Selection of reporting measures under varying performance relevant scenarios

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Abstract

This study is an exploratory investigation of the ability and willingness of individuals to vary their selection of reporting measures across situations that differ in the performance relevance of these measures. As information needs change over time, this ability to select decision relevant information given a particular situation would be a desired skill for managers dealing directly with firm operations. However, prior research provides some evidence that managers may not be successful in independently identifying and extracting what is relevant for a given situation.

This study uses two parallel scenarios which differ in the level of organization critical skills embodied in the human resources of each organization. One has a high level of experience-based skills of value to the firm while the other has a low level. In the second, controlling costs is of more importance than managing human resources. The selection of relevant measures for the scenarios requires attention to their differing job requirements and the consequent differing level of relevance of human resources and costs to desired outcomes. Results indicate that managers react to current specific performance needs and do discriminate between jobs with high versus low relevance of human resources to success when selecting performance measures but not when allocating time to tasks. However, the discrimination with respect to measures is not universal and financial measures continue to be heavily relied upon.

Keywords: information choice, managerial reporting, relevant performance measures, intangibles, human resources

INTRODUCTION

Surveys of managers by the Institute of Management Accountants (IMA) indicate the ability to identify and provide decision relevant information as one of the most desired skills for managerial accountants (Siegal and Sorensen 1994, Siegal 1996). While the ability of managerial accountants to supply relevant information is desirable, it would also be desirable to have their efforts supplemented by input from front line managers. This relevant information is not static: What is provided should change over time as organizational and environmental conditions change (Johnson and Kaplan 1987, Maskell 1991; Nanni et al. 1992, Drucker 2002, Leitner 2005). One major change in the recent past relates to the importance of intangible assets. While intangibles have always been significant contributors to human economic progress (Basu and Waymire 2008), currently more and more attention is being paid to human resources. As noted by Kaplan & Norton (1996, p. 3) when discussing the information age environment, the "ability of a company to mobilize and exploit its intangible or invisible assets has become far more decisive than investing and managing physical, tangible assets." Intangible rather than hard assets are now often cited as accounting for a significant portion of firm value (Shellenbarger 1998, Drucker 2002, Leitner 2005) and research in financial accounting has demonstrated the value relevance of voluntarily disclosed intangible assets to investors (Aboody and Lev 1998). Bruce Pfau, quoted in Fortune's annual survey of most admired companies (Kahn 1998), stated that "…the single best predictor of overall excellence was [a] company's ability to attract, motivate, and retain talented people." Human resources are a potentially crucial intangible asset, depending upon specific situational or structural firm characteristics. Peter Drucker (2002, p. 76) believes that knowledge workers, while a minority of the total workforce, "have become the major creators of wealth and jobs."

Although human resources can be of considerable significance to firm success, and despite the steadily declining cost of tracking and reporting information, it is unclear to what extent managers identify human resource related information as relevant when it is a major influence on performance. One firm, the Austrian Research Technology Organization (ARC) (Leitner 2005), identified such information as important, and has developed a system to report intellectual capital. It helped them identify specific development and support needs of their research personnel. However, prior research (Carson et al. 1991) indicates a tendency for people to concentrate on current operational outcomes in their evaluations of the performance of others to the exclusion of other relevant factors even when information on other factors is directly presented and may be relevant. Research also indicates a tendency (Terpstra et al. 1996) to use information that is easily available and requires little effort rather than expending effort seeking out information that might be more relevant. Financial information related to the evaluation and control of operations is likely to be more familiar and easier to locate and use than is information on human resources. Even when nontraditional measures, such as those relating to human resources, are available it is unclear whether managers will extract and use the measures when appropriate.

The importance of human resource measures in a firm can depend upon circumstances and firm strategy (Ittner 2008, Skinner 2008) so selection of such measures should vary accordingly. Jobs differ in their need for communication skills, financial management skills, physical skills, the ability to predict the environment, or skill in retaining and developing subordinates. These differences lead to a need for differences in decision relevant information. Reported information can direct attention. However, prior research in judgment and choice (e.g.,

Pankoff and Virgil 1970, Connolly and Serre 1984, Simnett and Trotman 1989) indicates that individuals are often unable to distinguish what is relevant to a task from what is not. If many different measures in multiple areas are reported, will decision makers distinguish what is more relevant from what is less relevant?

This study is an exploratory investigation of the ability and willingness of managers, typically with about five years of experience, to select different decision relevant measures for jobs with different task requirements, specifically, to select measures related to the management of human resources when, and only when, relevant. This selection process requires an appreciation of differential job requirements and of the influence or lack of influence of current human resource management practices on future outcomes. This study investigates the use/nonuse of information on human resource related measures to evaluate managers, information that should be increasingly relevant as subordinates are more difficult to replace and have greater levels of experience-based skills relevant to firm success. This addresses the issue of the choice of measures related to the management of human resources at the departmental level, for an asset whose importance will vary within firms as well as across firms. This allows a fairly simple presentation of situations in which the differential value of these resources should be relatively clear.

The contribution of this experimental study is to extend the literature of performance measurement and reporting at the operational rather than the firm level. The results provide evidence that managers do select appropriate human resource performance measurements relatively more often for positions where those resources are relatively more important. The results also have practical implications for managers. If frontline managers can identify what is relevant to performance under the specific conditions they face, the task of maintaining an appropriate selection of measures to report will be easier than if they cannot or do not do so.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

A major goal of managerial accountants is to provide managers with the information needed to support optimal decisions in light of firm goals (Borthick 1992, Hiromoto 1991, Siegal and Sorensen 1994, Siegal 1996, Tongtharadol et al. 1991). Another goal is to help create an environment in which managers are motivated to pursue firm goals (Johnson 1992, Anthony 1989, Ansari et al 2004, Byrne and Pierce 2007). Reporting particular information communicates goals and can concentrate attention. However, as the cost of providing information declines, the question of what to report is increasingly being addressed by allowing managers to seek information in the underlying information stores as they wish rather than limiting access to information selected and periodically reported by others. Appropriate selection of information under these circumstances would depend on decision makers being able to identify what is relevant. Do managers appropriately identify that which is relevant? Can decision makers be best served by simply providing direct access to increasingly large data warehouses? The information set that could be provided is potentially very large: it includes information about any of the inflows, outflows, transactions, or relationships that occur from product/service conception through discontinuation for any or all of a firm's products/services. Appropriate information choice from this set becomes more critical as the level of competition increases, and more difficult as the information available expands. Managers who cannot acquire and properly interpret relevant information may not realize that attractive alternatives - or problems - exist, or may incorrectly conclude that an alternative is viable when it is not.

Changes in the environment or in the nature of the tasks involved or outcomes desired, can further complicate the issue of providing an optimal information set. Either those providing the dataset or those using it must change what is included over time as conditions change. Moving from a few large production batches to many small batches, a common practice when adopting just-in-time manufacturing, increases the relevance of startup cost information. Such costs may include substantial unanticipated losses in labor productivity and material yields (Dopuch and Gupta 1994). Changing from high to low inventory levels increases the need for timely information on incoming orders (Bruns and McKinnon 1993), and necessitates consideration of the relationship between customer and production lead times. Production managers want information on product costs, but may also want, at various times, information to help decide where process reengineering is called for, where to change plant layout, what resources to provide, or where excess capacity exists (Anderson 1995, Shank 1989, Shields 1995, Swenson 1995). Competitive pressure to improve operations may require attention to the provision of information in areas not previously addressed (Gupta and Gunasekaran 2005).

One area where information needs have been changing for many firms is related to intangible assets. Within intangible assets, human resources have been identified by many as particularly important (Drucker 2002, Hiltrop 1999, Leitner 2005). While competing firms generally have access to the same capital markets, fixed assets and suppliers, what ultimately differentiates organizations are the individuals who work for them: these are unique. Although their value will differ across and within firms, human resources often comprise valuable assets whose conscious management can contribute to firm competitive advantage and success. While this is true for all organizations, it is especially true for service organizations, the area of the U.S. economy currently providing the greatest job growth. The Economist (Anon 2012a, 2012b) notes that American exports of services such as architecture, engineering, finance, and "apps" are booming. Unfortunately, research by McKinsey & Company (Cliffe 1998) indicates that managers generally do not feel accountable for identifying, tracking and developing talent. Only 16% of senior managers surveyed "were confident that their company could identify its high and low performers" and only 7% felt that managers were held accountable for employee development.

Given the importance of human resources and the increasing availability of potentially decision relevant data, can one expect managers to move to extract and use new performance related information if it becomes appropriate to do so? Will they judge from current factors or assume that the same measures are relevant in any situation? Judgment modeling research (e.g., Larcker and Lessig 1983) typically represents a decision as the result of an analysis of the available cues by a decision maker. In order to be useful, these available cues must be gathered "in the context of particular hypotheses" (Fischhoff and Beyth-Marom 1983, p. 242), such as are generated by problem solving behavior. Managers must recognize that a problem exists before relevant cues can be selected and attended to, and organizational adaptation occur (Kiesler and Sproull 1982). Thus for the proper use of human resource related measures to occur, managers must be able to discern when such measures are most relevant and to then select them for use. Will managers do so?

Information selection has been investigated for decades and, unfortunately, numerous instances of suboptimal information selection and use have been detailed, even when well-motivated subjects are allowed considerable practice. Pankoff & Virgil (1970) found that the performance of financial analysts in forecasting stock prices was generally not a function of the information they acquired. Casey (1980) found that high loads of information increased decision

time but did not improve performance, indicating difficulty in selecting needed information from the information available. Abdel-Khalik and El-Sheshani (1980) interpreted the results of their experiment on prediction of default on debt as indicating participant lack of ability to select the right information. Connolly and Serre (1984) and Simnett and Trotman (1989) discovered that participants had difficulty distinguishing between high and low validity cues. Connolly and Thorn (1987) found underpurchase (acquiring less than the optimal quantity) and mispurchase (acquiring less useful information when more useful information was available) of information. It seems that, to some extent, information selection could be described as a trial and error strategy given some experimental results, and "[t]here seems little reason to believe that moving to a field [business] setting will facilitate evaluation of information sources, make their combination more optimal, or improve the balancing of information cost and error penalty" (Connolly and Wholey 1988.) Thus, prior research indicates that the mere provision of the appropriate information may not be optimal.

The sheer quantity of information available can compromise the ability to select appropriately (Cook 1993). If someone is asked to choose information from a limited set, and given direct and specific feedback on which items chosen are relevant, they do "learn" over time to choose that which is defined as relevant (Broder 2003, Rieskamp and Otto 2006). However, this is not spontaneous identification of what is relevant from what is available. Additionally, as Johnston et al. (2002, p. 256) note, "measuring everything" can be taken to mean "nothing is important". Managers engaging in direct access of firm data warehouses may be in this position if no one is providing feedback on what is most relevant. In the investigation of firms successful in making their reported measures useful, Johnston et al. (2002) found that a simple and clear structure of the measures that were most important to outcomes was present in all of the (successful) firms examined. In addition, these successful firms had managerial accountants who understood the organization and worked with those in other functional areas to facilitate the "collection, interpretation and dissemination of data." (Johnston et al. 2002, p. 257) Thus managers can provide valuable input to the process of identifying decision relevant information.

Returning to the issue of whether managers will choose the most relevant information, consider human resources. Although a firm's human resources can provide a competitive advantage and, in this case, it is important to manage them well (Pfeffer 1998, Becker and Huselid 1999), effective management cannot occur without certain conditions being met. Those being evaluated need to be able to seek firm objectives through the provision of resources and relevant information, and motivated to achieve them through appropriate performance evaluation and compensation. Those making performance evaluations for these managers must be able to combine firm goals and objectives with task requirements to determine what is decision relevant, have relevant information available for these measures, and be willing to use the information. Gomez-Mejia et al. (2012) note that the measurement of human resource performance is one of the most difficult issues for managers and that appropriate measures are needed to provide employees with feedback to help them achieve higher levels of performance. Wright and Snell (1998) present a model of strategic human resource management (HRM) and emphasize that such a model incorporates a number of assumptions. One is that "decision makers are able to identify all of the skills and behavior required of a given strategy" which would allow them to determine appropriate human resource performance measures.

Thus, metrics used to evaluate performance should be affected by "firm characteristics and operating environments" (Keating 1997). Bontis et al. (1999) suggest that since intellectual capital for each firm is unique, the selection of what is relevant to measure (e.g., skills, attitudes

or attributes other than human resource measures) must be driven by firm specific managerial needs and based on the long-term strategy of the firm. These are situation specific. There is evidence that appropriate identification of *relevant* HRM related measures can make a difference in firm outcomes. Swanson (1998) cites a study by G.E. Rosentreter that found a training program in communication skills for goal setting resulted in decreases in subordinate turnover that provided a 9:1 return on the training costs. MacDuffie (1995) notes that flexibility, a valuable skill in a rapidly changing environment, comes from broad employee skills which, in many jobs, develop over time and improve with length of job tenure. Developmental experiences during employment can increase the behavioral repertoires available to employees, allowing varied responses as needed, to the benefit of their employers (Wright and Snell 1998). Cliffe (1998) cites the knowledge economy, extreme levels of competition and employee mobility as factors increasing the need for organizations to attempt to retain their best employees. Since human resources are assets owned by the individuals, firm access to the knowledge embodied in the employees (rather than knowledge created by them now in firm information stores or policies and procedures) depends on the continued willingness of the individuals to stay. This willingness can be affected by management actions. Knowing what one ought to do in a given situation often depends on information.

For appropriate human resource related information to be available when needed requires someone to determine what measures are relevant for a particular decision maker and make sure such measures are available. Will managers identify human resource measures as relevant for positions where these resources are important to firm success? If not, might those who provide information need to highlight such measures in reporting to positions where they are important? Questions such as "Should jobs be assigned to those with the best skills or to those who need to develop those skills?" or "How costly is turnover?" or "What affects accident levels?" or "What does it cost to acquire and train an individual for a particular job?" may need to be answered before one can determine relevant performance measures for a particular position. Answering these questions requires information that may not be currently collected or reported. Flamholtz (1999) provides numerous examples of decisions that managers in organizations often make without the benefit of useful relevant information, information that could be provided by the organization's internal reporting system but is not. Organizations may not keep records on such things as the experience possessed by employees, the results that have been obtained by providing training programs or by rotation of managers through various jobs, or about the consequences of employee turnover or the differences in performance in similar areas under different managers with differing levels of skill in managing others. But if such information is determined to be useful, collection and retention could be implemented.

One would expect a rational manager to select performance measures for subordinates based on the tasks involved in the job and their relative importance to desired organizational outcomes. Do managers in fact tend to use appropriate measures? Research has demonstrated that people may have difficulty in identifying the appropriate drivers of performance. Dedrick and Dobbins (1991) found that subjects presented with instances of poor performance in which the only difference between performers was age concluded that young workers should be trained, but old workers should be moved to simpler jobs even though age was not an appropriate variable for differentiation for the task involved. Deming (1986) felt that variation in performance was often system- rather than person-related but that people rate performance as though the outcomes are primarily person related. Carson et al. (1991) provide some support for this contention. The authors found that when provided with person-based, system-based, and

outcome information, ratings were overwhelmingly due to the outcome information (productivity) even though the raters reported weighting all three types of information similarly in judgment formation. This implies a limited view of what constitutes relevant information.

As noted by Cappelli (2000), "different groups of employees warrant very different retention efforts." Those with skills that are in short supply or those who have high levels of organization critical skills should receive the strongest retention efforts. Barney (1991) suggests that sustainable competitive advantage comes from resources that are valuable, rare, difficult to imitate, and not substitutable. Cappelli's "groups that warrant high levels of retention efforts" qualify under this definition. Thus human resource related measures should have varying weight depending upon specific circumstances. This study concentrates on one part of the human resource management process, the relationship between task requirements and appropriate performance measures. The specific question examined in this study is whether managers are able and willing to select different performance measures for subordinates who face different task requirements, specifically, to differentiate between jobs where human resource measures are more or less important. This differentiation would be indicated by the performance measures and time allocations they choose. The following hypotheses present expectations of manager's selection of performance measures.

H1 Participants asked to allocate managerial time to various tasks will allocate larger amounts of time to human resource management related tasks for positions in which employee skills are more relevant to firm success.

H2: Participants asked to choose performance measures for specific managerial positions will select human resource related measures more frequently for managerial positions in which subordinate employee skills are more relevant to firm success.

H3: Participants asked to weight performance measures for specific managerial positions will weight human resource related measures more heavily for managerial positions in which subordinate employee skills are more relevant to firm success.

METHOD

A study was conducted at a large, urban southern university in which graduate students were required to develop performance evaluation criteria and performance measures in two business case scenarios. The study involved 49 MBA students with an average of 5 years of business experience, ranging from 2 to 15 years. These experienced MBA students are representative of frontline managers evaluating business process information and making decisions about performance measures, those who could provide early information on changing information needs. The scenarios were completed as part of course work. The results were used as the basis for a discussion of managerial task requirements and appropriate performance measures.

In a way analogous to the use of a single site study allowing the assumption of consistency in other factors that might affect behavior (Marginson et al. 2010), the use of this group allows the assumption that other factors affecting responses to the study questions will be randomized by the use of managers from a number of different firms. This should mitigate

against results driven by particular cultural or other environmental conditions present in only one firm.

The task simulated performance evaluation of business processes and subordinate managers. Participants were presented with two parallel scenarios for different areas of the business which differed by high/low levels of organization critical skills. The first area, Procurement, has a "low" level of organization critical skills as new hires are fairly easy to find and hiring costs are low. Consulting Engineers, the second area, has a "high" level of organization critical skills as the engineers are highly trained, are costly and difficult to replace, and have greater levels of experience-based skills relevant to firm success. The use of high and low levels of managed employees with hard-to-replace skills requires participant evaluation of differential job requirements between the two scenarios.

The information packet given to participants consists of a brief case overview and the two scenarios: the Procurement scenario and the Consulting Engineers scenario. The instructions state that there are no "right answers," provide a description of the firm and the two managerial positions, diagrams of the way these managers currently spend their time, lists of measures available for performance evaluations, and questions to answer relating to the overall task of performance evaluation. The information and questions for the two positions are constructed in parallel for testing differences in responses for the high/low levels of organization critical skills. The "high" scenario, Consulting Engineers, involves the evaluation of managers who supervise employees with difficult-to-replace skills relevant to organizational success. The "low" scenario, Procurement, involves managers who supervise employees who are relatively easy to replace and train. The subjects were asked to separately recommend how performance should be evaluated for each of the positions. The recommendations were organized into three areas for each position: 1.) Percentage changes, increase or decrease, in time allocation for major tasks of the positions (i.e., satisfaction surveys, cost performance, firefighting, administrative, etc.), 2.) Selection of individual performance measures, and 3.) Weights that should be applied to each measure selected. In addition to selecting individual measurements, subjects were instructed to justify their selections and the reasoning behind their choices of measures. The normative expectation from the hypotheses is that, when asked to select relevant dimensions of performance, participants will identify aspects of human resources (rather than of financial performance for example) more frequently in the "high" organizational critical skills scenario than in the "low" scenario.

RESULTS

Descriptive statistics for the management time allocation variables are presented in Table 1[1]. Panel A shows the baseline percentages for each of the management tasks. Participants were given these current time allocations and asked to make the changes they believed were appropriate to these time allocations. Panels B and C separately report these recommended

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[1] The responses with respect to the variables examined are not normally distributed and significance tests were performed using non-parametric tests. Observations for the "low" and "high" scenarios are not independent and the non-parametric significance tests were performed on matched pairs of variables from these two conditions for each participant.

changes for the Procurement scenario (Panel B "low" level of organization critical skills) and the Consulting Engineers scenario (Panel C "high" level of organization critical skills). Hypothesis 1 predicted a greater increase in allocation of time to human resource management related tasks for the "high" scenario where employee skills are more relevant to firm success.

Of the major tasks in the management time allocation (Table 2 – Panel A), the mean changes were significantly different between the "low" and "high" scenarios only for Cost Performance. The time allocated to this activity decreased significantly more for Consulting Engineers ("high"), -6.8%, than for Procurement ("low"), -4.3%, (p<0.015 two-tailed). Time allocation for human resource management related tasks of Deal with New Hires and Deal with Agent Needs increased significantly from the baseline allocation for Consulting Engineers (see Table 2 – Panel B). However, these time allocations also increased significantly for Procurement and there is no significant paired difference between the mean changes for the two positions. Thus while participants noted a lesser role for financial considerations with Consulting Engineers than with Procurement, the time reallocation was not significantly different for the HR related tasks across these two positions. Since there is no significantly different reallocation to human resource related tasks across the two positions, Hypothesis 1 is not supported.

Descriptive statistics for the selection of performance measures are presented in Table 3. Panels A and B separately report all of the human resource measures collected and reports on differences between the "low" (Procurement) versus "high" (Consulting Engineers) levels of organization critical skills scenarios. Each measure is a binary choice, i.e. selected=1 or not selected=0, and each mean represents the proportion selecting that specific measure. For example, in the "low" scenario, Employee Turnover was chosen by 78% of participants (in the "high" scenario, the same measure was chosen by 94%). Panel C reports summarized measures for total measures chosen (including other non-human resource measures excluded from these tables), total human resource measures chosen, and the proportion of total human resource measures to total measures chosen. This last variable, Total HR as % of Total, represents overall human resource measure choices as a percentage of total measures chosen in testing Hypothesis 2.

With respect to Hypothesis 2, choosing performance measures, participants were encouraged to be selective, to provide a limited but unspecified number of performance measures sufficient to provide feedback on all significant aspects of the job but few enough to allow the managers to pay attention to all of them. Hypothesis 2 predicted that participants would select human resource related measures more frequently for positions in which employee skills are more relevant to firm success, i.e. the "high" scenario (Consulting Engineers) is expected to have proportionally more of these measures than the "low" scenario (Procurement). This was supported by a significant paired difference between "low" and "high" scenarios for Total HR as % of Total with 17.76 for Procurement and 21.59 for Consulting Engineers (p<0.001 one-tailed, Table 4). Similarly, a significant paired difference was found for Total HR Measures with 1.82 for Procurement and 2.14 for Consulting Engineers (p<0.004 one-tailed, Table 4). Therefore, Hypothesis 2 is supported.

Further examining the individual human resource related measures (the first 5 listed in Table 4), there were similar significant paired differences with higher selection of measures for Employee Complaints and Employee Turnover for Consulting Engineers than Procurement (p<0.013 and p<0.017 one-tailed, Table 4). The paired difference for Employee Span was

marginally significant at p<0.099 one-tailed. Paired differences for the remaining two measures were not significantly different between the "low" and "high" scenarios.[2]

Hypothesis 3 predicted that participants would assign greater weight to human resource related measures for positions in which employee skills are more relevant to firm success. This was also supported. Descriptive statistics for these choices are shown in Table 5. Weighting percentages were summed across the five human resource variables to calculate Total HR Weighting.

Hypothesis 3 predicted that participants would weight selected human resource related measures more highly for positions in which employee skills are more relevant to firm success, i.e. the "high" scenario (Consulting Engineers) is expected to have a proportionally higher weight on these measures than the "low" scenario (Procurement). This was supported by a significant paired difference between "low" and "high" scenarios for Total HR Weighting with 16.25 for Procurement and 20.68 for Consulting Engineers (p<0.004 one-tailed, Table 6). Therefore, Hypothesis 3 is supported.

Further examining the weighting of individual human resource related measures (the first 5 listed in Table 6), there were similar significant paired differences with higher weighting of selected measures for Employee Complaints (1.95 vs 0.96) and Employee Turnover (10.93 vs 7.10) for Consulting Engineers than Procurement (p<0.014 and p<0.005 one-tailed, Table 6). Paired differences for two other measures comparing Consulting Engineers and procurement were marginally significant in the predicted direction at the < .10 levels for Number Supervised and Employee Training (0.39 vs 0.20). The difference for Number Supervised was marginally significant with more weight for Procurement (3.50 vs. 2.31). Employee Span was not significantly different between the "low" and "high" scenarios.[3]

CONCLUSIONS, LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

In summary, the objective of the study was to examine the question of the ability and willingness of individuals to vary their selection of reporting measures across situations that differ in the performance relevance of these measures. In one scenario, human resources are of high importance and in the other, they are not. The contribution of this experimental study is to extend the literature of performance measurement and management of intangibles at the operational level in a specific managerial accounting context. The results provide some evidence that experienced managers, with typically about 5 years of business experience, can differentiate between positions where employees have differing levels of organization critical skills. The results also have important practical implications for managers. Selecting appropriate

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[2] A similar analysis was performed on the five individual financial performance measures. There was no significant difference between the "low" and "high" conditions on any of the individual or summarized financial measures. Thus, although more emphasis was placed on human resource related measures for Engineers ("high"), an equivalent emphasis on financial measures was maintained for both high and low conditions.

[3] A similar analysis was performed on the five individual weighting of financial performance measures. There was no significant difference between the "low" and "high" conditions on any of the weightings for individual or summative financial measures. Thus although more emphasis was placed on human resource related measures for Engineers ("high"), an equivalent emphasis on weighting of financial measures was maintained for both high and low conditions.

performance measures for performance requires strategic and operational knowledge beyond financial measures. The performance evaluation process may be used in an interactive way that can encourage the identification of useful non-financial performance measures.

Although participants did not recommend increasing the time spent on HR tasks more for the area where employees have higher levels of organization critical skills, they did make appropriate differential choices in reducing reliance on cost performance. In the Consulting Engineers scenario, the major financial costs would be salary and IT related, and not directly amenable to meaningful control. In the Procurement scenario, the major financial costs, of both the materials themselves and their organizational consequences due to quality or timeliness issues, would be amenable to direct meaningful control. The recommended reduction in attention to cost performance was greater for the Consulting Engineers scenario which is appropriate.

However, the managers did not necessarily reallocate management efforts toward human resource management related tasks any more for positions where it is more relevant than where it is less relevant. This may indicate a need for collaborative efforts with managerial accountants (highlighting the relevant information) or better communication of firm needs and strategies. One way to direct attention to such measurement and evaluation would be to include any resource that is not financial but nevertheless needs managerial attention as a reported asset. "Ideally, [the] financial accounting [dollar denominated] model [of performance representation and evaluation] should have been expanded to incorporate the valuation of a company's intangible and intellectual assets, such as high-quality products and services, motivated and skilled employees, responsive and predictable internal processes, and satisfied and loyal customers." "Realistically, however, difficulties in placing a reliable financial value on such assets will likely preclude them from ever being recognized in organizational balance sheets. Yet these may be the very assets and capabilities that are critical for success in today's and tomorrow's competitive environment." (Kaplan and Norton 1996, p. 7). Other researchers also conclude that problems in with the valuation of many intangibles makes inclusion in formal reports unlikely (Basu and Waymire 2010, Wrigley 2008, Wyatt 2008). Skinner (2008) finds the case for their inclusion unconvincing, and argues that the benefits are outweighed by the potential costs and difficulties. Since this formal recognition is not currently feasible, organizations may need to consciously seek some other appropriate means of communicating to managers the position related relevance of nonfinancial assets to help ensure appropriate time allocation.

Selecting measures for managing any resource becomes more relevant as that resource, tangible or intangible, becomes more important for firm success. Results indicate that while many managers do differentiate between positions where human resources are more and less relevant, this discrimination is not universal. While twice as many chose Employee Complaints for the position where human resources are more relevant to success, this was only 20% of the participants. Employee Turnover was selected by 94% of participants for Consulting Engineers but was still selected by 78% for the position where turnover is not particularly problematic. The results are also tempered by a continuing emphasis on financial outcomes, even in a position (Consulting Engineers) where such outcomes are largely determined by relatively fixed aspects of the operations.

One possible implication from the study, designed to increase the percentage of managers who select relevant though perhaps not familiar performance measures, is that organizations might want to encourage the interactive rather than diagnostic use of performance measures. This

could be especially relevant in areas where the most appropriate measures to use are not clear or change significantly over time. The study asks for the development of relevant performance criteria to "provide feedback to help" the subordinate managers "improve the efficiency and effectiveness of their job performance". This is interactive use of the measures. Marginson et al (2008) describe interactive use as face to face discussions of performance and strategy. Such interactions could help managers at both ends of the discussion to revise and refine their assumptions about what is important in their situation. This could lead to better understanding of the value of various – tangible or intangible – assets and more appropriate provision and use of information for future decision making.

This study, as with any experimental study, is subject to various limitations in interpreting the results and care should be taken when generalizing to other groups and tasks. Data was collected from a particular group of managers who had self-selected a particular MBA program and results may not be generalizable to a different group of managers. Secondly, the research instrument focuses on a particular subset of performance measures that may not represent other task environments and may omit other potential performance measures. However, this study attempts to mitigate potential biases in the instrument by providing for open ended input of measurement items in addition to the listing of measurements. Future research could consider other groups of managers, accountants, and performance measures.

As noted in the introduction, human resources can be valuable assets for organizations. This study indicates that many business professionals can and will select performance measures based on specific position requirements and that they will differentiate between positions that need to conserve and develop human resources and those in which human resources are less important. It indicates that managers are willing to use nonfinancial measures of performance. It also indicates, however, that financial measures remain important considerations for both types of positions regardless of differences in the usefulness of these, and that the discrimination between positions in what is relevant is not nearly universal. This means that some method of communicating what is most valued to those managing the resources could aide in firm success. Given the changing nature of business and competition, it also indicates that determining the behaviors and skills for tasks that are most relevant to achieving firm goals and matching performance measures to these should not be overlooked as a necessary ongoing task.

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APPENDIX A

Table 1: Descriptive Statistics Related To Management Time Allocation

Panel A: Baseline Management Time Allocation

Major Tasks	Baseline Percentage
User Satisfaction	20%
Cost Performance	20%
Firefighting	30%
Meet Higher Mgmt.	5 – 10%
Meet External Agents	5 – 10%
Deal with New Hires	2 – 3%
Deal with Agent Needs	2 – 3%
Work with IT	10%

Panel B: Procurement scenario ("low" level of organization critical skills)

Major Tasks	N	Mean	Std. Dev.	Minimum	Maximum
User Satisfaction	49	-0.310	7.2640	-20.0	20.0
Cost Performance	49	-4.296	7.5083	-20.0	20.0
Firefighting	49	-9.898	8.5208	-25.0	0.0
Meet Higher Mgmt.	49	-0.388	3.4915	-7.5	12.5
Meet External Agents	49	5.184	5.7579	-7.5	17.5
Deal with New Hires	49	2.949	4.7228	-2.5	18.5
Deal with Agent Needs	49	4.561	4.9725	-2.5	17.5
Work with IT	49	3.714	6.8465	-6.5	25.0

Panel C: Consulting Engineers scenario ("high" level of organization critical skills)

Major Tasks	N	Mean	Std. Dev.	Minimum	Maximum
User Satisfaction	49	0.235	6.5344	-10.0	20.0
Cost Performance	49	-6.827	6.2396	-20.0	10.0
Firefighting	49	-8.735	9.7661	-25.0	10.0
Meet Higher Mgmt.	49	-0.571	3.3213	-7.5	7.5
Meet External Agents	49	5.398	5.3977	-7.5	17.5
Deal with New Hires	49	2.969	5.0160	-1.5	18.5
Deal with Agent Needs	49	5.694	5.1029	-1.5	17.5
Work with IT	49	2.878	6.4133	-7.5	22.0

Table 2: Significance Tests of Management Time Allocation

Panel A: Wilcoxon Signed Ranks Test of Management Time Allocation

Data are reported for 49 matched pairs (by subject) of management time allocation tasks for the "low" level of organization critical skills (Procurement) and the "high" level of organization critical skills (Consulting Engineers) scenarios. The Wilcoxon signed ranks test is for the significance of the (paired) differences between the means of the two groups.

Major Tasks	Means		Z	Asymp. Sig. (2-tailed)
	"Low" Scenario	"High" Scenario		
User Satisfaction	-0.310	0.235	-0.488	0.625
Cost Performance	-4.296	-6.827	-2.433	0.015**
Firefighting	-9.898	-8.735	-1.426	0.154
Meet Higher Mgmt.	-0.388	-0.571	-0.398	0.691
Meet External Agents	5.184	5.398	-0.329	0.742
Deal with New Hires	2.949	2.969	-0.400	0.689
Deal with Agent Needs	4.561	5.694	-1.185	0.236
Work with IT	3.714	2.878	-1.188	0.235

Panel B: One-Sample t-test to test if time allocations selected by participants are different than zero; where zero represents no change from the Baseline Management Time Allocation in Table 1 – Panel A.

Major Tasks	t-test Sig. (2 tailed)	
	"Low" Scenario	"High" Scenario
User Satisfaction	0.769	0.803
Cost Performance	0.000***	0.000***
Firefighting	0.000***	0.000***
Meet Higher Mgmt.	0.441	0.234
Meet External Agents	0.000***	0.000***
Deal with New Hires	0.000***	0.000***
Deal with Agent Needs	0.000***	0.000***
Work with IT	0.000***	0.003***

** and *** denotes statistical significance at the .05 and .01 levels (2-tailed), respectively.

Table 3: Descriptive Statistics Related to Choice of Performance Measures

Panel A: Human Resource Measures (Procurement=Low)

Performance Measure	N	Mean	Std. Dev.	Minimum	Maximum
Employee Complaints	49	.10	.31	0	1
Employee Turnover	49	.78	.42	0	1
Number Supervised	49	.43	.50	0	1
Employee Span (# of suppliers assigned)	49	.47	.50	0	1
Employee Training (NM)	49	.04	.20	0	1

Panel B: Human Resource Measures (Consulting Engineers=High)

Performance Measure	N	Mean	Std. Dev.	Minimum	Maximum
Employee Complaints	49	.20	.41	0	1
Employee Turnover	49	.94	.24	0	1
Number Supervised	49	.37	.49	0	1
Employee Span (# of customers assigned)	49	.57	.50	0	1
Employee Training (NM)	49	.06	.24	0	1

Panel C: Summarized Performance Measures (Low = Procurement, High = Consulting Engineers)

Summarized Measure	Scenario	N	Mean	Std. Dev.	Minimum	Maximum
Total Selected	Low	49	10.39	3.952	4	21
Total Selected	High	49	10.49	4.063	4	19
Total HR Measures	Low	49	1.82	.972	0	4
Total HR Measures	High	49	2.14	.935	1	5
Total HR as % of Total	Low	49	17.76	9.109	.00	40.00
Total HR as % of Total	High	49	21.59	8.893	9.09	42.86

Table 4: Wilcoxon Signed Ranks Test of Human Resource Related Performance Measures Selected

Data are reported for 49 matched pairs (by subject) of performance measures selected for the "low" level of organization critical skills (Procurement) and the "high" level of organization critical skills (Consulting Engineers) scenarios. The Wilcoxon signed ranks test is for the significance of the (paired) differences between the means of the two groups.

| | Means | | | Asymp. Sig. |
| | "Low" | "High" | | |
Performance Measure	Scenario	Scenario	Z	(1-tailed)
Employee Complaints	.10	.20	-2.236	0.013**
Employee Turnover	.78	.94	-2.138	0.017**
Number Supervised	.43	.37	-1.134	0.129
Employee Span	.47	.57	-1.291	0.099*
Employee Training (NM)	.04	.06	-1.000	0.159
Total Selected	10.39	10.49	-0.471	0.319
Total HR Measures	1.82	2.14	-2.694	0.004***
Total HR as % of Total	17.76	21.59	-3.064	0.001***

*, ** and *** denotes statistical significance at the .10, .05 and .01 levels (1-tailed), respectively
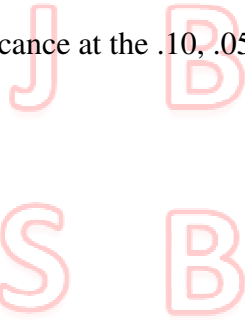
Table 5: Descriptive Statistics Related to Weighting of Selected Performance Measures

Panel A: Human Resource Measures (Procurement=Low)

Performance Measure Weighting	N	Mean	Std. Dev.	Minimum	Maximum
Employee Complaints	49	0.96	3.04	0	15
Employee Turnover	49	7.10	6.06	0	22
Number Supervised	49	3.50	5.73	0	30
Employee Span (# of suppliers assigned)	49	4.48	6.09	0	22
Employee Training (NM)	49	0.20	1.00	0	5

Panel B: Human Resource Measures (Consulting Engineers=High)

Performance Measure Weighting	N	Mean	Std. Dev.	Minimum	Maximum
Employee Complaints	49	1.95	4.34	0	15
Employee Turnover	49	10.93	8.21	0	45
Number Supervised	49	2.31	3.74	0	15
Employee Span (# of customers assigned)	49	5.12	6.25	0	22
Employee Training (NM)	49	0.39	1.55	0	7

Panel C: Summative Performance Measure Weightings (Low = Procurement, High = Consulting Engineers)

Summative Weighting	Scenario	N	Mean	Std. Dev.	Minimum	Maximum
Total HR Weighting	Low	49	16.25	10.03	0	40
Total HR Weighting	High	49	20.68	11.18	5	67

Table 6: Wilcoxon Signed Ranks Test of Weighting of Human Resource Related Performance Measures Selected

Data are reported for 49 matched pairs (by subject) of the weightings specified for performance measures selected for the "low" level of organization critical skills (Procurement) and the "high" level of organization critical skills (Consulting Engineers) scenarios. The Wilcoxon signed ranks test is for the significance of the (paired) differences between the means of the two groups.

	Means			
Performance Measure Weighting	"Low" Scenario	"High" Scenario	Z	Asymp. Sig. (1-tailed)
Employee Complaints	0.96	1.95	-2.207	0.014**
Employee Turnover	7.10	10.93	-2.561	0.005***
Number Supervised	3.50	2.31	-1.453	0.073*
Employee Span	4.48	5.12	-0.362	0.359
Employee Training (NM)	0.20	0.39	-1.342	0.090*
Total HR Weighting	16.25	20.68	-2.666	0.004***

*, ** and *** denotes statistical significance at the .10, .05 and .01 levels (1-tailed), respectively

APPENDIX B – Scenarios

Business Case Scenarios[4]

Virginia Beach (VB) is a division of a large international corporation. It manufactures engines for aircraft and has recently created a customer-based Internet site to improve productivity and strengthen customer relationships. The firm has about 300 customers and has already involved about 25 airlines and leasing agencies in the use and further development of its Web-based services. The system has been demonstrated to approximately another 100 clients as well, and all are enthusiastic about its potential benefits.

The following sections describe two position titles (and their areas of responsibility) in the division. Descriptions of their overall activities and participation in this project are given. You have been promoted to divisional manager. The performance criteria for the managers you supervise have been uniform in the past. VB is currently seeking to improve its competitive position and you have been asked to develop performance evaluation criteria relevant to each of the two positions. The managers have been complaining for some time that the current uniformly applied measures are not appropriate. These measures are to be used to provide feedback to the respective managers to help them improve the efficiency and effectiveness of their job performance.

Position 1: Manager of Procurement (providing physical inputs) Supervises purchasing agents.

The manager of procurement (MP) is responsible for managing the activities of the personnel who deal with purchasing parts and components. These agents deal with:
   Outside suppliers
   Divisional design engineers
   Product management
   Production personnel

New hires for agents:
   Generally have some technical experience, either in engineering or production
   Level of prior experience varies and affects the purchasing assignment (types of parts)
   New hires are fairly easy to find and hiring costs are small (departments are charged for costs
      of recruitment)

About 500 of the division's suppliers (80% of the total) are currently linked to VB's Web site. The ordering process is highly automated due to the new Web site as follows:
   VB customers place an order
   The order is communicated automatically to production.
   This updates the production schedule to match available capacity to customer need.

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[4] The experimental materials in this document are exactly as provided to subjects performing the assignments with two exceptions. Page headers and footers are added for clarity of the document parts for review purposes.

This then updates the purchasing needs which are communicated directly to suppliers.

The Web site allows VB purchasing and production personnel to view (for VB orders) suppliers':
　　Production schedules
　　Inventories
　　Shipping dates

The major non-automated tasks procurement personnel engage in are:
　　Reviewing costs and alternate sources of supply for current parts and components
　　Ensuring multiple sources of supply for critical items
　　Dealing with occasional shortages of individual parts
　　Working with design engineers and suppliers to ensure availability and reasonable cost of new
　　　parts (the more experienced agents are assigned these tasks)

The major tasks for the Manager of Procurement are shown on the next two pages, including current time allocation percentages.

Part 1: Tracking User Satisfaction with Departmental Performance
(40% of an average week)
Designed to Make Sure the Agents Are Providing the Needed Services
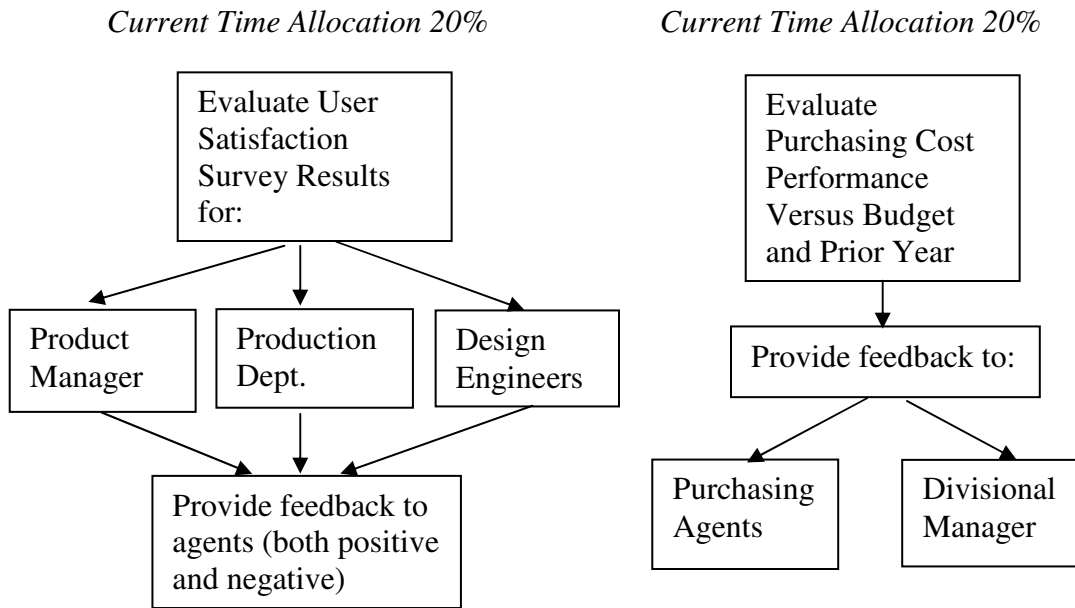
Current Time Allocation 20%   *Current Time Allocation 20%*

```
┌─────────────────┐            ┌─────────────────┐
│ Evaluate User   │            │ Evaluate        │
│ Satisfaction    │            │ Purchasing Cost │
│ Survey Results  │            │ Performance     │
│ for:            │            │ Versus Budget   │
└─────────────────┘            │ and Prior Year  │
                               └─────────────────┘
┌────────┐ ┌──────────┐ ┌────────┐        │
│Product │ │Production│ │Design  │   ┌──────────────────┐
│Manager │ │Dept.     │ │Engineers│  │Provide feedback to:│
└────────┘ └──────────┘ └────────┘   └──────────────────┘
┌──────────────────────┐      ┌──────────┐  ┌──────────┐
│Provide feedback to   │      │Purchasing│  │Divisional│
│agents (both positive │      │Agents    │  │Manager   │
│and negative)         │      └──────────┘  └──────────┘
└──────────────────────┘
```

Part 2: Firefighting
(30 % of an average week)
Designed to Locate and Correct any Problems that are Too Difficult or Too Important to Leave
to Agents

```
┌─────────────────┐
│ Search for /    │
│ Respond to      │
│ Complaints or   │
│ Problems        │
└─────────────────┘
        │
┌─────────────────┐
│ Deal with       │
│ Complaints      │
│ or Problems     │
└─────────────────┘
        │
┌─────────────────┐
│ Provide         │
│ feedback to     │
│ agents          │
└─────────────────┘
```
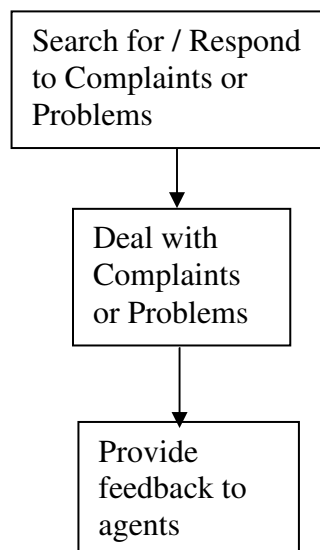
Part 3A: Administrative Issues
(10-20% of an average week)
Meetings with Higher Management, External Agents

Current Time Allocation 5-10%   *Current Time Allocation 5-10%*

| Meetings with management to discuss divisional progress and needed contribution from procurement | Meetings with suppliers and potential suppliers to discuss evolving divisional needs and ways to improve communications |

Part 3B: Administrative Issues
(less than 5% of an average week)
Dealing with New Hires, Agent Needs

Current Time Allocation 2-3%   *Current Time Allocation 2-3%*

Discuss Methods and Policies

↓

Assign a mentor from among the other agents

↓

Discuss Progress with new agent and mentor

Evaluate agent job satisfaction and deal with problems

↓

Initiate a search for a replacement when necessary

Part 3C: Administrative Issues
(10% of an average week)
Working with the Information Technology Group

Meetings with IT managers to discuss:

Current performance of the system(s)   Communication needs that are not being met

Answer the following questions. Be sure to take into account what the firm needs to do to succeed and to emphasize the areas of performance that will have the largest impact on this success (or lack of success).

1. The time allocations shown on the two previous pages reflect the importance placed on these tasks by the manager. Given the (limited) information in the position description, does it seem likely that any of the time allocations of this manager be changed (increased or decreased)? Why or why not?

2. Currently the following information is available for use as performance measures but OTHER INFORMATION COULD BE COLLECTED IF NEEDED.

    For the three managers:
       Departmental budget versus actual results
       Number of purchasing agents supervised
       Total dollar volume handled by the purchasing agents supervised
       Number of suppliers handled by the purchasing agents supervised
       Turnover of the purchasing agents
       Days a position was unfilled
       Number of problems with/complaints from suppliers
       Results of the user satisfaction survey
       Recruiting costs
    For the personnel they supervise:
       Pay levels
       Days absent
       Number of suppliers served
       Average calls handled per day
       Number of complaints or problems
       Turnover in suppliers
       Price comparisons of prices achieved with lowest market price for the period
       Quality ratings by production personnel of the items purchased

    What performance criteria (measures) should be used to evaluate the performance of the three supervisors of purchasing agents? Remember that you can list items not currently gathered if you believe they would be appropriate.

3. Assign a total of 100 points to the measures you selected in part 2, assigning more points to the measures you feel are more important. List the most important first, then the next most important, and so on. Explain why each is rated as it is.

      Measure   Points Assigned   Explanation

Position 2: Manager of Consulting Engineers Supervises customer service engineers

VB has a group of engineers who deal with customer problems and are referred to as consulting engineers. They staff the "collaborate" part of the divisional Web site.

The engineers who work in this area are highly trained and experienced individuals and are costly and difficult to replace (departments are charged for costs of recruitment).

Most have not only an engineering degree but also advanced training and many years of experience in the field.

Many have worked with airlines prior to coming to VB and have a high level of understanding of the needs of the division's customers.

On this "collaborate" part of the Web site, high resolution photos of damaged components or parts are available for visual inspection.

Customers and VB engineers can both view the photos at the same time and discuss the potential for repair and the types of repairs that are most applicable. They have available during this discussion:
Service bulletins
Rotating views of parts and components
Animated engine disassembly techniques
Trend analysis showing how particular parts normally hold up over all fleets
Drill-down parts identification available by clicking on an area of a drawing to see progressively more disassembled views down to the bolt level.

The engineers deal with highly complex problems, which are referred to them by staffers in another work group. The staffers handle more routine questions with the aid of a database that uses case-based reasoning to identify prior responses to questions that could be relevant to the current question.

VB customers make frequent use of this service and tend to develop long term relationships with particular engineers.

The major tasks for the Manager of Consulting Engineers are shown on the next two pages, including current time allocation percentages

Part 1: Tracking User Satisfaction with Departmental Performance
(40% of an average week)
Designed to Make Sure the Engineers Are Providing the Needed Services
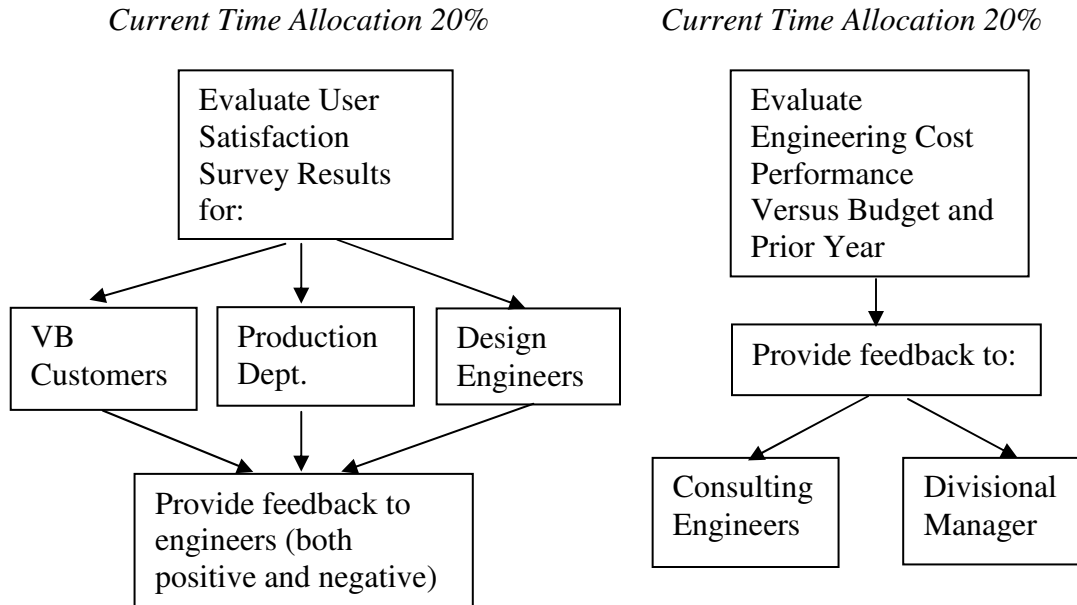
Current Time Allocation 20%　　　　*Current Time Allocation 20%*

```
┌─────────────────────┐          ┌─────────────────────┐
│ Evaluate User       │          │ Evaluate            │
│ Satisfaction        │          │ Engineering Cost    │
│ Survey Results      │          │ Performance         │
│ for:                │          │ Versus Budget and   │
└─────────────────────┘          │ Prior Year          │
                                 └─────────────────────┘
   ┌──────────┬──────────┐                 │
┌────────┐┌──────────┐┌──────────┐  ┌─────────────────────┐
│ VB     ││Production││ Design   │  │ Provide feedback to:│
│Customers││Dept.    ││Engineers │  └─────────────────────┘
└────────┘└──────────┘└──────────┘        ┌──────┴──────┐
        └──────┬──────┘            ┌────────────┐┌────────────┐
┌─────────────────────┐           │ Consulting ││ Divisional │
│ Provide feedback to │           │ Engineers  ││ Manager    │
│ engineers (both     │           └────────────┘└────────────┘
│ positive and negative)│
└─────────────────────┘
```
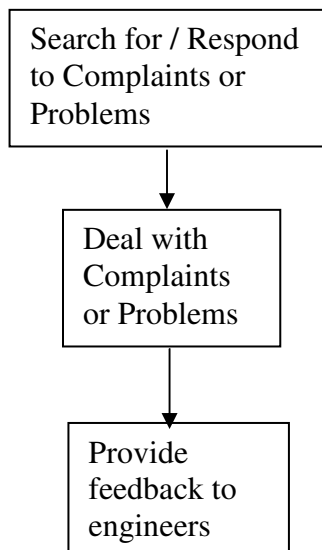
Part 2: Firefighting
(30 % of an average week)
Designed to Locate and Correct any Problems that are Too Difficult or Too Important to Leave
to Engineers

```
┌─────────────────────┐
│ Search for / Respond│
│ to Complaints or    │
│ Problems            │
└─────────────────────┘
           │
┌─────────────────────┐
│ Deal with           │
│ Complaints          │
│ or Problems         │
└─────────────────────┘
           │
┌─────────────────────┐
│ Provide             │
│ feedback to         │
│ engineers           │
└─────────────────────┘
```

Part 3A: Administrative Issues
(10-20% of an average week)
Meetings with Higher Management, Customers

Current Time Allocation 5-10%   *Current Time Allocation 5-10%*
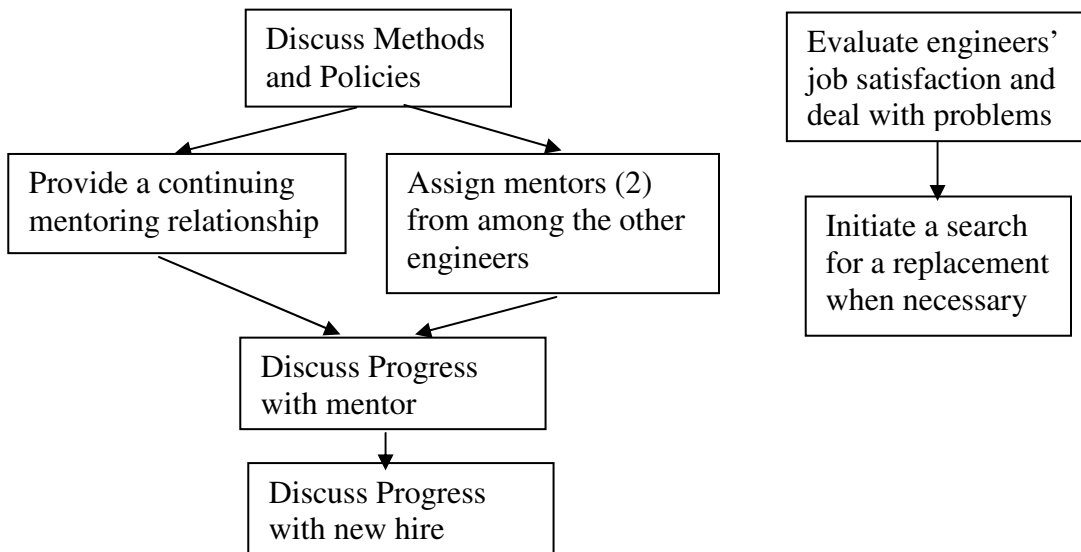
Meetings with management to
discuss divisional progress and
needed contribution from the
consulting engineer group

Meetings with customers and
potential customers to discuss
evolving customer needs and ways
to improve communications

Part 3B: Administrative Issues
(less than 5% of an average week)
Dealing with New Hires, Consulting Engineers Needs

Current Time Allocation 2-3%   *Current Time Allocation 2-3%*

Discuss Methods
and Policies

Provide a continuing
mentoring relationship

Assign mentors (2)
from among the other
engineers

Discuss Progress
with mentor

Discuss Progress
with new hire

Evaluate engineers'
job satisfaction and
deal with problems

Initiate a search
for a replacement
when necessary

Part 3C: Administrative Issues
(10% of an average week)
Working with the Information Technology Group

Meetings with IT managers to
discuss:

Current performance of
the system(s)

Communication needs
that are not being met
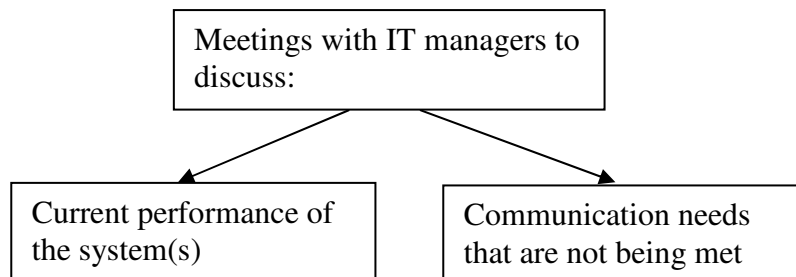
Answer the following questions. **Be sure to take into account what the firm needs to do to succeed and to emphasize the areas of performance that will have the largest impact on this success (or lack thereof).**

1. The time allocations shown on the two previous pages reflect the importance placed on these tasks by the manager. Given the (limited) information in the position description, does it seem likely that any of the time allocations of this manager be changed (increased or decreased)? Why or why not?

2. Currently the following information is available for use as performance measures but OTHER INFORMATION COULD BE COLLECTED IF NEEDED.

    For the three managers:
       Departmental budget versus actual results
       Number of consulting engineers supervised
       Total dollar volume of the customers served by the consulting engineers supervised
       Number of customers handled by the consulting engineers supervised
       Turnover of the consulting engineers
       Days a position was unfilled
       Number of problems with/complaints from customers
       Results of the user satisfaction surveys
       Recruiting costs
    For the personnel they supervise:
       Pay levels
       Days absent
       Number of customers served
       Average calls handled per day
       Number of complaints or problems from customers
       Turnover in customers
       Percentage of their customers' business captured (out of the items purchased by the
          customers, what percentage is supplied by this firm?)
       Growth of customers' purchases as % of growth of the customers' total purchases in that
          category

    What performance criteria (measures) should be used to evaluate the performance of the three supervisors of consulting engineers? Remember that you can list items not currently gathered if you believe they would be appropriate.

3. Assign a total of 100 points to the measures you selected in part 2, assigning more points to the measures you feel are more important. List the most important first, then the next most important, and so on. Explain why each is rated as it is.

       Measure   Points Assigned   Explanation