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Human Resource Metrics: Can Measures Be Strategic?

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ABSTRACT

For SHRM to advance, it must eventually be based on a theory that specifies not only concepts and relationships, but appropriate and high-quality measures to express and test them. For metrics to advance beyond simply a large inventory of potentially-useful indices with no integrating logic or theory, they must be driven by a strategic perspective that can identify key measures, their necessary characteristics, and the linkages necessary to test and enhance their quality. To date, metrics theory and SHRM theory have not connected, to the detriment of both. This chapter suggests a general framework for strategic HR metrics, as a starting point for integrating SHRM and measurement research, demonstrating the key role that the metrics issue plays in fundamental SHRM theoretical dilemmas, and showing how principles and evidence from measurement theory (e.g., linkages, constraints and constituent responses) may inform the theoretical and operational issues facing future SHRM research.

The idea that an organization's people represent a key strategic resource is widely accepted. The business press is filled with examples of top executives proclaiming how important it is to engage people's minds and spirits in the quest for competitive advantage (Boudreau & Ramstad, 1997; Boudreau, 1995). Virtually every currently-popular business model emphasizes the key role of people in organizational success. Tracey & Weirsema (1997) suggest that organizations compete through Operational Excellence, Product Leadership, or Customer Intimacy, with each market discipline implying different organizational and human design factors such as "culture" "organization," and "management systems" that embody human attributes such as "discipline" and "desire to win."

Kaplan & Norton's (1996) "balanced scorecard" concept of measurement, incorporating Financial, Customer, Internal Business Processes, and Learning/Growth implies that employee learning and growth must be clearly linked and measured consistently with the organization's key strategic approach to success. They propose that a measurement system should embody a "theory of the firm," with measures serving as ongoing tests of that theory, and indicators to show when the theory or the outcomes need to change. Similarly, Reichheld (1996) notes that the "Loyalty Effect" rests on creating loyal employees who engender loyalty among customers, which in turn leads to loyal shareholders, willing to provide capital for the long run. There is also mounting scientific evidence that certain "bundles" of "high-performance" work practices (e.g., performance-contingent pay, team-based work structures, selective recruitment and hiring, extensive training, etc.) are associated with higher organizational financial performance (Arthur, 1992; Becker & Huselid, in press; Ichniowski, Shaw & Prennushi, in press; MacDuffie, 1995; Welbourne & Andrews, 1996).

Clearly, human resources are widely recognized as fundamental to organizational strategy, and SHRM is seen as a key and leading determinant of organizational success, similar to capital, land, marketing, finance and operational investments (Boudreau & Ramstad, 1997). Yet, it remains rare to find organizations whose human resource investments are clearly linked and measured in accordance with strategic goals. Linkage is often articulated, even at the highest levels, in phrases such as "People are our most important asset," but HR measurement systems rarely reflect a logical theory regarding how human factors translate into strategic outcomes. For the most part, the management of people retains a focus on administrative efficiency, traditional and disconnected functional initiatives, and measurements that focus on activities rather than strategic outcomes. There are literally thousands of cost-based and ratio-based measures available to researchers and managers (e.g., cost per hire,

trainee, recruit, employee; number of HR employees per total employees, etc.). Witness the broad variety of metrics currently reported in the area of intellectual capital (Edvinsson & Malone, 1997; Stewart, 1997). This proliferation of HR measures may actually contribute significantly to the difficulty in associating cause and effect in SHRM. While many of these metrics may emerge as useful leading indicators of strategic organizational outcomes, not all of them are likely to be equally as valuable in practical strategy making or strategy research. Thus, metrics theory can benefit from frameworks that merge measurement with SHRM.

At the same time, the field of strategic human resource management (SHRM) lacks a framework of measurements that reflect the richness of the linkages between human factors and strategic outcomes. As other papers in this volume observe (McMahan, Virick & Wright, in press; Chadwick & Cappelli, in press), SHRM research often proceeds from very disparate conceptual frameworks, adopting measures that are often derived for one particular study, that may or may not be comparable across studies, and that may not reflect key intermediate linkages underlying general relationships. One study may relate organization-wide financial measures to reported HR practices, while another may measure outcomes at a particular production site and relate them to site-level indicators of efficiency. Can these approaches be linked within a common framework that might encourage more integrative contributions?

For SHRM to advance, it must eventually be based on a theory that specifies not only concepts and relationships, but appropriate and high-quality measures to express and test them. For metrics to advance beyond simply a large inventory of potentially-useful indices with no integrating logic or theory, they must be driven by a strategic perspective that can identify key measures, their necessary characteristics, and the linkages necessary to test and enhance their quality. To date, metrics theory and SHRM theory have not connected, to the detriment of both. While a complete inventory of SHRM measures is not feasible today, this chapter suggests a general framework for strategic HR metrics, as a starting point for integrating SHRM and measurement research. The chapter demonstrates the key role that the metrics play in fundamental SHRM theoretical dilemmas, and shows how a metrics framework may inform and reveal theoretical and operational issues facing SHRM in the future.

HOW HR METRICS ADD VALUE

Metrics support SHRM in at least two ways. The first, and perhaps most obvious, is that testing SHRM theories and propositions requires developing or finding measures of key variables. The second is the effect that metrics may have on the strategy and decision-making process.

Guiding the Choice of Variables to Test Theory

Obviously, in order to test SHRM propositions, operational measures of the variables must be developed. Less obvious are the underlying assumptions and inferences behind the measures. For example, a correlation (even lagged over time) between reported HR practices and financial performance may create an inference that HR practices lead to financial performance, but does not necessarily prove this inference. As Gerhart (in press) points out in this volume, these results may support several alternative explanations, including the possibility that those reporting the HR practices modify their perceptions of the practices based on their assumptions about which practices associate with good or poor firm performance. McMahan, Virick and Wright (in press) characterized existing SHRM research as “data -driven theory application,” meaning that data are collected and linked to elements of one or more theories, and results are interpreted within one or more of those theories, but in many cases “the relationship between the two variables is dependent upon a number of intervening conditions” implicit in the theory, but perhaps not tested. Thus, the choice and presentation of particular metrics reflects both explicit and implicit assumptions and frequently leads to inferences about unobserved effects.

A framework for SHRM metrics should enable researchers to better articulate which processes they are choosing to measure, which are unmeasured, and what metrics might be used to fill in the gaps. Thus, as SHRM researchers consider appropriate variables to test theory, a metrics framework can assist by showing the nature of the measures necessary to support or refute the inferences being made. It is not sufficient merely to provide a list of alternative measures. HR metrics must systematically link to the strategic objectives of the organization, and serve as a template on which to test and validate a “theory of the firm” that comprises the link between people and organization performance (Boudreau & Ramstad, 1997; Becker & Huselid, in press). Thus, it is incumbent on those who develop and apply SHRM theory to choose appropriate measures, but it is also incumbent on measurement developers to provide a theory-based framework , not simply an ever-growing list of new measures.

For example, while there is no shortage of financial measures that can be correlated with human resource activities or bundles, rarely does theory precede the choice of the measures. It is quite interesting to discover that stock price or Tobin’s Q correlate with the number or bundles of HR activities reported in a firm. Certainly stock prices and market value creation get attention from investors, but it is the intervening variables and their measurement

that define the theoretical logic of the relationship. Perhaps market share, sales growth, cost reduction, margin growth, etc. are more appropriate outcome measures, and perhaps attitudes a more appropriate indicator of HR health. One can envision an explosion of studies correlating every imaginable index of HR with whichever financial measure is currently fashionable, but without a measurement framework, it will be difficult to develop theoretical logic or measurement rigor to support the inference that investments in human resource strategies lead to organizational success. A framework articulating the strategic and measurement linkages provides an ability to direct and compare such results.

Constituent Responses: Effects of Metrics on Strategic Decision-Making

Boudreau (1995) noted that HR metrics create value (or harm) according to their effects on key constituencies, suggesting that metrics research adopt a "choice" model of HR measurement, in which such systems are adopted based on communication goals and probable receiver responses (Shelby, 1988, 1991). Possible uses of HR metrics include persuasion, fashion-setting and decision support. Persuasion involves influencing receivers of HR information in ways that benefit the senders of that information (Quinn, Hildebrandt, Rogers & Thompson, 1991; Reardon, 1991; Perloff, 1993). Thus, an alternative framework for viewing the strategic impact of measures is the whether information receivers (e.g., employees, managers, shareholders, regulatory agents) react in ways that favor the information provider (often an HR manager). "Fashion-setting" involves convincing others that practices are innovative and based on the latest thinking (Abrahamson, 1991). Under this theory, metrics have value in this framework if they signal that HR practices are "progressive" in emulating fashion setters or are frequently emulated by others. Finally, "decision-support" suggests that HR metrics create value to the degree that they improve more decisions, that the decision improvements have significant value, and that the cost of the metrics does not offset this value (Boudreau, 1991).

Thus, the choice of HR metrics will affect the strategy-making process. Metrics are not neutral. The choice of metrics conveys values, priorities and a strategic framework. Moreover, metrics generally reflect an implicit constituency for the strategy process. Thus, whether intentional or unintentional, the choice of HR metrics sends signals that will affect the decisions of these constituents. Consider the strategic decisions involved in mergers and acquisitions, for example. The measures used to guide such decisions virtually always reflect resources such as capital, markets, technology, brands, etc. They frequently omit any explicit index of human factors, and are often presented as a method of shedding extraneous labor. A

strategic approach to measurement must incorporate the likely effect of such measures on the perceptions of employees involved.

To be “strategic,” metrics must be perceived and experienced to enhance decisions or other valued outcomes for key strategic constituents. Constituents typically considered are the shareholder or client for human resource outcomes (usually a line manager), but in fact metrics will send signals and likely affect the behavior of a broad set of constituents including employees, unions, governments, communities and customers. Subsequent sections will note how the role of metrics in the strategy-making and strategy-interpretation process is a key component of a strategic measurement framework, and the importance of explicating the constituents for HR metrics and SHRM.

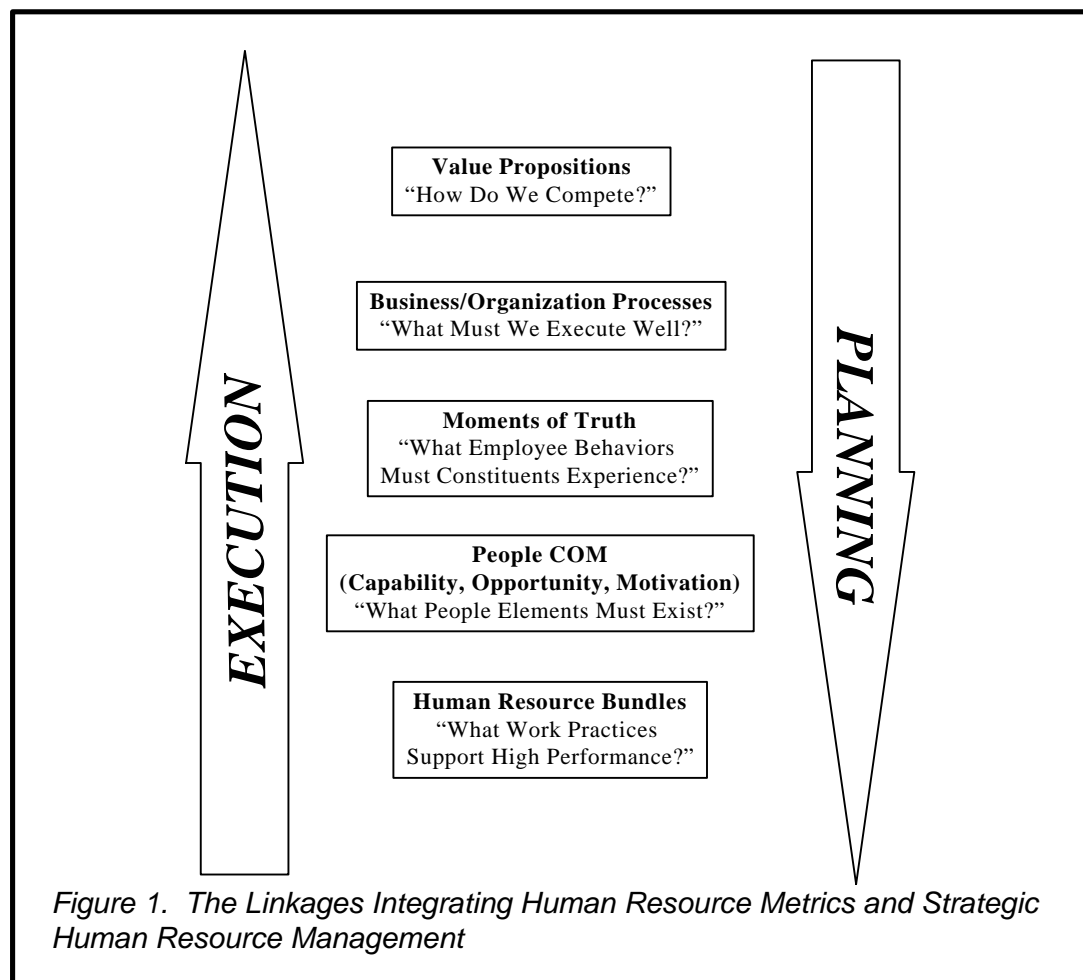
LINKAGE AND STRATEGIC HR METRIC SYSTEMS

Throughout SHRM, there are increasing calls for greater cause-effect theory and knowledge. Wright & Sherman (in press), in this volume, call for models that can test linkages between HR practices, through potentially mediating employee attributes and behaviors, to financial performance, noting that no study to date has tested the full model. This is another illustration of the lack of integration between measurement research, which has largely focused on effects of programs on relatively proximal outcomes (learning, attitudes, performance ratings), and strategy research which has focused on relationships between groups of HR programs and unit-level outcomes. Wright and Sherman note inconsistencies in the SHRM literature with regard to what is meant by HR (practices, employee skills, employee behaviors), what HR practices constitute the commonly-used notion of “high-performance work systems,” and in the organizational outcomes studied. We contend that defining which HR practices should be included in SHRM cannot be done without a measurement framework that articulates linkages. A metrics framework can provide guidance and the beginning of a common language for dealing with these issues. We need not strive for a single definition, but rather we require a framework for articulating which measures reflect a particular construct and why.

Let us take the “value-based” theory as an example. The “value-based” theory of the organization suggests that sustainable competitive advantage is created through resources that are valuable, rare, difficult to imitate, and supported by organizational structures that allow them to be exploited effectively (Barney & Wright, 1997). An effective HR metrics system would focus on linkages that are most likely to have these characteristics. Barney & Wright (1997) and Coff (1997) give several examples showing how human resources can contribute

to sustainable competitive advantage by creating links between levels of effect. The key is related not just to the resources themselves, but to the ability to use resources to strategic advantage (Stalk, Evans & Shulman, 1992), which requires theories and metrics that reflect linkages.

Figure 1 presents these concepts graphically. This chapter will discuss each element of the Figure in detail. Human resource activity “bundles” support human attributes of Capability, Opportunity and Motivation (COM). These attributes enable employees to enact critical behaviors that represent the “Moments of Truth” experienced by key constituents. These moments of truth affect constituent perceptions and reactions, forming the basis for successfully accomplishing the key “Business Processes” of the organization, including “new product introduction,” “market intelligence,” “productivity/quality,” etc. Finally, the successful execution of the business processes leads to success in achieving the value propositions. Examples include “operational excellence,” “product leadership,” and “customer intimacy” (Treacy & Weirsema, 1997).



Notice the two arrows in Figure 1. They are meant to convey the synergy between strategic planning, measurement and execution. When planning, the development of metrics proceeds downward, from the value proposition to the bundles. However, when executing the strategy, the causal direction moves upward. Similarly, metrics should be designed based on the strategic vision embodied in the value proposition, and work downward to articulate ever-more specific outcomes, but actual implementation of metrics systems will frequently involve tracing linkages from the bottom up. Moreover, the effect of metrics is often best measured at all levels, because key constituents are likely to exist at all levels. Becker and Huselid (in press, Figure 1) suggested a similar model, and noted the need to “peel back the onion,” and identify the intermediate relationships that seem to underlie the association between bundles of high-performance work practices and overall organizational success. This model is also consistent with the premise of the “loyalty effect” (Reichheld, 1996) and with Treacy and Wiersema’s (1997) notion that competitive strategy is supported by “Culture, Organization, and Management Systems” (a mix of the Human Resource and Organization levels) which create and support certain “Core Processes,” which in turn enhance the organization’s capability to enact its competitive discipline and reap market rewards. The notion of intellectual capital (Bontis, 1996) encompasses human capital (capability), customer capital (moments of truth), and structural capital (opportunity). The model is also consistent with Guest’s (1997) suggestion that SHRM extend theories about how performance and HRM are linked. Finally, we see expressions of the linkage concept in some empirical SHRM studies, where researchers focused on a level of analysis at which clear intermediate links could be discerned, such as distinct lines of business in insurance (Chadwick & Cappelli, in press) or auto assembly plants (MacDuffie, 1995).

Kaplan & Norton (1996) propose that a measurement system should embody a “theory of the firm,” with measures serving as ongoing tests of that theory, and indicators to show when the theory or the outcomes need to change. This means that strategic HR metrics should express a theory of the firm through linkages from people to organizational outcomes. HR metrics are not simply an evaluation tool, or a method of justifying HR investments. Rather, they represent the operational expression of the theory of how people contribute to organization success, and the HR investments that lead to that success.

CONSTRAINTS AS A KEY TO STRATEGIC HR METRICS

Like the concept of constituent responses, the concept of constraints is fundamental to measurement theory in management. As Boudreau and Ramstad (1997) noted, this concept

explains the emergence of key measurement systems throughout financial history. The principle is that measures provide the most information when they enhance decisions about key constraints. For example, there was little need to measure time zones until travel speed created a strategic constraint in the capability to integrate delivery schedules across regions. Similarly, the familiar DuPont model on which most financial reporting is based emerged with the advent of capital markets, and reflects a fundamental premise that capital is the key constrained resource (hence the common goal to maximize overall return on capital employed). Boudreau and Ramstad (1997) proposed that this underlying premise explains many limitations in the DuPont model in a world in which human factors may be the more significant constrained resource.

Thus, strategic HR measurements should focus on key constraints. Less obvious is the corollary that HR strategy must also identify and address key constraints (Ramstad, 1996). Subsequent sections will suggest how this principle of constraints informs the integration of SHRM and HR metrics.

ELEMENTS OF THE STRATEGIC MEASUREMENT MODEL

The Value Proposition ... How do we Compete?

Kaplan & Norton (1996), drawing on Porter (1985), define the value proposition as “the attributes that supplying companies provide, through their products and services, to create loyalty and satisfaction in targeted customer segments.” Treacy & Wiersema (1997) distinguish “Operational Excellence,” “Product Leadership,” and “Customer Intimacy,” suggesting that successful firms will choose to excel in one, and meet competition in the other two. Chadwick & Cappelli (in press), in this volume, observe that such prescriptions may overlook the necessary richness needed to discern relationships with strategy, and the common tendency for researchers to rely on simplistic strategic definitions. They suggest that for strategy to be a competitive advantage, either the strategy or its related “path dependencies” or links, must be difficult to imitate. Figure 1 suggests that the appropriate strategy definition and granularity will be determined by considering what measures support the linkages expected, rather than what generic strategy definitions are available. In essence, the model suggests working from the bottom up, to ask “if we surmise these linkages, then what value proposition measures are necessary to express them?”

What are the likely indicators of success at value creation? Kaplan & Norton (1996) suggest such while metrics must link to the financial outcomes of the organization, they cannot be limited to financial outcomes, which often lag success. They suggest adding customer

satisfaction, retention, new customer acquisition, customer profitability and market and account share. As Chadwick and Cappelli (in press) note, the appropriate unit for the measurement of SHRM relationships will often be the unit, not the broader corporation, because only at the unit level can the value proposition be discerned with enough detail. The metrics model in Figure 1 suggests using the linkage concept as a guide. One might ask, “what is the largest organizational unit at which it is reasonable to infer and measure the linkages” and “what is the smallest unit at which it is reasonable to define a value proposition?”? SHRM effects may best be investigated at that level. Thus, this element of the measurement model may provide a methodological diagnostic, that can be tested by the reliability and inter-rater agreement around the definition of the value proposition.

For example, several studies of the auto industry focused on plant-level outcomes (e.g., production costs, scrap, etc.) related to the adoption of high-performance work systems (Ichniowski, Shaw, & Prennushi, 1997; MacDuffie, 1995). While plant-level outcomes may not map directly to ultimate share prices for multinational auto companies, the richness of the description and the clear logical and theoretical linkage is enhanced because measurement linkage is clear. At the other extreme, correlations between firm-level HR practices and stock price are intriguing, but more difficult to articulate linkages. The measurement model of Figure 1 thus suggests that SHRM research decisions about the unit of analysis be driven, at least in part, by the availability of sufficient measurement linkage. Moreover, incorporating the value proposition, rather than simply financial measures, in Figure 1, we attempt to capture the notion that SHRM researchers should begin by asking whether a value proposition can be articulated at the level of their analysis. At too small a level (e.g., the HR activity), no value proposition may be visible. At too high a level (e.g., the total HR actions of General Motors), the value propositions are simply too diverse.

Constituent Responses to the Value Proposition

While it is useful when the key constituents for HR metrics can agree on value propositions, it is frequently the case that even shareholders and line managers have not considered this question. Kochan (in press) in this volume suggests that when SHRM defines this proposition only in terms of business success and shareholder value, SHRM risks missing significant elements of the broader value proposition, and the effects of strategy on constituents such as communities and governments. Another implication of the concept of constituent response is the effect of metrics on the strategy-making process. For example, Bamberger and Feigenbaum (1996) noted the role of “strategic reference points” in framing

how decision makers evaluate strategic options. Thus, the metric chosen may well influence the strategic response.

Constraints and the Value Proposition

The appropriate choice of constituents and value propositions is difficult. How can one begin to choose which value proposition or constituent is key? There is no complete answer to this question, but consider the idea that useful measures tend to reflect limiting constraints (Boudreau & Ramstad, 1997). One can find clues to the key factors by examining constraints. To take a simple example, consider two pharmaceutical companies, one that relies on drug development and being first with the newest product (e.g., the newest breakthrough in disease treatment), the other that relies on quick and low-cost production of standard drug therapies (e.g., over-the-counter pain medication). The first company may have plenty of new proven drug ideas, competitive marketing and distribution, and ready production facilities, so is not be limited by operational, customer, or even product innovation propositions. The key limit may be getting through the drug approval process as efficiently as possible. Thus, the key constituents are the drug regulators. The second company manufactures products that have already survived the approval process, and so would face completely different constraints. Despite the fact that the two companies share the same industry, constraints suggest suggesting a very different value proposition, and thus metrics reflecting how human resources contribute to strategic success. Without understanding constraints, SHRM research may well focus on the wrong factors. With attention to constraints it becomes clearer which value propositions are key, and at what level they should be measured.

Business Processes ... Initiatives for Achieving Value

With value-creation metrics established, it is possible to begin “drilling down” into the organization level of analysis to identify the business processes that logically support the value propositions. What metrics would indicate that the business or business unit is achieving results that will lead to the value propositions? For example, Kaplan & Norton (1996) describe “internal processes that will have the greatest impact on customer satisfaction and achieving the organization's financial objectives”. We would argue that the constituent set should be far broader than customers and financial observers, as Kochan (in press) suggests. Kaplan and Norton further note that metrics at this level should go beyond examining the performance of existing business processes, (e.g., terms of time, cost or quality), which they call the “short wave” of success, but should also explicate new business processes, or processes in need of reengineering, and measure the performance of those

efforts as well. Thus, metrics should include innovation, to capture the organization's performance on the "long-wave" of success. The literature on intellectual capital similarly suggests attention to both the "stock" of such capital and the organization's ability to efficiently promote a productive "flow" of the existing capital, and its translation into value through the value propositions (Bontis, 1997). Treacy & Wiersema (1997) note that each value discipline has a corresponding set of "core processes" (e.g., "product leadership" is supported by "invention/commercialization, market exploitation, and disjoint work processes," p. 90).

HRM measures frequently focus only on HR activities, suggesting that these activities represent the key business processes of HR. For example, classroom training is frequently "measured" by the number of courses offered, the number of trainees signed up for each course, or the immediate reaction of trainees upon completing the class. Such metrics signal that more training courses, large class sizes, and positive reactions are the goal. It should not be surprising, then, that in many organizations the perceived link between training and changes in individual, unit and organizational performance is tenuous at best. Alternatively, GE, Motorola, Federal Express and others are famous for requiring that training be tied to the key initiatives of the organization, and that it be evaluated as such. Training metrics include the effect on such things as product quality, cycle time, cost reduction, and speed of execution. In several shipping companies, the benefits of enhanced training or selection is frequently expressed as "the number of additional trucks/planes that can be loaded for free, without paying for additional labor." Steve Kerr, Vice President of HR at GE says they "teach the initiatives" (Frost, 1997, p. 341), not just the learning objectives.

Constituent Reactions and Business Process Metrics

How does focusing on the key business processes relate to the measurement principle of constituent reactions? At Pepsi Cola, IBM, Sears and other companies, the linkage concept is articulated through "learning maps" that show through pictures and games how the broad organizational goals reflect value propositions, and then imply improvement in key business processes. For example, the business objective might be improved market share, which requires the value proposition of "product availability," which means increasing the amount of shelf space, which might be achieved through enhanced by better inventory tracking and better-customized product promotion processes. The learning maps often become the basis for company-wide meetings, with employees at all levels participating in games and contests to enhance their knowledge of the value propositions and, even more important, their

understanding of the linkages between business processes and their individual role in supporting them. We know precious little about the effects of such articulation on individual learning, attitudes and behaviors, but these responses are likely to be a key to the success of HR strategies. Both SHRM and metrics research can be enhanced by attention to these effects. Thus, the choice of business process metrics should reflect not only the SHRM theory, but behavioral implications of the measures.

Constraints and Metrics of Business Processes

Strategic business processes alleviate strategic constraints. For example, enhancing the product knowledge of sales people provides far less valuable in a situation where the constraint is a lack of competitive products, in which case product innovation may be more valuable. The key role of salespeople may be to listen to customers to identify their most pressing and unmet product needs, rather than to “sell” them on existing (perhaps obsolete) products. SHRM research that fails to identify the key constraint may inappropriately focus on non-essential business processes, such as product knowledge, while ignoring the critical constraint of product innovation. A failure to find a link to success in value proposition and market performance may be due to choosing business processes that are not on the “critical path” of constraints. Thus, the constraints concept at the business process level may shed light on the dilemma of finding “fit” effects in SHRM.

Key Behaviors and “Moments of Truth”

The value propositions and business processes are the typical dependent variables in SHRM, and have received a significant amount of theoretical and empirical attention. However, the “moments of truth” have received relatively less attention. Gronroos (1990, 1994) and Carlzon (1987) noted that “moments of truth” represent pivotal contact points between employees and customers, whether in providing a service, selling a product, or providing assistance. These determine constituents’ perceptions of service and product quality.

In the classic case of employees meeting customers, the link may be quite clear. When Pepsi route drivers talk with buying managers in supermarkets and convenience stores, or when they “face” the product so that the label is in view of customers, their performance will affect future sales, and repeat buying behavior. When retail store associates meet and assist shoppers, their behaviors, conveyed attitudes, and product knowledge likely affect the probability of making a sale, and the customer’s impression. Some of the best empirical examples of the links in Figure 1 come from areas where such sales associates meet

customers (e.g., Rucci, Kirn & Quinn 1998). In fact, it appears likely that the customer interaction affects not only customer perceptions of the store associate, but also perceptions of the product and even the company. This premise reflects the idea of an “upside-down” organization (Milkovich & Boudreau, 1997), in which those who directly meet customers are at the top, supported by the other layers of the organization, the CEO at the bottom of the support structure.

What is often overlooked is that the “moment of truth” concept applies to situations without a direct customer meeting. Employees providing technical assistance through call centers are only slightly removed from direct face-to-face contact. Moreover, such call centers frequently collect key linkage data such as repeat business, order or service types, etc., making the metrics linkage even more feasible. Moving to the other extreme, is it possible that employees who provide maintenance or cleaning services have “moments of truth” as well? Jay Barney (1997, personal communication) notes that in one organization he approached a janitor and asked what the organization’s mission was. Surprisingly, the janitor accurately stated that the mission was to provide customer intimacy through world-class delivery of their key products. The more difficult question came next, “Can you make a difference to this mission in your work?” The custodian proceeded to state that he altered his cleaning routine to emphasize those parts of the manufacturing plant where dirt was most likely to produce product flaws and failures or injuries. Deciding where to clean represented a moment of truth because the cleaning pattern affected other employee work processes that directly supported the value proposition. Appropriate metrics might determine how differential cleaning related to objective outcomes such as machine failure, or the perceptions of employees who benefit from these janitorial services.

While it is indeed dangerous to *substitute* the concept of an internal customer for the ultimate customer, an HR metric system can use intermediate perceptions of internal customers to articulate linkages. If organizational success is built on hundreds or thousands of small steps taken by many employees, articulating a grand value proposition supported by key business processes, even when associated with good metrics at each level, will often not succeed without specific reliable behaviors from thousands of employees (Pfeffer, 1996). Thus, the “moments of truth” are the key employee behaviors that are pivotal to success of the important business processes.

Constituent Reactions and Moments of Truth

Strategy research and practice that articulates specific moments of truth may be more likely to affect individual behaviors, because it is possible for individuals to understand the connection between the outcomes of their behaviors and strategic success. When such linkages go unstated, achieving strategic success may be less likely both due to a lack of information and perhaps due to the signal that such linkages are not important enough to articulate and measure clearly. Frequently the informational and motivational effects of these metrics occur best through anecdotes. Vivid stories often carry the power of legend or myth in conveying strategic linkages. A widely-shared story involves the top officer of a manufacturing organization who, upon encountering a dirty work area in a plant tour surprised everyone by grabbing a dustpan and cleaning up the mess, rather than ordering that it be cleaned. If the top officer takes a personal interest in cleaning up, the importance of cleanliness as a key behavior is reinforced. In the same way, the metrics reflecting moments of truth serve both an informational and motivational purpose within the organization. Thus, SHRM research must not only strive to define appropriate moments of truth based on strategy and theory, but also to identify the moments of truth that organization members employ to articulate, communicate and understand their role in organizational success.

Constraints and the Moments of Truth

From a practical perspective, the key at this stage of Figure 1 is to avoid being overwhelmed by the sheer variety and number of potential measures of employee behaviors. Once again, the measurement principle of focusing on the constraints may be useful. First, as Figure 1 suggests, the most fruitful moments of truth will reflect the link from each behavioral measure to the key business processes or initiatives that will be enhanced by it, and subsequently the key value propositions that will be supported. Second, the key to these business processes will frequently be to focus on what is the most binding constraint and what moments of truth will clearly affect it. To continue the earlier example, for salespeople in a company where product innovation is the key constraint, measuring selling behaviors and their effects on business outcomes may be less fruitful than measuring rapid customer intelligence, listening, and communicating new ideas to product designers. Thus, SHRM measure development would again focus on the question of which moments of truth are the key to alleviating the most serious constraints.

Capability, Opportunity, Motivation (COM)

This element of Figure 1 reflects direct changes in the human resource, in terms of Capability Opportunity and Motivation (COM): (1) Capability is the capacity of employees to create value; (2) Opportunity is the necessary circumstances for employees to create value; and (3) Motivation is the drive or force employees feel to create value. These three components (COM) are derived from traditional work suggesting the notion that individual performance is a multiplicative function of ability and motivation (Vroom, 1964; Maier, 1955; Cummings & Schwab, 1973), as well as critiques of the simple model (Campbell & Pritchard, 1976), and suggestions that the nature of the environment determines the expression of ability and motivation (Gilbreth 1909; Dachler & Mobley, 1964), and more recent work suggesting that situational constraints and opportunity are key to a theory of work performance (Peters & O'Connor, 1980; Blumberg & Pringle, 1982). SHRM metrics should reflect all three components, as theory suggests all three must be present for human resources to contribute to organizational value. Moreover, any single or set of HR activities may contribute to any of the three components (e.g., more stringent selection to identify workers with experience working in teams may produce employees not only with team skills, but also those whose needs and values tend to create motivation in team settings).

The concepts of “capability” and “competency” occur frequently in the SHRM and human resource literature. The vast majority of measures at this level seek to capture the capability element. In this volume, Ulrich (in press) emphasizes “competencies,” and McMahan, et al. (in press) note the traditional emphasis on “organizational capability” (Amit & Shoemaker, 1993; Collis, 1994; Kamoche, 1996; Lado & Wilson, 1994). While these authors quite appropriately note that these factors combine to create a capacity for strategic change, the emphasis often seems to be on what Figure 1 defines as capability, with less attention to motivation and opportunity. The metrics model suggested here emphasizes that the requisite human attributes go beyond capability, and that an overemphasis on capability may be counter-productive.

What about employee attitudes? Figure 1 does not explicitly incorporate employee attitudes, such as job satisfaction, focusing instead on their effects on employee motivation to engage in behaviors (“moments of truth”) such as turnover, citizenship behavior, etc. Recent employee attitude research supports this view that strategy and linkage are key (Johnson, 1996; Ryan, Schmit & Johnson, 1996; Schmit & Alscheid, 1995; Schneider, Ashworth, Higgs & Carr, 1996). There seems to be a trend in these studies to link attitudes with organizational

and strategic goals. Organizations, such as GE and Sears have implemented employee “attitude” surveys that reflect a linkage concept, for example employees are asked their perceptions that leaders have communicated clearly the vision (value propositions, business processes and moments of truth), that resources are sufficient to accomplish goals, that there is an emphasis on winning, that individuals clearly understand their personal role in meeting objectives, and the rewards that will emanate from achievement (e.g., Rucci, et al., 1998). This kind of measurement seems more likely to show relationships through the value propositions than mere measures of job satisfaction.

A similar approach might be taken toward other common HR metrics. Capability indices such as competencies, skills, knowledge, certification, and test scores can be strategic metrics, but only when embedded within a theory that links them to value. This will help to identify the capabilities that are strategic, and to focus research and practice on developing them. Opportunity indices such as team composition, organizational design, etc. can also be developed based on their linkage. Boudreau & Ramstad (1997) give several examples of linking COM measures to key organizational initiatives.

Constituent Reactions and “COM”

Organizations that modify their attitude, skill and opportunity measures to reflect linkages to strategic behaviors, business processes and value propositions can then hold leaders accountable for changes in such measures. The oft-quoted admonishment to avoid “rewarding for A while hoping for B” reflects this idea. SHRM research has devoted relatively little attention to the effects of measurement choices on the behavior of supervisors and managers, yet this would seem to be a key linkage in implementing strategy. Indeed, it seems likely that the choice of measures probably frames the perceptions of managers and employees in terms of what is important, so strategy making is also driven by such measures. At Sears (Rucci, et al., 1998), one important result of using data to demonstrate linkages from employee attitudes to business success was the change in perspective among managers as to the strategic drivers of the organization. Thus, the COM concept can become the basis for evaluation and assessment of managers. Even without such explicit accountability, the choice of which COM elements are measured sends signals to employees that are likely to motivate a desire (or at least curiosity) about the action to be taken in these areas. For example, many organizations (and SHRM HR assessments) measure the number of hours or dollars spent in training classes, but do little to measure whether such training is applied at work. It seems likely that this may signal to employees and managers that attendance is the key, not

necessarily competency building and application. Thus, the behavioral effects of metrics at the “COM” level remains to be examined with SHRM research. The principle of constituent responses to metrics has complementary implications for research in utility analysis (UA), suggesting that studies should focus on how utility models affect the perceptions and reactions of constituents, rather than simply on the mathematical elegance or completeness of estimates (e.g., Boudreau, 1991; Latham & Whyte, 1994). Thus, future SHRM research may benefit from attention to individual reactions to the COM measures.

Constraints and “COM”

Industrial-organizational psychology research typically measures effectiveness in terms of increased skills or learning, assuming that such increases are monotonically related to organizational value (e.g., “utility analysis”, Boudreau, 1991; “HR costing,” Cascio, 1991; and “human resource accounting,” Flamholtz, 1985). Such approaches are deficient if they fail to reflect how the results of HR processes will be used, and whether the metric reflects key constraints. For example, Boudreau (1991) noted that the utility values will vary depending on whether they are used to cut costs, increase volume or increase margins. Much utility analysis literature has presumed that the key requirement was to translate HR outcomes into the “language of business” by placing dollar values on them. As we have seen, strategic HR metrics require much more than simply a dollar-valued scale. In fact, it is likely to be more important to understand the link between HR outcomes, moments of truth and value propositions, than to express results in dollars. For example, an organization with unsold inventory is little served by human resource interventions designed to increase production levels. The key constraint is sales volumes, not production. However, standard utility analysis theory and measures could quite easily construct equations that would show very high apparent payoffs to increasing worker speed, because such models generally assume that increases in worker productivity are linearly and positively related to attained value. In this case, the appropriate question is not “what is the difference in value between a low-producing factory worker and a high-producing factory worker,” but “is there greater value in increasing factory worker productivity compared to sales productivity.” Linking COM to these strategic paths necessary to integrate SHRM and measurement as depicted in Figure 1.

Human Resource Management Processes ... The Bundles

The notion the human resource activities are most effective when bundled into synergistic combinations, while prominent in SHRM, could be better incorporated into research and practice in HR metrics. SHRM research (Arthur, 1992; 1994; Huselid, 1995; Ichniowski, et

al., 1997; MacDuffie, 1995) suggests that bundles of HR processes, often called “high performance work systems” are a key determinant of performance. Utility analysis research has acknowledged the interplay between different HR processes, noting the consequences of linkages between recruitment, selection, separation, and internal movement for the overall value of the workforce (Boudreau, 1991). As yet, utility analysis applications have not evolved to capture this interplay. Developing such a system will require the integration of SHRM and metrics, and articulation of key linkages as shown in Figure 1.

Indeed, this perspective suggests a change in the notion of an “HR program” in both SHRM and metrics research. Though HR programs typically are measured as relatively large-scale interventions applied to many employees, (e.g., formal training, compensation, selection or recruitment), there is “human resource management” occurring in each interaction between employees, managers and customers. How much of the effectiveness of staffing, for example, rests with the individual judgments that are made *after* candidates have been screened through formal evaluation procedures? How much of the effectiveness of rewards rests with the individual recognition, appraisal and communication that goes on *outside* the formal pay and performance appraisal processes? How much of knowledge and skill acquisition takes place on the job, *independent* of formal training programs? Capturing these effects requires an approach to metrics that explicates linkages at levels beyond individual HR programs, and that flexibly measures the HR programs themselves.

Constituent Reactions and HR Bundles

How HR practices are measured and conceived strategically may affect key constituents. If Gerhart (in press) is correct in his suggestion that HR managers, shareholders and perhaps even customers or employees hold implicit assumptions about the association between HR and organizational performance, then how the HR bundles are defined and communicated may affect those perceptions. Organizations that communicate and track their HR practices from an integrated perspective of “high performance work systems” may be perceived as more progressive or effective. The metrics used to evaluate and describe HR practices may well influence how they are organized and integrated. Organizations that adopt a strictly functional approach, with clear delineation between staffing, compensation, training, etc. may produce functionally separate decisions by HR managers and others. Metrics that instead emphasize integration, “fit” and synergy across functions may elicit different behaviors. For example, in some organizations, the “staffing” function is defined and evaluated in terms of the interplay between acquisition, internal movement and retention. One manager may

oversee this integrated function, with rewards and evaluation based on the combined effect of these processes. In other organizations, the sub-components of staffing are strictly delineated, with separate managers and metrics for each sub-component. It seems likely that staffing initiatives are chosen differently in the two organizations. SHRM researchers who adopt the more integrative approach for theoretical reasons might do well to consider whether their metrics carry an implicit assumption about how organization members perceive the HR bundles.

Constraints and HR Bundles

The concept of internal “fit” in SHRM suggests that HR activities may create synergy when they complement each other. However, there are a huge number of “fit” patterns among HR activities that might reasonably be considered strategically useful. For example, while it may seem logical for organizations pursuing strategies in risky environments to “fit” those with HR practices that reward risk-taking, one can also make the argument that HR practices that provide some stability (e.g., a significant portion of pay that is not outcome-based) may be a better strategy, because reinforcing risk may create chaos, while tempering it may allow reasoned action. Barringer and Milkovich (1997) reported that employees and employers prefer secure, longer-term contracts when the work environment is risky and uncertain. The principle of focusing on the key constraints may provide value as an indicator of which of many “fit” patterns may be most strategically useful. By beginning with the strategic linkage concept, metrics theory can identify measures that reflect the most important organizational processes. By attending to the constraint principle, SHRM researchers may gain clues regarding the fit patterns that are most important to measure.

Though beyond the scope of this chapter, the concept of constraints linked to measures of HR bundles highlights the importance of an “optimization” perspective in both SHRM and HR metrics. Cappelli & Crocker-Hefter (1996) noted that strategies may be better formed by looking for ways to apply existing organizational resources strategically, as suggested by the resource-based model, than by starting with a general strategy and attempting to fit resources to it. Each organization will have a very different feasible set of strategic paths, because it has a very different set of constraints based on the resources it possesses. The same applies to optimizing bundles of HR practices. Simply put, strategic HR investments require optimizing both the synergy of the bundles and their results, but also the synergy of the resources used to invest in those bundles. Organizations with decentralized HR systems (e.g., a training unit within each business), each investing based on unit needs and

resources, are likely to fail to optimize across units without metrics systems that link the unit investments together. Moreover, full optimization requires not only that the bundles work together, but that the bundle of resources chosen also be optimal. It is one thing to achieve synergy using expensive and time-consuming classroom training. It is quite another to achieve the same synergy by recognizing that if time is the key organizational constraint, then spending cash to develop decentralized training that takes less time may be even better. There is “fit” in terms of the resources used, just as there is “fit” in terms of the outcomes produced.

SUMMARY AND CONCLUSIONS

Cappelli & Singh (1992) suggested that SHRM is built on two unstated propositions: (1) A particular business strategy demands a unique set of responses from employees; and (2) A particular set of human resource policies produces a unique set of responses from employees. This chapter supports their call for research that explicitly measures and tests these propositions. Figure 1 proposes a model integrating SHRM and HR metrics, providing a departure point for a more detailed set of conditions and components. The model also suggests that SHRM may not require the strongest version of these propositions. A variety of employee responses may support a given business strategy, and that a variety of human resource practices may elicit them. This is not to say that there is no “fit” between strategy and practices. Rather, by focusing on the principles of linkages, constraints, and constituent responses, the appropriate domain of both strategic linkages and measurement imperatives may become clearer. While one unique combination may not exist, these principles may guide researchers toward those that are most supportable. We’ve illustrated how the challenges facing SHRM (e.g., more granular and context-rich strategy concepts, cause-and-effect knowledge) are intimately tied to the nature and quality of metrics, and how progress in HR metrics (e.g., moving beyond program-specific justification, deciding which of the thousands of metrics to use, creating measures likely to predict broader outcomes) likewise requires a strategic focus. A fundamental premise of this chapter is that a linked set of metrics really does produce stronger and more reliable relationships than measuring only part of the links. Future research is needed to test this proposition.

Metrics serve at least two purposes: (1) Operationalizing the theoretical concepts in SHRM and (2) Affecting constituents who observe and react to the measures. Both metrics and SHRM research can benefit from more focus on these two purposes. Defining value propositions more granularly and in context should be guided by looking for measures that affect key constituents that influence contextual constraints.

A fruitful area of research would reflect the impact of HR metrics on key decision makers. As Boudreau (1991, 1996) has noted, we know very little about how theories of persuasion and influence are reflected in the reactions to HR measures. It seems likely that metric systems that articulate the frameworks outlined here may have different effects than those focusing on specific programs, or those that reflect only the macro-level effects. Research is needed to determine if the metrics used to define and communicate strategy have differential effects on perceptions, decisions and behaviors. The effects of HR metrics has received limited attention from measurement researchers, but by integrating metrics and SHRM, and explicitly examining the effects of articulating strategy and measuring it in certain ways, future research can illuminate a key potential source of strategic impact. To date, research in both HR metrics and SHRM have not focused on constituent reactions. Related to this issue is the question of whether decision makers can articulate the key SHRM concepts, and whether their articulation of strategy is enhanced when approached from the principle of constraints suggested here.

Finally, Figure 1 clearly suggest the promise of comprehensive studies that track variables reflecting each level and step in the process. While such studies are difficult, the resulting data would be immensely helpful in articulating the intermediate linkages between the micro and macro studies. This has been noted before, but the present model suggests a specific framework for the variables comprising these linkages. It seems possible that organizations have the necessary data bases to carry out such studies, especially organizations with large numbers of customer-contacting employees and established market research and financial data (e.g., large retailers, banks, and telecommunications organizations). Exploiting such data requires creative integration between disparate data bases, but may be far less difficult than attempting to gather such data from the outset.

In sum, both SHRM and HR metrics will benefit from a closer integration. It is hoped that the framework suggested here will encourage such integration in the future.

References

- Abrahamson, Eric (1991). Managerial fads and fashion: The diffusion and rejection of innovations. Academy of Management Review, 16, 586-612.
- Arthur, Jeffrey B. (1992). Effects of human resource systems on manufacturing performance and turnover. Academy of Management Journal, 37, 670-687.
- Barney, Jay & Wright, Patrick M. (1997). "On becoming a strategic partner: The role of human resources in gaining competitive advantage". CAHRS Working Paper.
- Barringer, Melissa W. & Milkovich, George T. (1997). Total compensation: Pieces of the pie. Electric Perspectives, May/June, 22 (3) 70-76.
- Becker, Brian E. & Huselid, Mark A. (in press). High performance work systems and firm performance: A synthesis of research and managerial implications. In G. Ferris (ed.) Research in Personnel and Human Resources.
- Blumberg, Melvin & Pringle, Charles D. (1982). The missing opportunity in organizational research: Some implications for a theory of work performance. Academy of Management Review, 7, 560-569.
- Bontis, Nick (1997). Managing Knowledge by Diagnosing Organizational Learning Flows and Intellectual Capital Stocks: Framing and Advancing the Literature. Working Paper 97-07, Richard Ivey School of Business, University of Western Ontario
- Boudreau, John W. (1996). "The Motivational Impact of Utility Analysis and HR Measurement." Journal of Human Resource Costing and Accounting, 1, 2, 73-84.
- Boudreau, John W. (1995). "So What?": HR Measurement as A Change Catalyst. National Meeting of the Academy of Management, August, Vancouver, Canada.
- Boudreau, John W. (1991). Utility analysis for decisions in human resource management. In Marvin D. Dunnette & Leatta M. Hough (Eds.) Handbook of Industrial and Organizational Psychology, (2nd ed.), Vol. 2. Palo Alto: Consulting Psychologists Press, pp. 621-745
- Boudreau, John W. & Ramstad, Peter (1997). "Measuring Intellectual Capital: Learning from Financial History." Human Resource Management
- Campbell, John P. & Pritchard, Robert D. (1976). Motivation theory in Industrial and Organizational psychology. In Marvin D. Dunnette (ed.) Handbook of Industrial and Organizational Psychology.
- Cappelli, Peter & Crocker-Hefter, Anne (1996). Distinctive human resources are the firm's core competencies. Organization Dynamics, 24 (3) 7-22.
- Cappelli, Peter & Singh, Harbir (1992). Integrating strategic human resources and strategic management. In Lewin, David, Mitchell, Olivia S. & Sherer, Peter D. (eds.) Research

- frontiers in industrial relations and human resources, 165-192. Madison, WI: Industrial Relations Research Association.
- Carlzon, Jan (1987). Moments of Truth, Cambridge, MA: Ballinger.
- Cascio, Wayne F. (1991). Costing Human Resources (3rd ed.) Wadsworth
- Chadwick, Clint & Cappelli Peter (in press). Alternatives to generic strategy typologies in strategic human resource management. SHRM Special Issue of Research in Human Resources Management. JAI Press.
- Coff, Russell (1997). Human assets and management dilemmas: Coping with hazards on the road to resource-based theory, Academy of Management Review, 22, 374-402.
- Cummings, Lawrence & Schwab, Donald (1973). Performance in Organizations: Determinants and appraisal.
- Dachler, H. Peter & Mobley, William H. (1973). Construct validation of an instrumentality-expectancy-task-goal model of work motivation. Journal of Applied Psychology, 58, 397-418.
- Edvinsson , Leif & Malone, M.S. (1997). Intellectual capital : realizing your company's true value by finding its hidden roots . New York : Harper Business.
- Flamholtz, Eric G. (1985). *Human Resource Accounting*. San Francisco, CA: Jossey-Bass.
- Frost, Peter J. (1997). Bridging academia and business: A conversation with Steve Kerr. Organization Science, 8, (3) May-June, 333-347.
- Gerhart, Barry A. (in press). Human resource management and firm performance: Measurement issues and their effect on causal and policy inferences. SHRM Special Issue of Research in Human Resources Management. JAI Press.
- Gilbreth, Frank B. (1909). Bricklaying systems. New York: Myron Clark.
- Gronroos, Christian (1990) Service Management and Marketing - Managing the Moments of Truth in Service Competition, Massachusetts/Toronto: Lexington Books.
- Gronroos, Christian (1994) 'From Marketing Mix to Relationship Marketing. Toward a Paradigm Shift in Marketing', Management Decision, 32, (2) 4-32.
- Huselid, Mark A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. Academy of Management Journal, 38, 635-672.
- Ichniowski, Casey, Shaw, Kathryn & Prennushi, Giovanna (1997). The effects of human resource management practices on productivity: A study of steel finishing lines. American Economic Review 87 (3) 291-313.

- Johnson Jeff W. (1996). Linking employee perceptions of service climate to customer satisfaction. Personnel Psychology, Winter, 49, (4) 831-851.
- Kaplan, Robert S. & Norton, David P. (1996). Linking the balanced scorecard to strategy. California Management Review, Fall, Vol. 39, No. 1 Pg. 53-79.
- Kaplan, Robert S. & Norton, David P. (1996). The balanced scorecard : translating strategy into action. (Boston, Mass. : Harvard Business School Press).
- Kirkpatrick, Donald (1994). Evaluating Training Programs: The Four Levels. San Francisco: Barrett-Koehler
- Kochan, Thomas (in press). [Editor: title to be determined on revision]. SHRM Special Issue of Research in Human Resources Management. JAI Press.
- Latham, Gary & Whyte, Glenn (1994). "The Futility of Utility Analysis", Personnel Psychology, vol. 47, pp. 31-46.
- MacDuffie, John Paul (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.
- Maier, Norman R.F. (1955). Psychology in industry.
- McMahan, Gary C., Virick, Meghna & Wright, Patrick M. (in press). Alternative theoretical perspectives for strategic human resource management revisited: Progress, problems and prospects. SHRM Special Issue of Research in Human Resources Management. JAI Press.
- Milkovich, George T. & Boudreau, John W. (1997). Personnel/human resource management: A diagnostic approach (8th ed.). Homewood, IL: Richard Irwin, Inc.
- Perloff, Richard M. (1993). The Dynamics of Persuasion. Hillsdale, NJ: Erlbaum Associates.
- Peters, Larry H., & O'Connor, Edward J.(1980). Situational constraints and work outcomes: The influence of a frequently overlooked construct. Academy of Management Review, 5, 391-397.
- Porter, Michael E. (1985). Competitive advantage : creating and sustaining superior performance.. New York : Free Press.
- Pfeffer, Jeffrey (1996). Why do smart organizations occasionally do dumb things? Organizational Dynamics, Summer, 33-44.
- Quinn, Robert E., Hildebrandt, Herbert W., Rogers, Priscilla S., & Thompson, Michael P. (1991). A competing values framework for analyzing presentational communication in management contexts. The Journal of Business Communication, 28, 213-232.

- Ramstad, Peter (1996). Lessons from finance and accounting for measuring HR value. Presented at the Center for Advanced Human Resource Studies Sponsor Meeting. May, New York.
- Reardon, Kathleen K. (1991). Persuasion in Practice. Newbury Park, CA: Sage.
- Reichheld, Frederick F. (ed.) (1996). The quest for loyalty: creating value through partnership. Boston, MA: Harvard Business School Press.
- Reichheld, Frederick F. (1996). The Loyalty Effect: The Hidden Truth Behind Growth, Profits, and Lasting Value, (Boston: Harvard Business School Press), especially Ch. 8, pp. 217-253, "The Right Measures".
- Rucci, Anthony J., Kirn, Steven P. & Quinn, Richard T. (1998). The employee-customer-profit chain at Sears. Harvard Business Review, January-February, 83-97.
- Ryan, Ann Marie, Schmit, Mark .J. & Johnson, Raymond (1996). Attitudes and effectiveness: Examining relations at an organizational level. Personnel Psychology, 49 (4) 853-882.
- Schmit, Mark J. & Allscheid, Steven P., (1995). Employee attitudes and customer satisfaction: Making theoretical and empirical connections. Personnel Psychology, 48, (3) 521-536.
- Schneider, Benjamin, Ashworth, Steven D., Higgs, A. Catherine & Carr, Linda (1996). Design, validity and use of strategically focused employee attitude surveys. Personnel Psychology, 49, 695-705.
- Shelby, Annette N. (1991). Applying the strategic choice model to motivational appeals: A Theoretical Approach. The Journal of Business Communication, 28, 187-212.
- Shelby, Annette N. (1988). A macro theory of management communication. The Journal of Business Communication, 25, 13-27.
- Stewart, Thomas (1997). Intellectual capital : the new wealth of organizations. New York : Doubleday / Currency.
- Stalk, George, Evan, Philip, & Shulman, Lawrence E. (1992). Competing on capabilities: The new rules of corporate strategy. Harvard Business Review, 70, (2) 57-69.
- Treacy, Michael & Wiersema, Fred (1997). The discipline of market leaders. Reading, MA: Addison-Wesley.
- Ulrich, Dave (in press). Integrating practice and theory." Towards a more unified view of HR. SHRM Special Issue of Research in Human Resources Management. JAI Press.
- Welbourne, Theresa W. & Andrews, Alice O. (1996). Predicting performance of initial public offering firms: Should human resource management be in the equation? Academy of Management Journal, 39 (4), 891-919.

Wright, Patrick M. & Sherman, W. Scott (in press). Failing to find fit in strategic human resource management: Theoretical and empirical problems. SHRM Special Issue of Research in Human Resources Management. JAI Press.

Vroom, Victor (1964). Work and Motivation. New York: Wiley.