focused on achieving critical business priorities.

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uinely become a source of value creation for the firm, however, requires more than just an occasional reminder of the necessary relationship among the respective functional responsibilities within HR. Quinn, Anderson, and Finkelstein (1996) describe four levels of professional intellect within an organization: cognitive knowledge, advanced skills, systems understanding, and self-motivated creativity. Traditional HR manager competencies include both cognitive knowledge and advanced skills. For a firm's HRM system to have a strategic impact, to be a source of shareholder value, however, it is crucial that HR managers develop the capacity for systems understanding. The systems perspective is essential because it provides a

deep knowledge of the web of cause-and-effect relationships . . . permit[ing] professionals . . . to solve larger and more complex problems . . . creating extraordinary value . . . [by] anticipat[ing] subtle interactions and unintended consequences. (Quinn et al., 1996, p. 72)

Based on our empirical work and experiences in a wide variety of companies, we believe the failure to appreciate these “subtle interactions and unintended consequences,” what we have termed *Deadly Combinations* and *Powerful Connections*, to be the single greatest challenge facing traditional HR managers as they make the transition to becoming true business partners.

Deadly Combinations develop when firms adopt HRM policies and practices that might well make sense in isolation but when evaluated within the context of *other* HRM practices deployed throughout the firm are a recipe for disaster. Simple examples can be found in firms that invest in sophisticated performance management systems only to adopt compensation policies that provide for little meaningful economic distinction between high and low performing employees; or firms that encourage employees to work together in teams, but then provide raises based on individual contributions. Alternatively, *Powerful Connections* reflect the presence of complementarities or synergies that can occur when economic returns from the “whole” of the HRM system adds up to more than the sum of its parts. For example, in empirical work in

over 1500 companies we have found that combining above-market pay policies with comprehensive performance management systems has a 50 percent larger effect on firm performance than the effects of the two policies considered in isolation. This finding reflects the synergistic gains of a better applicant pool, more talented hires, and an HRM system that is able to recognize and reward these more talented employees for their superior performance.

A more complex example of this type of synergy, reflecting both *Deadly Combinations* and *Powerful Connections*, is illustrated in Figure 3. Based on our empirical work, the downward sloping arrow in Figure 3 shows the effects of an organizational policy of promotion from within on firm performance, ignoring any effects of related HRM practices. While promotion from within can, on one hand, serve as an essential foundation for building core competencies, it can also degenerate into a low performance, “civil service” culture when compensation and advancement opportunities are not linked to performance. The latter effect apparently predominates and is reflected in the downward sloping arrow in Figure 3. In contrast, the upward sloping arrow shows the effects of a promotion from within policy when it is part of an HRM system that includes extensive training, incentive pay, and relatively greater pay differentials between high and low employee performance. In this case the civil service dimension of promotion from within has been mitigated by other elements of the HRM system that helps to develop a skilled and motivated workforce.

These same *Deadly Combinations* and *Powerful Connections* will probably not be present in every firm, or even most firms. Indeed if these synergies and unintended consequences are idiosyncratic there will be no one common organizational experience, or right answer; however, the only way that any organization can hope to identify the HRM system that is appropriate is to adopt a systems perspective. This means that business priorities drive the development of the HRM system, and the evaluation of any element of that system (recruiting, selection, compensation, etc.) is always considered within the context of *other* elements of the system *and* the business priorities of the organization.

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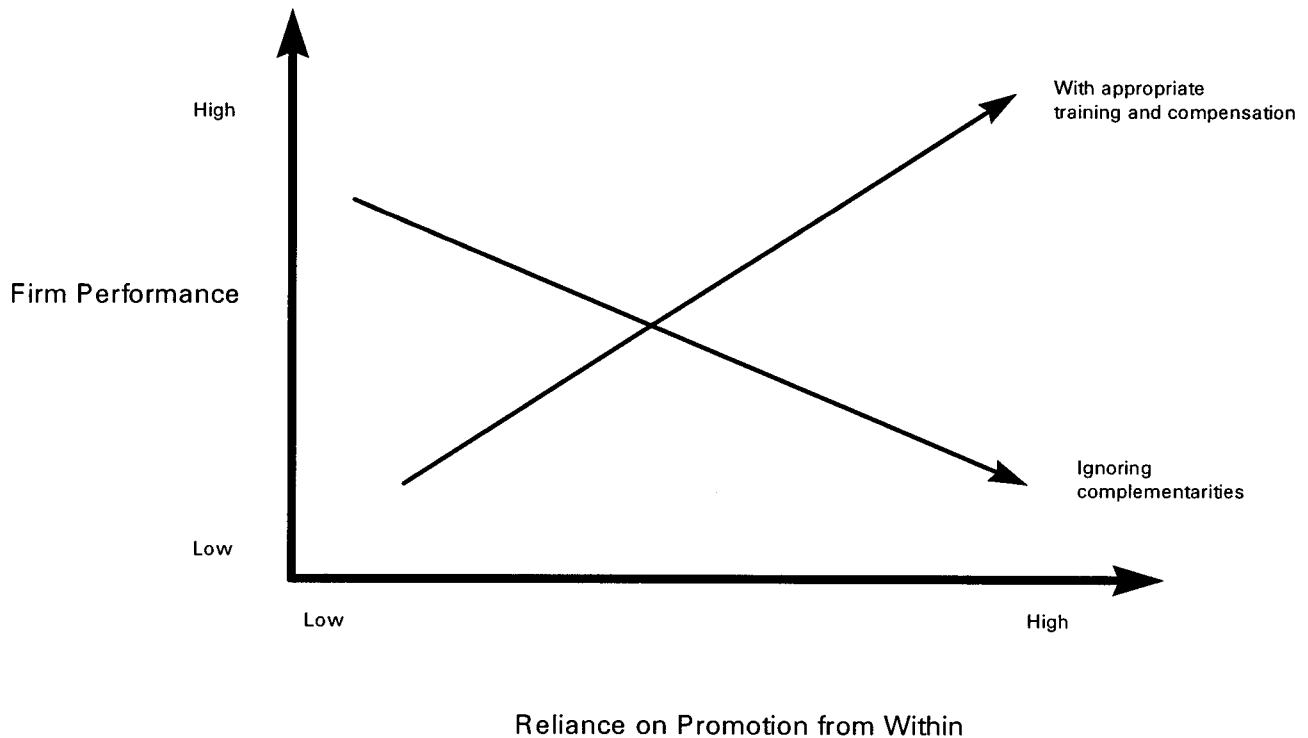


FIGURE 3. Deadly combinations and powerful connections.

Toward Human Capital Management

This article outlines both the conceptual and empirical evidence supporting the view that HR can have an important influence on shareholder value. In a departure from the traditional view of HR we argue, and provide strong research support for our contention, that the HR system can potentially represent a strategic asset for the organization. The key to realizing this potential is to think of HR, first and foremost, as a system that is characterized by synergies such as the *Powerful Connections* and *Deadly Combinations* discussed above. To create this value, however, requires a fundamentally different perspective on HR; a perspective probably more accurately described as human capital management than as HRM. The concept of human capital management emphasizes the essential point that a firm's human resources and subsequently its HRM system can be more than a cost to be minimized. A firm's human resources have an asset value that corresponds to the present value of future net cash flows that are derived from the skills, motivation, and adaptability of the firm's workforce. It requires that both the

CEO and the CHRO share a focus on one essential question: *How do we architect a human capital strategy that is aligned with business priorities and capable of rapidly adapting to a shifting competitive landscape?*

In the past, market conditions have not required a human capital perspective. The HRM function could focus largely on transactions and compliance with little opportunity cost. If HR managers are going to evolve into human capital managers, however, they will require a dramatically different set of competencies. For example, Ulrich, Brockbank, Yeung, and Lake (1995) argue that HRM competencies fall into three domains: (1) knowledge of the business, (2) HRM functional expertise, and (3) management of change. They show that demonstrated competencies in each of these domains are associated with greater perceived effectiveness of the HRM function. Most HR managers receive high marks in the domain of HRM functional expertise, but their knowledge of the business' sources of competitive advantage, industry dynamics, and the skill sets associated with the management of change are often much less well developed. Yet these are *exactly* the competencies required for human capi-

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tal management. Similarly, Huselid, Jackson, and Schuler (1996) identified two broad competencies that help HR managers to develop effective HRM systems. (1) *Professional HRM Capabilities* were related to the delivery of traditional HRM activities such as recruiting, selection, and compensation. In contrast, (2) *Business-Related Capabilities* reflected an understanding of the business and the implementation of competitive strategy. Both contributed to HRM effectiveness, which in turn had a substantial positive effect on several measures of firm financial performance. Huselid, Jackson, and Schuler's conclusions emphasize our point: Professional HRM Capabilities are a necessary, but not sufficient, condition for better firm performance. More importantly, the Business-Related Capabilities of HR managers (i.e., those linked to human capital management) are not only underdeveloped within most firms, but they also represent the area of greatest economic opportunity.

In the broadest terms these changes require a dramatically different role for the HR function and CHRO. Specifically,

1. **HR must focus on business level outcomes rather than HR level inputs.** The number one priority for the value-creating HR function is to develop the perspective and competency to solve business problems. HR matters when it can point to human capital problems that limit the ability of the firm to achieve important business priorities *and* can provide HR solutions to those problems. Adopting the latest appraisal methodology, for example, only creates value when it can be evaluated within this context.
2. **HR must become a strategic core competency rather than a market follower.** A *high performance work system* that creates real shareholder value is not a commodity that can be benchmarked from other organizations.

Bench-marking might keep the firm in the game, but it will not provide the intellectual capital to create a sustained competitive advantage.

3. **Strategic competencies are more important than functional competencies.** The most important value creating HR competency, and the one most underdeveloped in many firms, is the ability to understand the human capital dimension of each of the firm's key business priorities and be able to communicate how solving these human capital problems will directly affect operating performance.
4. **The most important missing element in the HR functional expertise is a systems perspective.** Functional competencies must blend traditional HR functional expertise with a system perspective to avoid *deadly combinations* and identify *powerful connections*.

Just as we have argued for a systems perspective throughout this paper, these recommendations must also be considered as a system composed of mutually reinforcing elements; they can not be implemented in isolation.

This brings us back to our initial thesis. We argued that the practice of HRM is in crisis because its traditional role does not create value for the organization. Alternatively, we have described theoretical and empirical evidence suggesting that HRM has the *potential* to have an economically significant effect on firm performance. This transformation from HRM to human capital management will require that *both* the CEO and the CHRO think of the HRM *system*, first and foremost, as a source of strategy implementation and as a means to achieve important business priorities. This shared perspective, and the commitment to developing the competencies in both line and HR managers to effectively implement this perspective, is the key to realizing this potential source of competitive advantage.

... we have described theoretical and empirical evidence suggesting that HRM has the potential to have an economically significant effect on firm performance.

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REFERENCES

- Arthur, J.B. (1994). Effects of human resource systems on manufacturing performance and turnover. *Academy of Management Journal*, 37, 670-687.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17, 99-120.
- Becker, B.E., & Huselid, M.A. (1996). Managerial compensation systems and firm performance. Paper presented at the 1996 Academy of Management Annual Meeting, Cincinnati, OH.
- Cappelli, P., & Crocker-Heftel, A. (1996). Distinctive human resources are firms' core competencies. *Organizational Dynamics*, 24, 7-21.
- Collins, D.J., & Montgomery, C.A. (1995). Competing on Resources: Strategy for the 1990's. *Harvard Business Review*, July-August, 118-128.
- Corporate Leadership Council. (1995). *Vision of the Future: Role of Human Resources in the New Corporate Headquarters*. Washington, D.C.: The Advisory Board Company.
- Delaney, J.T., & Huselid, M.A. (1996). The impact of human resource management practices on perceptions of performance in for-profit and nonprofit organizations. *Academy of Management Journal*, 39, 949-969.
- Hamel, G., & Prahalad, C.K. (1994). *Competing for the Future*. Boston, MA: Harvard Business School Press.
- Huselid, M.A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38, 635-672.
- Huselid, M.A., & Becker, B.E. (1996). Methodological issues in cross-sectional and panel estimates of the HR-firm performance link. *Industrial Relations*, 35, 400-422.
- Huselid, M.A., & Becker, B.E. (1995a). The strategic impact of high performance work systems. Working Paper, School of Management and Labor Relations, Rutgers University.
- Huselid, M.A. and Becker, B.E. (1995). High performance work systems and organizational performance. Paper presented at the 1995 *Academy of Management* annual conference, Vancouver, BC.
- Huselid, M.A., Jackson, S.E., & Schuler, R.S. (In press). The significance of human resource management effectiveness for corporate financial performance. *Academy of Management Journal*.
- Ichniowski, C., Shaw, K., & Prennushi, G. (1995). *The Effects of Human Resource Management Practices on Productivity*. Working Paper, Columbia University, Graduate School of Business.
- Itami, H. (1987). *Mobilizing Invisible Assets*. Harvard University Press, Boston MA. 1987.
- Jackson, S.E., & Schuler, R.S. (1995). Understanding human resource management in the context of organizations and their environments. *Annual Review of Psychology*, 46, 237-264.
- MacDuffie, J.P. (1995). Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial and Labor Relations Review*, 48, 197-221.

- Milgrom, P., & Roberts, J. (1995). Complementarities and Fit: Strategy, Structure, and Organizational Change in Manufacturing. *Journal of Accounting and Economics*, 19, 179–208.
- Pfeffer, J. (1994). *Competitive Advantage Through People*. Boston, MA: Harvard Business School Press.
- Quinn, J.B., Anderson, P., & Finkelstein, S. (1996). Managing professional Intellect: Making the most of the best. *Harvard Business Review*, March–April, 71–80.
- Schuler, R.S. (1990). Repositioning the human resource function: Transformation or demise? *Academy of Management Executive*, 4, 49–60.
- Stalk, G., Evans, P., & Shulman, L. (1992). Competing on Capabilities: The New Rules of Corporate Strategy. *Harvard Business Review*, March–April, 57–69.
- Stewart, T.A. (1996). Taking on the Last Bureaucracy. *Fortune*, January 15, 1996, 105–107.
- Tomer, J.F. (1987). *Organizational Capital*. New York: Praeger Publishers.
- Ulrich, D., & Lake, D. (1990). *Organizational Capability: Competing from the Inside Out*. New York: John Wiley & Sons.
- Ulrich, D., Brockbank, W., Yeung, A.K., & Lake, D.G. (1995). Human resource competencies: An empirical assessment. *Human Resource Management*, 34, 473–495.
- Wright, P.M., & McMahan, G.C. (1992). Theoretical perspectives for strategic human resource management. *Journal of Management*, 18, 295–320.

ENDNOTES

1. Authors are listed alphabetically to reflect their equal contributions.
2. Not only are investments in human capital not reflected in a firm's balance sheet, they are expensed in their entirety on an annual basis. Thus, in contrast to capital investments (e.g., the purchase of a building) that are depreciated over their useful lifetimes, investments in people lower accounting earnings (net income and cash flow) by their full amount in the year in which they are incurred. This treatment of human capital provides managers whose compensation is tied to accounting rates of return a significant disincentive to invest in human capital.
3. These human capital based competencies are in part the source of the intangible capital represented by the difference between the book value of a firm's assets (i.e., shareholder's initial investment) and the current market value of those assets. The best known variant of this measure is known as Tobin's q , which is ratio of firm market value to the replacement cost of its assets.
4. See for example Arthur (1994), Huselid (1995), Ichniowski, Shaw & Prenzushi (1995), Jackson & Schuler (1995), and MacDuffie (1995) for the most recent research on this subject. For compilations of the most recent empirical research on the subject, the reader should consider recent special issues of the *Academy of Management Journal* and *Industrial Relations*.
5. A more complete description of the processes through which HPWS affect employee behaviors, and subsequently firm performance, is beyond the scope of this paper. Interested readers can see Huselid (1995) for an overview.
6. A single index of the HRM system is used for two reasons. First, it is the entire HRM system that is the appropriate level of analysis for reasons described above. Second, information on a particular policy is generally taken to be an indicator of what is going on in that element of the larger HRM system. However, *taken together* these observations can paint a relatively accurate portrait of the entire HRM system. An analogy might be indices of "best places to live." Cities are measured based on health care, schools, climate, crime, recreation, etc. While any one of those measures is a limited indicator of that feature of the community, when taken together they probably describe "life" in that community pretty well. Just as those indices allow some cities to be rated higher than others, so does this HRM index.
7. Note that even in a world where these systems were easily imitated it would still be better to have them than not to have them. In this environment a High Performance Work System would simply become another *sine qua non* for entry in the market much like low cost and quality have become.
8. The strategy literature describes two features of organizational systems that increase their inimitability and would apply to high performance work systems: path dependency and causal ambiguity (Collis and Montgomery, 1995). Path dependency refers to policies that are developed over time and cannot be easily purchased in the market by competitors. Causal ambiguity focuses the numerous and subtle interrelationships in such a system that are not easily observed from outside the firm.
9. A percentile ranking of zero does not imply that firms have no elements of a HPWS, only that they have relatively fewer of these attributes than any other firms in the sample.

