

RETHINKING UTILITY ANALYSIS: A STRATEGIC FOCUS¹

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Abstract

Utility analysis is a technique which allows for the estimation of the financial impact of human resource (HR) interventions. While utility analysis methods have been available for decades, their application is still not widespread. Some argue that this is because managers do not understand the techniques and suggest that allowing managers to participate in the analysis would increase understanding and, as a result, use and acceptance of utility analysis. The current work posits that translating the value of HR interventions into financial terms may not be necessary. It may be more useful to determine the direct impact of HR programs on employee behaviors and attitudes. The impact of these changes on the bottom line may then be determined. Building upon the recently proposed multi-attribute utility analysis and the strategic perspective offered by the Balanced Scorecard, this paper presents a strategic utility analysis method. Strategic utility analysis requires that multiple outcomes, not only financial, be considered in order to determine the utility of a given HR intervention. It further stipulates that these outcomes should come directly from the company's business strategy. The strategy should imply certain organizational capabilities and strategic utility analysis should measure the contribution of HR interventions towards building these specific capabilities.

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Rethinking Utility Analysis: A Strategic Focus

Introduction

Frustrated by what is generally considered an insufficient investment in human capital development programs, the field of human resource management has been searching for ways to better assess the value of these programs. The general argument is that if the impact that human resource programs have on the financial bottom line could be evaluated, the company's decision makers would be more willing to allocate resources to further develop these programs. With this idea in mind, researchers have devised several *utility analysis* techniques which can help translate traditional HR measures, such as validity coefficients and statistical distributions, into estimates of monetary profit (Brogden, 1949; Schmidt, Hunter, McKenzie & Muldrow, 1979; Cascio & Ramos, 1986; Raju, Burke & Normand, 1990; Raju, Cabrera & Lezotte, 1996).

Unfortunately, after years of applying and fine tuning these techniques, researchers are puzzled by the negative reaction utility analysis produces in line managers and top executives. For instance, Latham and Whyte (1994) found that using utility analysis to influence managers decisions to implement a selection procedure actually lowered their support for the intervention. Some researchers think it is a question of presenting utility information in a way that managers are better able to understand (Macan & Highhouse, 1994; Hazer & Highhouse, 1997). According to them, managers will not accept the results of utility analysis unless they really understand how it works. Unfortunately, attempts to present more understandable utility information, while having a low-to-moderate positive effect on acceptance, still resulted in disappointingly low acceptance levels (Carson, Becker & Henderson, 1998).

Others have suggested that involving managers in the utility analysis process would increase their understanding and, consequently, their acceptance of the results (Rauschenberger & Schmidt, 1987; Cronshaw, 1997). While studies on the effects of participation have shown it to increase acceptance of strategic decisions, performance appraisal systems and organizational change efforts (Roth, Segars & Wright, 1998), no study has specifically examined the effect of participation on the acceptance of utility analysis information.

But even if we could prove this effect of participation on acceptance, it is still discouraging that we might be trying to build the respectability of HR programs using a set of techniques which appear to have even less face validity than the programs themselves.

In other words, the problem of how to convince the organization as to the importance of HR practices has been translated into a more complicated problem: how to convince organizations of the importance of utility analysis as a reflection of the importance of HR practices!

Some researchers argue that perhaps utility analysis has gone too far. Utility analysis is based on the assumption that money is the only language that is clearly understood by the organization decision makers. However, managers might have more complicated, perhaps multidimensional or even qualitative, models of what they expect from investments in HR. Roth and Bobko (1997) have proposed a *multi-attribute utility analysis* which attempts to translate the benefit associated with a given human resource practice into an array of units (not necessarily monetary) that reflect the kind of information managers typically consider in their decision making processes.

This interesting proposal raises the following question: How can we know the specific attributes managers are interested in, so that we can try to translate the utility of HR practices into those units? In order to answer this question, one must necessarily examine what the objectives of the organization are and how managers try to achieve those objectives. In other words, the utility of HR practices will be a function of how much those practices help the firm achieve its objectives, thus our label "Strategic Utility Analysis". This view of utility analysis, as we will see, is very much in line with modern views of human resource management as instruments to achieve strategic objectives (Wright & McMahan, 1992).

Interestingly, when one looks at the strategic management literature to try and understand how top executives draw the internal (resource allocation) and external (market positioning) master plans for their organizations, the "financial-only" assumption underlying traditional utility analysis seems to vanish. One of today's most influential and widespread tools of strategic measurement, Kaplan and Norton's *Balanced Scorecard* (1992, 1996a, 1996b), decomposes an organization's strategic intent into four main components, only one of which is specified in financial terms! If we want the HR department to play the role it should in the implementation of strategy and in the achievement of sustained competitive advantage (Wright & McMahan, 1992), we first need to understand how strategic value is measured by the organization to then translate the utility of our interventions in these very units.

In summary, this paper argues that, in fact, utility analysis might have gone too far in its attempt to bring human resource utility down to exclusively monetary terms. We agree with the agenda of multi-attribute utility analysis, but go a little further to suggest that the

attributes or dimensions of utility analysis need to be drawn directly from key strategic considerations. The four perspectives of the Balanced Scorecard may be useful in identifying important dimensions that should be measured in order to determine the utility of a HR intervention.

Multi-Attribute Utility Analysis

Utility analysis seeks to determine the value of job performance in dollars that results from the use of a human resource program such as selection. Thus, it only considers one, financial outcome of human resource interventions. Roth and Bobko (1997) argue that decision makers consider various outcomes when evaluating new programs. That is, there are multiple factors which influence decisions regarding usefulness. Based on this belief, they offer a multi-attribute utility analysis (MAU) which allows for the incorporation of multiple outcomes into the decision making process.

MAU analysis requires that decision makers first make a list of attributes that they consider important for making the final decision. The authors present an example of a selection system for which relevant attributes may include diversity, legal exposure, and organizational image in addition to increased value of job performance. Each of the chosen attributes must be measured by a common metric, for example effectiveness points, and combined into a single composite number which represents the benefit of each of the possible interventions. The aforementioned example actually shows a reversal in the decision made using multi-attribute utility analysis versus that which would have been made using traditional utility analysis.

MAU analysis is presented as having the added advantage of requiring the participation of decision makers in choosing, measuring and weighing the relevant attributes, and this participation is believed to increase acceptance of final recommendations. But the most important value of MAU is that it may offer a representation of utility that fits better with the multiple outcome models decision makers need in order to run their businesses. As Kaplan and Norton put it (1996), imagine entering the cockpit of a jet airplane and observing that there is only a single instrument measuring "airspeed". How would you feel about flying on that plane? Even if the pilot did an excellent job on airspeed, how could he avoid colliding with tall mountains or running out of fuel? Pilots need information from a large set of indicators to navigate an airplane. "Why should we believe that executives need anything less than a full battery of instrumentation to guide their journey?" (Kaplan & Norton, 1996b: 55).

Like many of the financial measures of organizational performance, traditional utility analysis might place too strong a focus on short-term outcomes (e.g. Kaplan & Norton, 1993). While the dollar value of performance may be an important indicator of today's performance it may not account for the factors that will determine future performance such as the capacity of the workforce to adapt to changing market conditions. In short, there are many considerations which may not necessarily be financial in nature but which may provide the intangible value which constitutes the basis for future returns.

The Balanced Scorecard

Kaplan and Norton (1992) first introduced the Balanced Scorecard as a performance measurement system which offered a “balanced presentation of both financial and operational measures.” The Balanced Scorecard encourages managers to supplement traditional financial measures with measures of performance from three other perspectives: *customer, internal business processes, and learning and growth*. The Balanced Scorecard allows managers to monitor financial results while keeping track of progress in building the capabilities and intangible resources that may be necessary to maintain the company's competitive advantage in the future.

The Balanced Scorecard includes a small number of measures from each of the four perspectives. The particular measures that are selected will depend on the strategy of the business unit and its stage of development. The financial perspective includes measures related to revenue growth and mix, cost improvements and asset utilization. The customer perspective deals with measures of customer satisfaction, customer profitability, market share, customer acquisition and customer retention. The internal business processes perspective assesses the effectiveness and efficiency of the company's value chain in providing for its customers. It includes such things as measures of cycle time, quality and cost of key processes. Finally, the learning and growth perspective identifies the resources that the organization must build in order to create long-term competitive advantage. This perspective taps into three main kinds of infrastructure: systems, organizational procedures and people. The people sub-component might include measures such as employee satisfaction, employee retention, and employee skills.

After using the Balanced Scorecard for a number of years, Kaplan and Norton recognized its value as a strategic measurement system which can help “link a company's long-term strategy with its short-term actions” (1996a). In order to obtain this strategic value, the company's vision must first be translated into a specific set of measures within

each of the four perspectives. For each of these perspectives, objectives are set and communicated throughout the organization. The balanced set of objectives included in the scorecard helps departments and individuals set their own objectives. The scorecard also helps companies integrate their business and financial plans, helps them allocate resources, set targets and intermediate milestones and align their different initiatives. Finally, by aiding in the monitoring of results, the Balanced Scorecard provides an opportunity for strategic organizational learning.

The multiplicity of measures advocated by the proponents of the Balanced Scorecard does not neglect the key importance of financial outcomes. Current and future financial success is seen as a requirement for the survival of the organization and, consequently, all measures must ultimately impact financial outcomes. For this reason, in addition to the set of measures, a Balanced Scorecard incorporates a set of hypothesized cause-effect relationships linking different indicators which, when viewed as a whole, represent the organization's theory of the business. These cause-effect links set up paths which ultimately connect each of the measures to financial outcomes. For example, a company might hypothesize a cause-effect link between employee skills and process quality, between process quality and customer loyalty, and between customer loyalty and financial return.

By explicitly articulating the theory of the business in this way, managers can empirically test the hypothesized links between performance drivers and outcomes. So, based on the hypothesized model, a company can try to forecast how much and how soon an increase in, say, employee skills, will affect process quality. If the expected effect is found, this will help reassure the company of its current strategy. If it is not found, the company may decide to revise its theory of how the business works or it may decide that it has not chosen the appropriate objectives for its strategy or it may even question certain aspects of its strategy. Thus, the Balance Scorecard can serve as a catalyst for organizational double-loop learning (Argyris & Schön, 1978).

The Balanced Scorecard philosophy suggests that *organizations should not expect the HR department to be able to translate the impact of every one of its initiatives into financial terms*. In fact, managers have admitted that an array of measures, many of which may not be financial in nature, are required in order to pilot the business towards its strategic goals. What the HR department needs to do is to show that its initiatives have a positive impact on the measures that have been identified as strategic by the organization's top management, in whatever units those measures may be specified.

Strategic Human Resource Management

Strategic HR Management (SHRM) focuses on “the pattern of planned human resource deployments and activities that are intended to enable the firm to achieve its goals” (Wright & McMahan, 1992:298). The basic premise is that in order to successfully pursue a particular strategy, a specific set of HR practices is required (Dyer, 1984; Schuler & Jackson, 1987a). Some researchers have shown that alignment between strategy and HR practices is related to firm performance (Schuler & Jackson, 1987b; Gomez-Mejia & Balkin, 1992; Delery & Doty, 1996). The Strategic HR Framework stipulates that a company’s business strategy should determine the critical organizational capabilities necessary for achieving the chosen strategy and that HR practices are responsible for building the required capabilities (Yeung & Berman, 1997).

Each of these tasks, identifying capabilities based on business strategy and setting up practices to create those capabilities, has measurement implications. That is, companies must assess both (a) the extent to which current capabilities are aligned with the strategy, and (b) how effective the current HR practices are at generating the necessary capabilities. These measurement requirements are compatible with the Balanced Scorecard philosophy. The learning and growth and internal business perspectives provide measures of the impact of the company’s HR practices on the creation of organizational capabilities. Connections between these two and the customer and financial perspectives provide complementary measures that let the company assess the linkage between their capabilities and the achievement of their business goals.

One advantage of using the Balanced Scorecard as a strategic measurement system is that it requires that HR practices be an integral part of the managerial actions taken in order to achieve the firm’s objectives, rather than their more traditional status as complementary initiatives. Also, given the overwhelming number of potential HR measures that are available, a strategic scorecard-like methodology can help companies narrow this number down to a few key measures which are considered important by the rest of the organization.

Strategic Utility Analysis

Notice that, whereas the goal of scorecard measurement is to keep track of the evolution of the company’s performance using an integrated set of complementary indicators, the goal of utility analysis is to assess the contribution made by one specific initiative to the organization’s objectives. In this section we propose an approach to utility

analysis that is based on the multi-attribute philosophy and incorporates key concepts drawn from the Balanced Scorecard methodology.

From MAU analysis we borrow the idea that the utility of a HR intervention is best represented as an array of outcomes, not all of which need to be financial in nature. As it is argued by MAU advocates, this alternative may better reflect decision making processes in the organization and may, therefore, yield more useful information. The MAU approach, however, raises the problem of the selection of the specific attributes to be included. We suggest that the answer to this question is to be found in the strategic measurement system of the organization, and we propose as a concrete alternative, the Balanced Scorecard system. By selecting the attributes this way, not only can we provide more useful evaluations of utility, but we emphasize and support the role of HR management as a strategic tool.

According to SHRM, the organizational capabilities which are required by a company's strategy are built by its HR policies. Thus, HR practices should be evaluated by determining their impact on these capabilities. A second level of evaluation can then be used to determine the link between the organization's capabilities and its strategic objectives. If we consider the four perspectives of the Balanced Scorecard, HR practices appear to have a more direct impact on the learning and growth and the internal business processes perspectives. That is, they should directly affect employee skills, attitudes and behaviors, and the performance with which internal business processes are carried out. These, in turn, will determine customer and financial related outcomes. In other words, within the cause-effect framework articulated by the company's scorecard, we will most likely find direct connections between HR practices and the measures from the learning and growth and internal business processes perspectives. It is likely, then, that the appropriate attributes for utility analysis are to be found within these perspectives.

Of course, there might be situations where direct links can be found between a particular HR program and customer-related indicators, or even between a HR program and a financial outcome. If that is the case, attributes can be derived from measures from these perspectives as well. In general, however, this might be the exception (and not the rule), and chances are that few attributes will be easily drawn from these sets of measures. The point here is that we need to measure utility in units that make sense to the organization, whether or not these include financial units, and assuming that in most cases they will not.

This idea is consistent with what Boudreau and Ramstad (1997) referred to as "illuminating the middle ground". That is, HR measurement systems should gather evidence showing the impact of HR practices on employee behavior and then show how the

combined changes in behavior produce financial results. This second part, however, is not, strictly speaking, the responsibility of the HR department, since those links appear as part of a company-wide Balanced Scorecard or strategic plan. In any case, as the company's history confirms empirically the causal model underlying the Balanced Scorecard, it becomes less and less relevant that we find exact dollar values for each HR initiative.

Consider the case of a retail bank, referred to as Metro Bank, which is used by Kaplan and Norton (1996b) to illustrate the use of the Balanced Scorecard methodology. The measures that this bank has identified as key given its strategic intent are:

- Learning and growth perspective: development of strategic skills, access to strategic information, alignment of personal and organizational goals and employee satisfaction.
- Internal business perspective: capacity to understand customer segments, to develop new products and to cross-sell; capacity to shift customer requests to appropriate channels, to minimize problems and to provide a rapid response.
- Customer perspective: customer confidence in financial advice provided by the Bank and customer satisfaction through superior execution.
- Financial perspective: breadth of revenue mix, operating efficiency and overall returns.

The bank's model further specifies hypotheses about cause-effect links between these measures. The hypothesized links are between the learning and growth and the internal business process perspectives, between the latter and the customer perspective, and finally, between the customer and the financial perspectives.

Given this strategic measurement system, suppose the bank wants to assess the utility of a new training program in sales and marketing which focuses on (a) sales skills, and (b) use of the bank's newest information systems to support sales and marketing activities. Out of all the measures in the bank's Balanced Scorecard, which ones should be most directly impacted by a training program if it were successful? Within the learning and growth perspective, it should be able to impact the level of strategic skills, access to strategic information and, perhaps, employee satisfaction. Within the internal business process perspective it should impact the capacity to cross sell and to understand customer segments. If we look at the next two perspectives, customer and financial, we may find it difficult to show a direct impact that is not mediated by the causal links already specified by the model.

Based on this scorecard, a utility analysis could focus on translating the effectiveness of the training program into whatever units are used by the company to assess the five aforementioned indicators. Perhaps it can be shown that the training program increases by 15% the level of strategic skills of each participant as measured by end of the year performance appraisals, that it decreases the time to access key information by an average of 45 seconds according to data obtained by the IT department, that it increases by one point employee satisfaction according to the annual climate survey conducted by an outside consultant, that it increases by 10% the rate of customer acceptance of product offerings according to data collected by the marketing information system and that it increases the number of successful cross sales to 45% of total sales from a previous 27%.

If such information can be provided to the bank's top management, they should then be able to make the connection between these indicators and financial outcomes using their Balanced Scorecard or strategic plan. In fact, as the overall model is fine tuned and quantitative estimates are established for each of the hypothesized links, the model will be able to yield estimates of the dollar value of the training intervention. But it will be an estimate that partials out the effects of other interventions and that considers a more complete set of effects and side effects of the HR program.

So, strategic utility analysis does not attempt to measure directly the effects of HR practices on financial outcomes. It requires that a number of key attributes, typically not financial, be identified so that the impact of HR programs on these attributes can be measured. It further requires that the key attributes be derived from the company's strategy. Clearly not all companies use a formal Balanced Scorecard, nonetheless, they should have an articulated strategy with an idea as to which organizational capabilities are necessary to achieve the strategy. This should guide the choice of attributes. Strategic utility analysis, therefore, encourages Strategic HR Management by forcing companies to examine their strategy and its implications before attempting to measure the effectiveness of their HR practices.

Conclusions

Strategic utility analysis brings together agendas and methods from the areas of utility analysis, strategic human resource management and strategic measurement in an attempt to assess the strategic value of specific human resource interventions. Strategic utility analysis shares the philosophy of multi-attribute utility analysis by viewing the utility of HR interventions as multidimensional rather than unidimensional. There are often outcomes

other than short-term returns that decision makers consider to be important when assessing the value of potential HR programs.

Multi-attribute utility analysis, however, does not provide clear answers as to what the other outcomes or attributes ought to be. Strategic utility analysis suggests that the attributes be drawn from the organization's strategic measurement system. Doing so not only provides a useful assessment of utility, but also contributes to strengthening the strategic role of human resources in organizations. Different strategies will require different organizational capabilities and HR interventions should contribute directly to building these capabilities. Thus, the value of HR programs should be determined by assessing how well they help build the organization's strategic capabilities.

Latham (1988) questioned the belief that organizational decision makers want information regarding the dollar value of human resource interventions. He reasoned that utility analysis is not used much in practice because there is no demand for it. That is, decision makers do not need to know the financial impact of HR interventions in order to make decisions regarding the adoption of new programs. If they are aware of the impact that HR interventions have on learning and growth and internal business processes and the links between these perspectives and financial outcomes, then all they need to know in order to make a decision is, What is the impact of the HR policies on the skills, attitudes or behaviors of the employees? The decision maker should already have measures indicating the impact that these changes will then have on the bottom line.

Perhaps decision makers are skeptical of utility analysis because it tries to make too great a leap. They more likely want to know how HR interventions affect business processes with the understanding that changes in the business processes should lead to changes in financial outcomes. Therefore, we should be more careful to illuminate the middle ground (Boudreau & Ramstad, 1997) and measure well the direct impact of our HR interventions. This is the information that decision makers expect and want. They should be able to then tie these outcomes to short and long-term financial results.

References

- Argyris, C. & Schön, D. A. (1978). *Organizational Learning: A Theory of Action Perspective*. Reading, MA: Addison-Wesley.
- Boudreau, J. W. & Ramstad, P. M. (1997). Measuring Intellectual Capital: Learning From Financial History. *Human Resource Management*, vol. 36, pp. 343-356.
- Brogden, H. E. (1949). When Testing Pays Off. *Personnel Psychology*, vol. 2, pp. 171-185.
- Carson, K. P., Becker, J. S. & Henderson, J. A. (1998). Is Utility Really Futile? A Failure to Replicate and an Extension. *Journal of Applied Psychology*, vol. 83, pp. 84-96.
- Cascio, W. F. & Ramos, R. A. (1986). Development and Application of a New Method for Assessing Job Performance in Behavioral/Economic Terms. *Journal of Applied Psychology*, vol. 71, pp. 20-28.
- Cronshaw, S. F. (1997). Lo the Stimulus Speaks: The Insider's View on Whyte and Latham's the Futility of Utility Analysis. *Personnel Psychology*, vol. 50, pp. 611-615.
- Delery, J. E. & Doty, D. H. (1996). Modes of Theorizing in Strategic Human Resource Management: Tests of Universalistic, Contingency, and Configurational Performance Predictions. *Academy of Management Journal*, vol. 39, pp. 802-835.
- Dyer, L. (1984). Linking Human Resource and Business Strategies. *Human Resource Planning*, vol. 7, pp. 79-84.
- Gomez-Mejia, L. R. & Balkin, D. B. (1992). *Compensation, Organizational Strategy, and Firm Performance*. Cincinnati: South-Western.
- Hazer, J. T. & Highhouse, S. (1997). Factors Influencing Managers' Reactions to Utility Analysis: Effects of SD_Y Method, Information Frame, and Focal Intervention. *Journal of Applied Psychology*, vol. 82, pp. 104-112.
- Kaplan, R. S. & Norton, D. P. (1992). The Balanced Scorecard – measures that drive performance. *Harvard Business Review*, January/February, pp. 71-79.
- Kaplan, R. S. & Norton, D. P. (1996a). Using the Balanced Scorecard as a strategic management system. *Harvard Business Review*, January/February, pp. 75-85.
- Kaplan, R. S. & Norton, D. P. (1996b). Linking the Balanced Scorecard to Strategy *California Management Review*, vol. 39, pp. 53-79.
- Latham, G. P. (1988). Human Resource Training and Development. *Annual Review of Psychology*, vol. 75, pp. 545-582.

- Latham, G. P. & Whyte, G. (1994). The Futility of Utility Analysis. *Personnel Psychology*, vol. 47, pp. 31-46.
- Macan, T. H. & Highhouse, S. H. (1994). Communicating the Utility of Human Resource Activities: A Survey of I/O and HR Professionals. *Journal of Business and Psychology*, vol. 8, pp. 425-436.
- Raju, N. S., Burke, M. J. & Normand, J. (1990). A New Approach for Utility Analysis. *Journal of Applied Psychology*, vol. 75, pp. 3-12.
- Raju, N. S., Cabrera, E. F. & Lezotte, D. (1996). Utility Analysis When Employee Performance is Classified into Two Categories. Paper presented at the *11th Annual Conference of the Society for Industrial and Organizational Psychology*. San Diego, CA, April.
- Rauschenberger, J. M. & Schmidt, F. L. (1987). Measuring the Economic Impact of Human Resource Programs. *Journal of Business and Psychology*, vol. 2, pp. 50-59.
- Roth, P. L. & Bobko, P. (1997). A Research Agenda for Multi-Attribute Utility Analysis in Human Resource Management. *Human Resource Management Review*, vol. 7, pp. 341-368.
- Roth, P. L., Segars, A. H. & Wright, P. M. (1998). The Acceptance of Utility Analysis: Designing a Model. Unpublished manuscript.
- Schmidt, F. L., Hunter, J. E., McKenzie, R. C. & Muldrow, T. (1979). The Impact of Valid Selection Procedures on Workforce Productivity. *Journal of Applied Psychology*, vol. 64, pp. 609-624.
- Schuler, R. S. & Jackson, S. E. (1987a). Organizational Strategy and Organizational Level as Determinants of Human Resource Management Practices. *Human Resource Planning*, vol. 10, pp. 125-141.
- Schuler, R. S. & Jackson, S. E. (1987b). Linking Competitive Strategies with Human Resource Management Practices. *Academy of Management Executive*, vol. 1, pp. 207-219.
- Wright, P. M. & McMahan, G. C. (1992). Theoretical Perspectives for Strategic Human Resource Management. *Journal of Management*, vol. 18, pp. 295-320.
- Yeung, A. K. & Berman, B. (1997). Adding Value Through Human Resources: Reorienting Human Resource Measurement to Drive Business Performance. *Human Resource Management*, vol. 36, pp. 321-335.

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