Human Capital Measurement Systems As a Source of Competitive Advantage

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Abstract

An increasing reliance on intangible assets--such as human capital--as a source of competitive advantage has led many firms to develop measurement systems to help them better manage these resources. However, the antecedents and consequences of human capital measurement systems (HCMS) such as Becker, Huselid, and Ulrich's (2001) *HR Scorecard* methodology are not well understood. Drawing from prior work on the Resource Based View of the firm and the Economics of Information, we describe the primary attributes of HCMS and develop a conceptual model and series of propositions intended to stimulate research on these systems.

Introduction

In an economic environment increasingly characterized by the reliance on intangible assets such as human capital in the creation of shareholder wealth, many managers would agree with the assertion that "people are our most important asset." However, while the literature generally finds a wide variety of human resource (HR) management practices to be associated with better firm performance (Becker & Huselid, 1998; Guthrie, 2001; Hitt, Bierman, Shimizu, & Kochhar, 2001; Huselid, 1995; Ichniowski, Shaw, & Prennushi, 1997; MacDuffie, 1995), practitioners often find that managing these intangible assets poses a significant challenge.

The Resource Based View of the Firm (RBV) provides a framework to help us understand the potential sources of competitive advantage that could be generated through investments in human capital. In the parlance of the RBV, resources internal to the firm are sources of competitive advantage to the extent they are valuable, rare, inimitable, and difficult to substitute (Barney, 1991). Barney and Wright (1998) argue that human capital (and the systems used to generate it) often meet these four criteria. Indeed, intangible assets linked to people can be important sources of competitive advantage and adaptability because they can be used in multiple contexts simultaneously, are difficult and time consuming to develop, and can be both inputs and outputs of business activity (Itami, 1987). Yet, capitalizing on human capital as a source of economic rents presumes that there is an adequate information infrastructure upon which to base both the design and implementation of managerial strategies – an assumption that is generally not met in most organizations (Becker, Huselid & Ulrich, 2001). Viewed from the lens of the RBV, it is just such an information failure that provides an opportunity for HRMS to be a source of competitive advantage.

Because conventional accounting rules provide little guidance for managing, measuring, and evaluating the impact of intangibles on firm performance (Lev, 2001), many firms have begun to develop their own intangible asset measurement systems. These systems generally

take the form of internal or *managerial* accounting systems, in contrast to *financial* accounting systems that are used to report business results to external constituencies (e.g., balance sheets, income statements, and statements of cash flow). Conventional financial accounting systems, designed over a century ago primarily to track tangible assets such as land, physical plant, inventories, and capital, don't provide much insight into the measurement and management of intangibles. Indeed, the gap between the importance of intangible assets, and our ability to monitor and control them, appears to be widening (Lev, 2001). However, since internal or managerial accounting systems are not intended to be reported to external constituencies and are therefore not audited, managers have wide latitude in what, and how, they measure their own intangible assets.

At the level of the enterprise or firm, Kaplan and Norton's (1992) Balanced Scorecard methodology has become very popular and widely adopted because it can help managers focus on the drivers or leading indicators of firm performance (e.g., cost, quality, new product cycle time) as well as on the conventional lagging indices of firm performance such as return on investment (ROI) or shareholder value. The intent of the balanced scorecard framework is to encourage managers to devote at least as much attention to the leading indicators of firm performance as they do the lagging indicators (financials), because it is the leading indicators which influence financial outcomes (and over which they have control). As such, Kaplan and Norton's Balanced Scorecard framework includes not only conventional financial outcomes, but also categories that focus on the customer, the internal (operational) business perspective, and learning and growth of the workforce.

While the Balanced Scorecard approach highlights the importance of leading indicators of value creation, as currently constructed it provides little insight into the management of intangibles. This has led some authors to develop specialized functional scorecards that focus specifically on intangibles such as human resources. The intent of this approach is not to replace the balanced scorecard framework, but rather to provide an additional tool which links

directly with the firm or enterprise-level balanced scorecard, and which focuses specifically on intangibles such as human capital. An example of this approach is found in the HR Scorecard framework presented by Becker, et al. (2001).

We believe that the HR Scorecard framework is one example of a larger process that we describe as a *human capital measurement systems* (HCMS). When designed and implemented effectively, HCMS are integrated measurement systems that focus on prediction and feedback of the firm's people-related assets. At their core, HCMS include any efforts to design a measurement system that describes how human capital creates value in an organization. However, we believe that this process goes much further, in that it also describes and facilitates the use of this measurement system on an ongoing basis to help make more effective decisions about the management of people. We make the distinction between HR Scorecards and HCMS because we believe that there may well be other approaches to achieve the same end, and thus we want to separate the study of a particular outcome (better management of human capital through measurement) with a specific process (in this case, an HR Scorecard).

As much of the work on balanced measurement systems has its genesis in the accounting literature, it also has a predominately practitioner focus. While the practitioner community appears to have embraced the scorecarding concept, empirical work on the antecedents and consequences of these systems is actually quite limited. Indeed, selecting the controls (i.e., measurement systems) that result in effective implementation of chosen strategies is a challenge for managers. As industries become more competitive, and markets continue to globalize, firms must become more innovative, flexible and creative to exploit their competencies (Volberda, 1996). Information must be not only reliable and valid, but also accessible to top managers who must make decisions on the structure that can accomplish this. Useful information helps executives improve decision-making, thus contributing to the formation and use of effective structure and controls (Kayworth & Ireland, 1998).

We believe that the social sciences have much to add to the development of such measurement systems – and also in specifying the conditions under which they are likely to be most effective. We also believe that a thorough treatment of HCMS, as sources of feedback and performance appraisal, needs to draw from relevant work in the social sciences, including industrial/organizational psychology, HRM, psychometrics, econometrics, and especially strategy. By drawing heavily on the prior work in these areas, we hope to encourage scholarship into the creation and implementation of intangible asset measurement systems within organizations.

Thus, in this paper we focus on the development and implementation of HCMS, although many of our comments will also apply to broader "balanced" measurement systems in general. We begin by describing how measurement systems can be a source of competitive advantage. Next, we identify the primary characteristics of an HCMS, and then turn to the factors that drive the need for such systems. We then describe the factors that we believe influence their success. We conclude with recommendations for future theoretical and empirical work on this topic.

Measurement Systems and Sustained Competitive Advantage

Barney and Arikan (2001) define *strategy* as a firm's theory of how it can gain superior performance in the markets within which it operates. Within this context, the RBV posits that internal firm resources are a potential source of economic rents to the extent that they are valuable, inimitable, rare, and causally ambiguous. In sharp contrast to Porterian notions of environmental determinism, the RBV assumes that firms compete on capabilities and bundles of assets that are unique and inherently *internal* to the firm. It is the bundle of resources possessed by a firm that may enable a firm to gain and sustain superior performance (Rumelt, 1984; Wernerfelt, 1984; Barney, 1986). Additional key concepts derived from the RBV include *resource heterogeneity*: competing firms possess different bundles of resources (which are scarce and non-substitutable); and *resource immobility*, i.e., because internal resources are

difficult to move across firms, differences in resources may persist over time and help to generate economic rents. Resources are valuable when they enable a firm to develop and implement strategies that have the effect of lowering a firm's net costs and/or increasing a firm's net revenues beyond what would have been the case if these resources had not been used to develop and implement these strategies. The value of resources can also be determined by their ability to enable firms to conceive of and implement strategies that are appropriate to the market within which a firm operates (Barney, 2001).

Within the context of human resource management (HRM), a firm's approach to managing people can help provide a competitive advantage by lowering costs, increasing sources of product and service differentiation, or by both (Porter, 1985). Achieving competitive advantage through HR requires that these activities be managed from a strategic perspective (Lengnick-Hall & Lengnick-Hall, 1988). However, investing in both people and people management systems incur costs. Thus managers need to analyze the ability of HR practices to meet strategic business needs; otherwise they may be excessive and inefficient, and result in less than optimal organizational effectiveness (Barney &Wright, 1998).

While the prediction that a firm's human capital, and the systems, policies, and practices that are used to generate this human capital, are a potential source of economic rents is entirely consistent with the RBV, prior work on the RBV has said little about the intrafirm attributes and characteristics that are required to capitalize on this potential source of value. Indeed, one important but unstated assumption inherent in the application of the RBV to the HRM context is that managers have adequate information upon which to make decisions. While this assumption may hold for tangible assets such as buildings, land, and equipment, it is significantly less likely to hold for intangible assets such as the organizational capabilities that are reflected in HR. Thus, in the next section we describe the attributes of such HCMS and some of the conditions under which they are likely to create the greatest value.

Attributes of a Human Capital Measurement System

While the terms “HR measurement” or “human capital measurement” have been widely used in the practitioner literature, the range of topics that these terms are used to describe is actually quite broad. At one end of the continuum, the term HR measurement is used to describe any efforts to measure any parts of the process through which HR creates value in an organization. Typically, this process begins with measuring activities associated with the HR function, such as cost per hire, days required to fill an open position, or benefits as a percentage of revenue. While better performance on these indicators may be associated with firm success, this is not necessarily always true. Because this type of measure tends to focus on the activities of the HR *function*, as opposed to the actual employee behaviors that drive *strategy*, their linkage with actual value creating behaviors of the workforce can be ambiguous. Thus, while these measures are relatively easy to collect and can be benchmarked across firms, in the long run they are not likely to help differentiate the firm from its competitors, as they are not linked to the firm’s unique strategy implementation process. In terms of the RBV, benchmarking on these attributes can’t provide a long-term source of rents, because any firm can imitate the process.

As conceptualized by Becker et al., an HCMS represents a significant departure from conventional approaches to HR measurement described above. The first point of difference is that a HCMS needs to focus on the implementation of firm strategy. As such, the measures included in the scorecard must be based on the strategy implementation process that is unique to each firm, and as such, the measures included in the HCMS may differ dramatically from firm to firm. Thus, the development of an HCMS begins with developing a clear understanding of firm strategy and the objectives that the firm is trying to achieve. These objectives are then translated into HR “Deliverables” (Becker et al., 2001), or the specific employee behaviors that are required to help the firm implement its strategy. Not only are such processes likely to be causally ambiguous (i.e., outsiders to the firm will have a difficult time understanding them in toto), they are also likely to be long-linked with the firm’s strategy (path dependent). For

example, if a bank hopes to increase its revenue stream through cross-selling of its products and services, then the metrics would be associated with those employee behaviors linked to cross selling. The metrics used in a manufacturing plant or consulting firm would be very different from those used in the banking context.

This approach differs from benchmarking or cost-benefit analyses of particular HR policies or practices in several ways. For example, a benchmarking study might be designed to help the firm understand how its benefits as a percentage of revenues compares to its target peer group, while a cost-benefit analysis study might be developed to help the firm understand the relative costs and benefits of opening a day care center, or of outsourcing the administration of the firm's benefits function. Both of these activities have their place, but they are very different from the purpose of an HCMS, which is designed to help managers (both line and HR) understand whether or not they are making progress towards implementing the firm's strategy. For example, determining that your firm's turnover rate among high potential managers is 14 percent, at a cost of $2.5 million a year, might be the result of a cost-benefit analysis project. This is potentially useful information. But the questions begging for response here are: Is this number too high or too low? If we wanted to lower this turnover rate, what would be the most effective courses of action? How would we measure progress toward our goal of turnover reduction, i.e., what are the intermediate steps? And finally, what would reducing turnover cost? Would this be a positive new present value investment? Said differently, benchmarking or cost-benefit analysis is designed to be short-term in nature and focused on answering a specific question. An HCMS, in contrast, is intended to be an ongoing management tool to help ensure that the firm is making progress towards its stated objectives.

One example of an HCMS is presented by Becker et al. (2001). As we noted above, we focus here on the broader construct of HCMS because we recognize that there may well be other approaches to achieving the same goal. As conceptualized by Becker et al., an HR Scorecard is designed to be a management tool focused on more rapid implementation of

strategy through the management of people. As such, it differs markedly from conventional approaches to HR, which includes cost-benefit analyses and benchmarking. Historically, HR managers have used conventional research methodologies borrowed from the social sciences to do cost-benefit analyses for HR. An HR scorecard is focused on neither of these elements, but may in fact incorporate elements of both. An example of an HR scorecard developed in a retail environment is presented in Figure 1.

Insert Figure 1 About Here

While the amount of detail that could be included in such a scorecard is almost without limit, managers are bounded not only by the amount of information they can process but also by the cost and availability of the data that they will need to collect for their HR Scorecard. The HR Scorecard approach presented by Becker et al. focuses on answering five key questions. These questions are designed to be arrayed in a causal order, beginning with the competencies of HR professionals who help design the HR management system (a leading indicator of a leading indicator) and ending in the employee behaviors which help to implement strategy. The five questions are as follows:

1. *Do we have the right HR Managers?* Do the HR managers in our firm have the competencies necessary to design & deploy HR management systems consistent with the needs of the business?

2. *Do we have the right HR practices, policies, and systems?* Have the appropriate HR management practices been designed & deployed throughout the firm? (E.g., is the firm using validated selection devices? Is the use of these tools resulting in better employee performance?)

3. *Do we have the right types of alignment?* From the perspective of the employees, have these practices been designed in ways that are internally consistent (internal alignment) and is the entire bundle consistent with the needs of the business (external alignment)?

4. *Do we have the right HR costs (relative to value delivered)?* Have the HR management processes been delivered in a cost-effective manner – not only via the HR function but throughout the business?

5. *Have we generated the right HR outcomes?* Are employees behaving in ways that help to rapidly implement strategy (e.g., cross-selling in a bank)?

Becker et al. also include in their scorecard a description of the objective (the construct to be measured), the actual measure in use, and a target or desired level to be achieved on the metric, and an initiative, or action to be taken that should drive progress toward meeting the target on the measure. Finally, Becker et al. note that scorecards are of little use in isolation, and have the greatest opportunity to drive desired behaviors when they are incorporated in a larger change management protocol.

Factors Influencing the Need for a Human Capital Measurement System

HCMS are a relatively nascent line of inquiry, and one in which the competence of practitioners may well exceed what is known in the body of academic research. Nevertheless, while it may be that all firms can benefit from an HCMS, in that most firms do a relatively poor job in developing their own internal human capital measurement systems (Becker et al., 2001), these systems can be expensive and time-consuming to develop. The economics of information literature suggests that firms will seek out relevant information until the point at which its marginal cost equals its marginal benefits (Stiglitz, 2001). Because of this, we expect both the need for, and economic returns from investments in, HCMS to vary across a number of important dimensions.

First, we believe that firm strategy will influence the need for human capital measurement systems. Porter's (1985) typology distinguishes firm strategies based on cost-reduction, product differentiation and market focus. Cost-based strategies tend to be more narrowly focused on reducing costs for processes that the firm already engages in. More value-enhancing strategies

tend to focus on the creation of new products or services that differentiate products in ways that customers value. Although cost-reduction strategies might require extensive operational cost-accounting based systems, innovation-based strategies—which require more risk-taking and tolerance of failure (Jackson, Schuler & Rivero, 1989)—are likely to require relatively more emphasis on human capital for effective innovation. This human capital can be a source of sustained competitive advantage if it results in creativity and innovativeness that produces a product differentiation strategy that in turn results in superior performance (Barney & Arikan, 2001).

> *Proposition 1*: Firms with differentiation or focus strategies will be more likely to adopt HCMS than will firms with cost-reduction strategies.

Because cost reduction strategies are often chosen by firms producing relatively standardized products in large quantities, implementation cost reduction strategies effectively implies manufacturing improvements. Product differentiation, on the other hand, often relies on creativity and innovativeness to develop new products. Therefore, we would expect that:

> *Proposition 1a*: Firms employing cost-based strategies will be more likely to focus on measures of efficiency; and,
>
> *Proposition 1b*: Firms employing focus or differentiation-based strategies will be more likely to focus on measures of employee contribution or effectiveness.

The diversity of a firm's product line should also have an influence over the propensity to develop an HCMS. When product lines are complex, it is reasonable to expect different skills to be required to design, manufacturer, and deliver those products. In this case, we would expect the need for HR measurement systems to be greater.

> *Proposition 2*: Firms with complex product lines will be more likely to develop HCMS.

Similarly, we expect the composition of the firm's business structure to influence the adoption of an HCMS. Teece (1980) was among first to begin to apply resource-based logic to the issue of corporate diversification. Prahalad and Bettis (1986) expanded on this point and emphasized the advantage of diversifying intangible assets across businesses because of the difficulty that competitors would have in imitating. In a firm that is simply structured—often single product lines in a single geographic market (e.g., a repair shop)—the information systems required are relatively unsophisticated, as it is often only one person (i.e., the owner-manager) who monitors all activities and makes all the decisions. As firms grow, the information required to compete grows dramatically. As firms become more divisionalized, fragmented, and operate in multiple locations, measurement systems of all types become more important—but the more difficult they are to develop as well.

> *Proposition 3*: Firms with divisionalized and fragmented organizational structures will be more likely to develop HCMS.

New product cycle time, or the length of time between significant new product introductions for a particular product, is also likely to affect the need for an HCMS. As firms grow, operating units become more differentiated, requiring more sophisticated planning and control systems and greater coordination of the resulting division of labor. Work within units becomes more homogeneous, but there is more diversity between units (Lawrence & Lorsch, 1967; Mintzberg, 1979). When cycle times are short, and the need for innovation is high, we expect that there is a high need for human capital. However, we expect that long cycle times for new products (e.g., pharmaceuticals) should increase the need for HR measurement, as recovery time is limited if the needed human capital cannot be developed or acquired; the longer that a project team works on a product, the more path dependent and inimitable they become.

> *Proposition 4*: Firms with long product cycle times will be more likely to develop an HCMS.

We also believe that measurement systems will be relatively more useful in turbulent economic conditions. Better information allows for more effective coordination, and faster decision-making and competitive responses. In a very uncertain market setting, the ability of a firm to remain flexible and rapidly change strategies may be valuable firm attributes (Kogut, 1991). Emerging industries tend to focus more on marketing and R&D, whereas mature industries focus more on production and manufacturing (where technology can substitute for human resources). In one of the few empirical studies on the resource-based view, Miller and Shamsie (1996) found that property-based resources helped performance in stable environments, while knowledge-based resources improved performance in more dynamic environments.

Although it may be true that HCMS are easier to develop and implement in less turbulent environments, managers will be relatively more attentive to the need for quality information on their own human capital when the external environment is shifting rapidly. For example, a large multinational corporation that builds computer hard drives found it necessary to consistently measure a wide variety of human capital measures to help reassign workers on a just in time basis (Barber, Huselid, & Becker, 1999). Similarly, many consulting and public accounting firms track the competencies, capabilities, and availability of their professional workforce to match the available talent with the needs of the customers.

> *Proposition 5*: Firms operating in turbulent economic and product-market environments will be more likely to develop a HCMS.

Similarly, the type of industry within which the firm operates is also likely to have an important impact on the need for an HCMS. For example, human capital related measurement systems are likely to be of greater need in knowledge intensive environments (i.e., those firms where intangible assets comprise a greater share of market value), where *a priori* information

creates more value for shareholders. In contrast, measurement systems in capital intensive environments—where technologies can substitute for human resources—are more likely to focus on processes.

> *Proposition 6*: Firms in knowledge intensive (as opposed to capital-intensive) businesses and industries will be more likely to develop a HCMS.

Finally, as Boudreau & Ramstad (1997) note, measurement systems are often designed to track scarce resources. As a general rule, as human capital becomes scarce or unique, firms are more likely to devote resources to its measurement. Moreover, we might also expect that firms might devote additional attention to key jobs when resources are scarce (Lepak & Snell, 1999). For example, in the pharmaceutical industry, we would expect the most intense measurement activities to be focused on R&D scientists, who presumable are a scare resource embodied in a key job.

> *Proposition 7*: Firms facing a scarce labor market for their core jobs will be more likely to develop a HCMS.

A model of propositions one through seven is presented in Figure 2.

Insert Figure 2 About Here

Factors Influencing the Efficacy of a Human Capital Measurement System

We have outlined above some of the factors likely to influence the adoption of an HCMS; we now describe some of the factors likely to be associated with the success of such systems should they be adopted. By "success" we mean HCMS are found to be useful in eliciting the desired behaviors from employees, that line and HR managers describe as helpful in making decisions about investing in people, and those which survive (e.g., are used for multiple years) over time.

While it may seem self-evident, measurement systems can only create value when they closely mirror the underlying phenomena under study. In the fields of biology and systems theory Conant and Ashby (1970) argued that "every good regulator of a system must be a model of that system," and this should be true for HCMS as well. Thus, we expect one of the most important drivers of HCMS success to be the extent to which it captures the process through which people create value in an organization. Kaplan and Norton (1996) proposed the concept of a strategy map (often referred to as a value chain), or a cause-effect relationship showing the process through which strategy is implemented, as a way of helping to communicate firm strategy throughout the workforce. An example of a strategy map is shown in Figure 3. We concur with Conant and Ashby that measurement systems will work best when they shadow the strategy implementation process.

Insert Figure 3 About Here

Proposition 8: HCMS based on clear conceptual models of the firm's value chain will be relatively more effective in eliciting desired employee behaviors.

The fields of psychometrics and econometrics also have much to offer the study of HCMS. In both fields, empirical research is grounded in statistically reliable and valid measures (Nunnally & Bernstein, 1994; Greene, 1994). The balanced scorecard literature has its genesis in accounting, which devotes relatively little attention to issues of reliability and validity. Yet, the issues of construct development and validation of measures is central to the process of model development (Nunnally & Bernstein, 1994), and we would argue, HCMS development as well.

Proposition 9: HCMS based on reliable and construct-valid measures will be relatively more effective in eliciting desired employee behaviors.

The literature on goal setting represents one of the most important and robust lines of research in all of the social sciences (Locke & Latham, 1990; Pfeffer, 1992), yet we know very little about the process of goal setting as it applies to human capital management systems. We believe that the setting of goals and objectives is likely to be an integral part of the process through which HR Scorecards create value in organizations.

From goal-setting research, we know that measurement systems work best when they have specific, difficult (but achievable) objectives tied to them (Locke, Shaw, Saari, & Latham, 1987); difficult goals lead to higher performance (Wright, 1990); and feedback can enhance the effect of specific, difficult goals (Langeland, Johnson & Mawhinney, 1998; Wilk, 1998) . Although conventional wisdom says that the more feedback employees get, the better, a recent meta-analysis concludes that feedback interventions may actually decrease performance (Kluger & DeNisi, 1996). Additionally, the sign of feedback—positive or negative—may be perceived differently by each employee. The point is that managers need to be aware that positive and negative feedback from an HR Scorecard can trigger categorically different reactions from employees.

> *Proposition 10*: Measurement systems with specific, difficult (but achievable) goals will be relatively more effective in eliciting desired employee behaviors.

As a corollary, we believe that widespread involvement in HCMS metric development will also likely be linked to the efficacy of these systems. Participating in measurement development tends to reduce employee resistance to such measures. As another caution to managers, however, employees will respond more positively to participation when they have greater levels of task information and involvement, and higher levels of experience and training (Locke & Latham, 1990).

> *Proposition 11*: HCMS designed with significant input of employees employee will be relatively more effective in eliciting desired employee behaviors.

Having a specific measurement system such as the HR Scorecard can, if properly implemented, motivate individuals to achieve the firm's strategic objectives. Knowledge of these objectives and feedback on them is key. However, providing *too much* feedback or having *too many* objectives may overwhelm employees. In addition to the HCMS, employees are faced with other measurement systems (e.g., financial measures such as ROA, ROE, etc.) at the firm, team and individual level. The HCMS must be designed so that employees do not pay so much attention to measurement that they will forget to change their performance in meaningful ways.

> *Proposition 12*: HCMS which a) do not contain redundant items or measures (mutually exclusive), and b) reflect each of the primary elements of the constructs under study (are exhaustive) will be relatively more effective in eliciting desired employee behaviors.

Another area that we believe is important to the successful implementation of HCMS is the frequency with which the metrics included in the scorecard are updated. Here there are two issues to consider. The first is the frequency with which the measures included in the scorecard are refreshed (i.e., new values are provided for the same measures). Most enterprise-level scorecards tend to be updated quarterly or annually. This may or may not make sense, depending on the variability of the underlying metric. Some metrics linked to human capital will be relatively stable and will not need to be updated very often, while other measures (e.g., turnover among high performing employees in a call center) are likely to be much more volatile. This volatility might be linked to regional economic conditions, or perhaps seasonality. We believe that it is important to match the "refresh rate" of the metric to its underlying characteristics.

The second issue concerns the frequency with which the actual measures included in the HCMS are changed to reflect learning or actual changes in firm's strategy. Developing an appropriate human capital measurement system and actually implementing one are two very different processes. Just as important as setting specific targets and milestones or setting the

company's vision, are communicating that vision to all employees and using feedback and learning to make adjustments to the targets (Kaplan & Norton, 1996).

Proposition 13: HCMS which have measurement "update" cycles matched to the pattern of variance of the underlying metric will be relatively more effective in eliciting desired employee behaviors.

Proposition 14: HCMS which are continuously adjusted on feedback and learning will be relatively more effective in eliciting desired employee behaviors.

A model of propositions eight through fourteen is presented in Figure 4.

Insert Figure 4 About Here

Conclusion

Based largely on the RBV and the economics of information literatures, in this paper we have presented a conceptual framework to help stimulate research on the design and implementation of effective human capital measurement systems. We believe that such systems are especially important for firms which compete on the basis of intangible assets, as conventional HR metrics, which often focus on the activities associated with the HR function (as opposed to the value creating activities of the broader workforce), encourage a short-term focus and can actually provide a disincentive to invest in long-run human capital development. This tendency is magnified by conventional accounting systems, which require that all people-related investments be expensed in the current period, even though these investments may continue to provide value for many years. Unlike investments in buildings, which are depreciated over their useful lives, managers pay for all investments in people out of the current years' earnings. For managers who are often paid based on earnings, this provides a considerable disincentive to invest in people (Becker et al., 2001).

While our comments have primarily been directed towards the development of internal or managerial human capital measurement systems, we believe that these ideas also have implications for the broader debate about the development of measurement systems for external reporting (see Lev, 2001). The accounting profession devoted considerable resources into what was then called HR accounting in the early 1970s (see Flamholtz, 1989), which focused on the feasibility and acceptability of capitalizing investments in people on the firm's balance sheet. While those efforts were ultimately unsuccessful, given the rise in importance of intangible assets in the determination of shareholder wealth in the 1990s, external reporting for investments in HR has once again come to the attention of the accounting and finance professions. Given the importance of intangibles assets in the determination of firm performance, the accounting profession has turned its attention to developing measurement systems to begin to track these assets. Consider the comments made in October, 2001 by Harvey Pitt, Former Chairman of the Securities and Exchange (SEC) Commission:

> "We may need to reconsider whether our accounting principles provide a realistic picture of corporate performance…….While rules can be useful tools in achieving our reporting goals, such as comparability and verifiability, they are not and should not be treated as ends in themselves - rather, the goal is clear, verifiable information. When rules get in the way of providing clear, reliable information to investors, then it is time to change them. We could consider, for example, whether financial disclosure would be more relevant if this picture contains more information about intangibles, and, if so, whether that information would be contained inside or outside financial statements. Of course, we would work closely with FASB [Financial Accounting Standards Board] in any such undertaking."

If the HR community does not want to be held accountable by metrics designed by accountants, we would encourage increased attention to the development of HCMS. While the SEC deliberates the role and measurement of intangibles in front of the US Congress and prepares to issue directives on disclosure of intangibles, the HR Community has been largely absent in this debate. To our knowledge, there are no major initiatives underway on the measurement of intangibles by any of the major organized bodies in this area, including the

Academy of Management, SIOP, or SHRM – despite the latter representing nearly 175,000 practitioner members.

In summary, we see the increasing emphasis on HCMS to be a useful development in the management of human capital. This is truly an area where practical application has outstripped academic progress. Progress will be greatest when what we know from the areas of performance appraisal, psychometrics, and information economics is applied to this burgeoning area of inquiry. We hope that this paper will help to stimulate such application, and encourage the broader field of HR to contribute to the debate on the best way to measure the returns from investments in people.

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Figure 1: Sample HR Scorecard: Simple Retail Example

HR Scorecard	Objective	Measure	Target	Initiative
HR Deliverables	• Sales associates create exceptional buying experience	Mystery Shopper Ratings on: • product knowledge • helpfulness • courtesy	• average rating 90% • no rating below 70%	• Sales Training • Strategic Focus Initiative (Learning Map)
HR Efficiency	• Associate training by marketing deadline • Training costs at or below industry norm	• % associates trained by deadline • actual/ industry norm	• 100% trained • 90-100% of industry norm	• Sales Training • Strategic Focus Initiative (Learning Map)
HR Alignment	• Elements of HR system support strategic sales behaviors	• Alignment Index	• No negative ratings • average rating of +50	• Develop partnerships with line managers • Track progress of implementation
High Performance Work System	• HR practices are designed and implemented to support strategic objectives	• % receiving performance appraisal • % pay at risk for specified behaviors	• 100 % • 25%	• Develop partnerships with line managers • Track progress of implementation
HR Manager Competencies	• HR managers possess competencies that are linked to the needs of the business	• Rating on validated competency assessment tool (360)	• Average competency rating 85th percentile	• Targeted in-house and external development programs • Special developmental projects

Figure 2
Factors Influencing the Need for an HCMS

The need for an HR Scorecard will be:

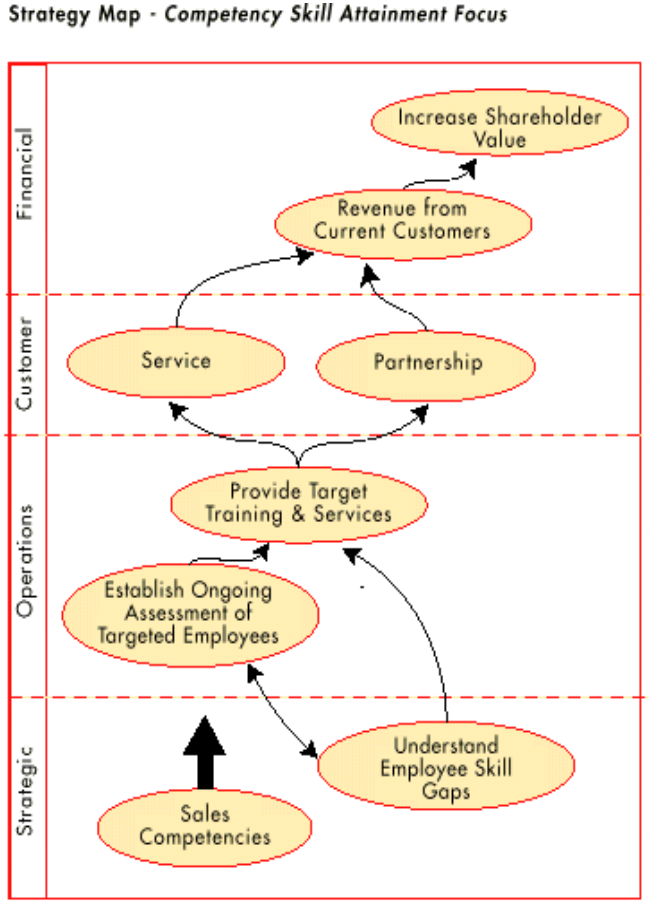
Factor	Low →	High
1. Strategy	Cost-based	Differentiation-Based
2. Product Line	Simple	Complex
3. Structure	Centralized	Divisionalized
4. Environment	Stable	Uncertain/ Rapid Change
5. Industry	Capital Intensive	Knowledge Intensive
6. New Product Cycle Time	Short	Long
7. Core Human Capital	Abundant	Scarce

Figure 4
Factors Influencing the Efficacy of an HCMS

An HR Scorecard will be:

Less Effective	→	**More Effective**
8. Model not linked to strategy		**Scorecard closely models strategy implementation process**
9. Invalid/untested measures		**Construct-valid measures**
10. Vague goals or action plans		**Goals and action plans defined**
11. Employees unaware of Scorecard		**Scorecard communicated to employees**
12. Many measures		**Measurement focuses on the critical few**
13. Measures updated annually		**Measurement update linked to underlying cycle time**
14. No follow-up or modifications		**Feedback & learning used to adjust system.**

Figure 3
Sample Strategy Map



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