

THE USE OF DATA IN “LIVE” CASES TO ENCOURAGE SYSTEMS THINKING AND INTEGRATIVE ANALYSIS: AN EXERCISE LINKING HUMAN RESOURCE PROGRAMS AND FINANCIAL OUTCOMES IN REAL ORGANIZATIONS

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ABSTRACT

Inviting students to work with “live” cases provides a powerful tool for linking academic learning with real-world experience. However, live cases rarely provide students with the data they need to apply many of the analytical tools they need to master as part of their academic curriculum. This paper addresses this problem in the specific context of a live-case exercise in which students are asked to use survey and financial data to create a budget for a change program related to employee motivation. Because each case is unique, the instructor requires a method for quickly establishing a realistic budget. Our proposed method assumes that every case will share two common characteristics: diminishing increases in performance in response to increasing levels of change effort; and diminishing increases in financial gain in response to increasing levels of performance. These phenomena can be represented in the form of two general response curves, or, as shown here, in data tables relating performance to financial outcomes. The paper shows how these can be used to link programs directed at “soft” phenomena (e.g., attitudes, values, motivation-related beliefs) to financial outcomes. We demonstrate this approach with an exercise requiring students to apply the expectancy theory of motivation in a realistic organizational setting, and use data tables to decide on the type and intensity of change efforts directed at employees’ cognitions. This exercise is aimed at getting students to relate motivation to financial outcomes, and, more generally, to develop the habit of “systems thinking”—integrating different functional areas of business

(management, finance, operations) that are typically taught in separate courses and housed in different business school departments.

INTRODUCTION

One of the powerful attributes of experiential learning is its ability to immerse students in work situations in which they can translate abstract concepts into concrete, real-world behavior. Psychologically, the translation takes the form of two critical links: the first between the new problem-solving experiences generated by the exercise and the emotional consequences of success; the second between the experiential exercise and its application to the real world, where the learning must ultimately be applied (Yakonich, Cannon, and Ternan 1997).

In service of the second link, a popular approach is the use of a “live” case. This is a case involving an actual organization in which the students may be employed or may otherwise have access to real data. Markulus (1985) identifies three distinguishing features of the approach:

1. personal participation and appearance by the company’s key decision-makers during the case presentation and discussion,
2. the immediate accessibility of the company for the students,
3. the company situation or strategic decision is one that has current relevance, current, in that it exists presently, has just recently been made, or is about to be made.

Studies consistently show that the perceived relevance of a learning experience is a key motivator in the learning process (Karns 1993, 2005). This is where the live case excels. However, we can espouse Markulus' live-case principles without holding ourselves to them literally. "The key ingredient in live case studies is realism. There is a real company with real products, real competitors, real decision-makers, real employees" (Burns 1990, p. 203).

We can relax the live-case requirements even further. Ward and Redelius (1987) distinguish between two fundamentally different types of teaching approaches: "ruleg" and "egrule." Ruleg is a deductive approach, in which students learn general principles, or rules, and then apply them to specific situations. Egrule is an inductive process in which students study different situations, identify patterns, and develop the principles or rules themselves. Burns (1990) argues that, unlike conventional cases, live cases are a ruleg approach. The cases immerse students in specific business situations that require them to reason through a problem, identify the rules required to address it, and come to a realistic resolution. Assuming that an instructor has specific rules in mind, or rule-finding-and-applying skills, they might introduce some artificial elements into the otherwise live case in order to ensure that the case experience stimulates and rewards the targeted learning, as long as the elements do not compromise the sense of realism necessary for the effectiveness of the "live case" method.

Although there is disagreement over whether a project that features artificial data is still a "live case," the potential for introducing artificial but realistic elements introduces important flexibility in pedagogical design. Foremost among the criteria for selecting the client for a live case is that the client's key problem fits the objectives of the course (Goodell & Kraft 1991; Lopez & Lee 2005). If course objectives include very specific types of data or analyses, the chances of finding a real client who uses the desired approach and fits the other client criteria may be close to zero.

This paper will address a design that uses student-selected clients and very specific analyses in an exercise from a course in organizational behavior. In general, the combination of unstructured client selection and structured objectives tends to make the client-objectives mismatch we have just discussed the norm rather than an unfortunate exception.

The problem grew out of a curriculum-planning initiative in which a business school was trying to develop a more coherent, self-reinforcing curriculum. One of the mandates coming out of the planning effort was to incorporate assignments involving the use of spreadsheets and the manipulation of financial data into a broad range of traditionally non-quantitative courses.

The specific course addressed in this paper was Management of Organizational Behavior. The exercise we describe addresses a budgeting process that might be used

in conjunction with human resource-related decisions in a wide variety of firms. On a higher level of abstraction, the exercise serves as a metaphor for a much broader range of assignments that might be developed for many different types of courses. The commonality is the fact that each assignment applies a theoretically sound decision model, drawn from the material covered in the course, to a class of problems that are common to virtually all firms. The data are developed from a standard template and are scaled to be realistic for a particular firm.

LITERATURE REVIEW AND BACKGROUND

The notion of experiential learning grew out of the education literature, and from there, to the literature on training and management development. ABSEL plays an important role in this, focusing on the use of computer-based or behavioral simulations as a means of developing managerial and decision-making abilities. The use of live cases would seem to be a particularly useful experiential tool. This approach has been used to address such diverse areas of knowledge as market research (Bove & Davies 2002) and business ethics (McWilliams & Nahavandi 2006). In a study addressing 20 popular training methods, a sample of 200 corporate trainers rated it the most effective method of instruction (Kaupins 1997). A follow-up study of 138 business professors again found it to be the highest rated method of instruction. These results are consistent with student perceptions.

One of the problems with the studies addressing live cases is that by necessity they look at learning outside the organizational context in which students will ultimately have to function. The literature on organizational learning, and more specifically, absorptive capacity, suggests that the collective knowledge-driven abilities of an organization are different from the sum of individual employees' abilities. This presents an especially difficult problem for business schools because neither the instructors nor the students know the organizational context in which students will ultimately end up working. Our solution is to explore the link between individual and organizational learning in an effort to structure learning experiences that are concrete and applied, but also generalizable across a broad range of organizational settings. This was the goal of the curriculum initiative that gave rise to the development of the exercise described in this paper. It sought to build adaptable skills in financial analysis by confronting students with practical budgeting problems, the solutions to which involve similar principles, but different applications, across a broad range of courses. Another, more general goal, was to develop in students the habit of adopting a systems perspective—one in which discrete functional problems (e.g., in personnel, finance, marketing, etc.) are analyzed in an integrated rather than a narrow functional fashion. Although the typical "capstone" course in the

business school curriculum is aimed at promoting higher-level and more integrative analysis, we believe it is important to develop students' capacity and habit of doing so earlier in their learning.

While the literature on absorptive capacity has tended to focus on technology, the general concepts can be applied to virtually any type of knowledge. On an individual level, this begins with the ability to fit new knowledge into prior schemata (Cohen & Levinthal 1990). New knowledge related to knowledge and schemata already resident in the learner will be retained more easily, as the learner has a cognitive "place" in which to fit it (cf. Dyer & Singh 1998; Van den Bosch, Volberda & de Boer 1999). Again, this is illustrated by our broader financial analysis initiative. The principles of a basic financial analysis provide a general schema, and students learn to adapt it to new knowledge as they encounter it in the context of different courses and varying assignments in their curriculum.

On an organizational level, new knowledge that complements pre-existing schemata in the organization should tend to be accepted and assimilated into the organization more quickly than would unrelated learning. This is similar to the "compatibility" principle in diffusion of innovation theory, where an innovation that can be easily related to things already in the consumer's life will be adopted more quickly than will those that require mental work to adopt (Rogers 2003). On an individual level, it reflects the "cognitive miser" principle in social psychology (Fiske & Taylor 1985), according to which people cope with data overload by using their limited cognitive resources to screen, organize, and make rapid inferences on the basis of preexisting mental categories.

The concept of absorptive capacity was originally used in a macroeconomics context, referring to the amount of foreign aid that a recipient country could employ usefully (Adler 1965), and later, to the capacity for technology transfer (David 1975; Stiglitz 1987). Cohen & Levinthal (1990) applied the concept to organizations, using it to refer to a firm's "general ability to value, assimilate, and commercialize new, external knowledge" (Lane & Lubatkin 1998, p. 463). As noted in our earlier discussion of schemata, Cohen & Levinthal considered an individual's absorptive capacity to be closely related to his/her store of prior knowledge. With exposure to new knowledge, the individual adapts existing schemata to assimilate and convert the new knowledge into usable form.

Organizational absorptive capacity, however, is more than the sum of the absorptive capacities of the individuals in an organization. Learning must be transferred within the organization from person to person and from unit to unit. For Cohen & Levinthal (1990), organizational absorptive capacity relates largely to the organization's technical knowledge, and is the result of the organization's own R&D, plus what it can gain from competitors and peers, and from outside of its industry. However, the same principles apply to the broader range of relevant

organizational skills, from functional expertise to "best practices." In fact, Lane, Koka & Pathak (2006) describe over-reliance on R&D (technical) knowledge in the absorptive capacity literature, clearly implying the appropriateness of applying the concept beyond technical learning.

Even though Cohen and Levinthal (1990) emphasized the sociocognitive processes underlying the construct, they operationalized it in both their 1989 and 1990 studies as R&D intensity, and in much of the subsequent literature, researchers have done the same. As a result, few have examined the role of absorptive capacity in the acquisition, assimilation, and commercial application of other types of business-related knowledge, including managerial techniques, marketing expertise, and manufacturing know-how (p. 852). Given that absorptive capacity applies to all kinds of organizationally-relevant knowledge, we still face the particular problem that we are trying to prepare students in a business school not only with absorptive capacity on an individual level, but also the ability to pass this capacity on and receive it within an organization. Furthermore, we are doing this preparation with little or no knowledge of the specific organizational contexts in which it will have to be applied. Indeed, we expect that each of our students will most likely be employed in different organizations whose culture and capacities will vary widely. A potentially effective way to address this is to identify problems with increasing absorptive capacity that tend to recur across organizations.

In order to address this problem, let us return to our curricular initiative, and to our proposed HR "live case" exercise. As we have noted, it serves both as an exercise and as an example of the kind of exercises that can be used to prepare students to develop both individual absorptive capacity and the ability to transfer this capacity to the organizations that employ them. To do this, we will draw on the work of Szulanski (1996). He provides an excellent summary of the difficulties ("stickiness") organizations face when trying to transfer learning within a firm. Furthermore, Szulanski's focus is on "best practices" such as total quality management (TQM) or, as in our proposed exercise, quantitative evaluation of behavior- or human resource-related R alternatives, rather than technology transfer.

Szulanski's framework posits four stages in the knowledge transfer process, together with several sources of stickiness. These are illustrated in Figure 1, along with the associated learning objectives we propose to address the stickiness. Note that our students must be prepared to play two organizational roles. One is that of a teacher, or what we will refer to as a knowledge agent, the person who is promoting absorption of a particular best practice within the firm. The second is the student, or the person to whom "best practices" knowledge is being transferred. The objectives portrayed in Figure 1 address both of these roles. They are arranged roughly in the order of the stickiness

problems they must address, but they all overlap and apply in some degree to all parts of the model.

In the Initiation stage, the transfer process is triggered by recognition of a problem and a potential solution (the new knowledge). This leads to the initial efforts toward knowledge transfer, where recipients of the knowledge seek to determine whether the knowledge is worth considering further. There are two primary sources of stickiness. The first is whether the knowledge appears to logically address the problem—its potential relevance to the problem, an issue Szulanski refers to as causal ambiguity. The second source, which arises because relevance is never certain, is whether the knowledge has an established history of success in other organizations.

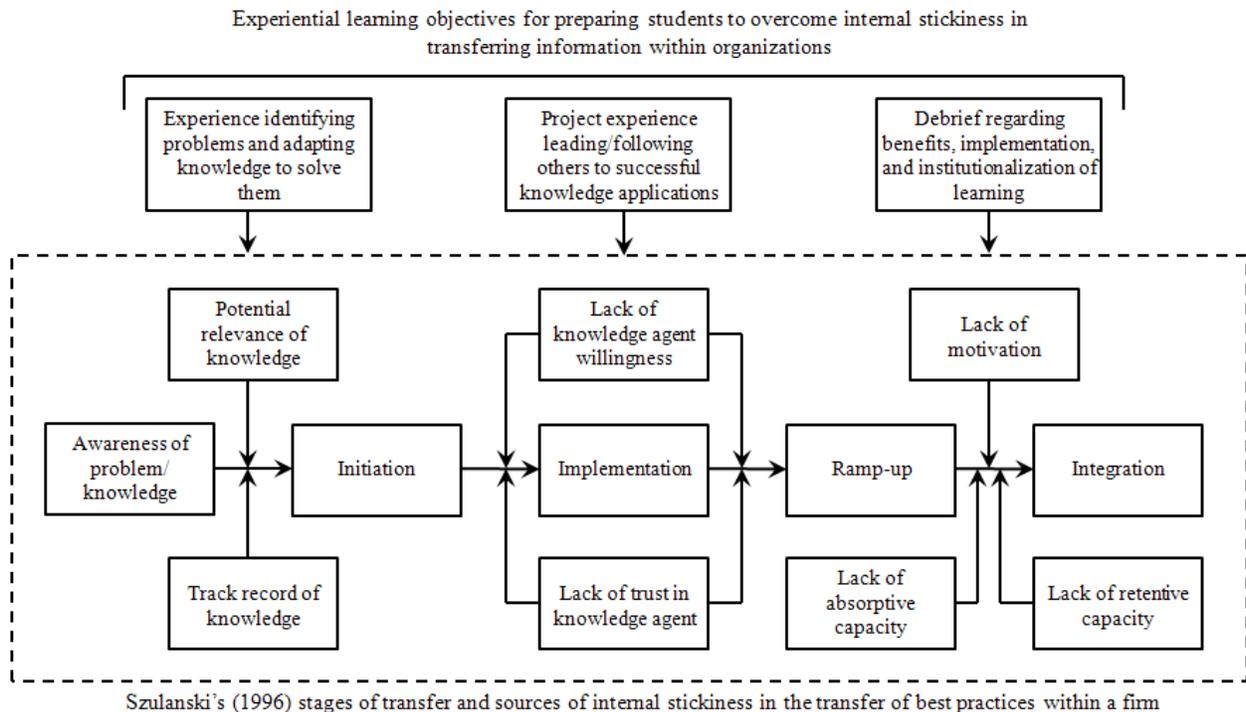
We have already noted that students are being prepared to play two different roles: that of knowledge recipient (student) and that of knowledge agent (teacher) in the organization. The experiential learning objectives are essentially the same for both. Addressing the initiation stage, in each role, students need to develop a facility in recognizing the key elements of problems, mapping cause-and-effect relationships by relating them to existing knowledge structures, and implementing solutions. As knowledge recipients, they need to be able to quickly grasp and evaluate potential solutions when they are presented, and as knowledge agents, they must be able to explain the

relevant principles to their colleagues in practical, understandable terms. Given that no “solution” is quite the same in two different organizational settings, establishing a track record, or history, is an exercise in reasoning by analogy. The “live case” approach, especially when implemented across a number of courses in the curriculum, provides the student with a number of practical experiences on which to draw. Requiring students to quantify conceptual decision criteria forces them to think rigorously about the judgments they have to make.

The implementation stage, and the subsequent ramping up of the knowledge transfer program, gives rise to two related impediments. First, knowledge transfer involves an increase in colleagues’ overall level of competence. Potential knowledge agents often resist this for fear of losing the status afforded by their superior knowledge. Conversely, acting as a knowledge agent implies superior knowledge, a premise that colleagues will often reject. This might result from fear of facing professional inadequacy, or it may simply result from a failure to trust the knowledge agent. To address these problems, it is important to prepare students in the principles of both leadership and followership for both the role of knowledge agent and knowledge receiver. Both require a high level of competence and confidence, which is again developed by facing applications of the live-case method over different

Exhibit 1

Experiential learning objectives for addressing Szulanski’s stages



classes throughout the curriculum. But equally important are the “soft” skills of self-awareness and self-management, social awareness, and relationship management (Koman & Wolff 2008). One of the features of our live-case exercise is that it can be conducted in a group setting, so as to require practice, coaching, and debriefing in the application of emotional intelligence as well as the application of general problem-solving and technical skills.

Finally, the integration stage involves incorporating new knowledge into the ongoing organizational system. As knowledge transfer continues, individuals and organizational factions that have a vested interest in the old way of doing things may lack motivation to change. Another source of stickiness is a lack of overall absorptive capacity, due to a lack of prior knowledge or an inability to adapt prior knowledge structures to value, assimilate and apply new knowledge. Yet another source of stickiness is lack of retentive capacity. That is, the organization is unable to institutionalize the knowledge it has absorbed to ensure that the best practices are continued when experienced employees leave, thereby allowing organizational members to revert to more comfortable and less effective ways of doing things. Obviously, as our students are newly hired into organizations, they will not be in a position to address these organization-wide issues. However, we can encourage them to be open to best practices, absorptive capacity, and the ability to incorporate best practices into their own lives. By carefully debriefing students following their live-case exercises, we can focus their attention on the benefits of what they have just learned, and its potential for improving performance in real organizations. We can help them adopt a systems perspective, to understand the concepts of absorptive and retentive capacity, and to understand how these relate to knowledge transfer. This understanding will help them resist the tendencies to give up, perceive what they have learned in formal educational settings as irrelevant, or apply their knowledge in a simplistic, narrow, or functionally specific fashion.

DESCRIPTION OF THE EXERCISE AND BUDGET PROCEDURE

The analytic procedure we are describing is general in nature and can be easily adapted to a wide variety of organizational or human-resource management exercises. We will describe how the exercises might be developed, illustrating the process using a general assignment that requires students to address one of several different organizational behavior (OB) or human resources (HR) concepts addressed in management courses.

The General Exercise

The general assignment is an exercise that assumes that a firm can improve its profitability by applying a

particular theory from the OB common body of knowledge. To illustrate this assignment, we will describe an exercise that is structured around employee motivation and that uses expectancy theory (Nadler & Lawler, 1977; Vroom, 1964). This theory posits motivation as a function of three cognitive elements: (1) Effort-Performance expectancy ($E \rightarrow P$; the employee’s perceived probability that a given level of effort will result in a given performance level); (2) Performance-Outcome expectancy ($P \rightarrow O$; the employee’s perceived probability that a particular performance level will result in a particular outcome); and (3) valence (V ; the worth or desirability of a particular outcome to the employee). According to expectancy theory, these three cognitive elements combine multiplicatively to predict the employee’s level of motivation or effort. For example, when an employee has high levels of $E \rightarrow P$ (i.e., is confident that effort will result in achievement of a target performance level), $P \rightarrow O$ (i.e., is confident that achieving the target performance level will result in particular outcomes), and values those outcomes (i.e., attaches positive valence to them), that employee will be highly motivated. This multiplicative relationship, however, also means that if any one of the three elements is very low, motivation will be low regardless of the level of the other two elements.

Expectancy theory has several characteristics that make it especially suitable to use in an exercise aimed at developing students’ capacity to link “soft” organizational phenomena such as employee attitudes to bottom-line, especially financial, results. First, the theory is consistent both with people’s intuitions about motivation and incentives and the standard utility maximization perspective that students learn in economics. Second, standard survey measures of the expectancy theory elements have been developed (Nadler & Lawler, 1977; Doyle, 2003, pp. 79-81), enabling comparison across employees on the key elements. Finally, expectancy theory has provided the rationale for many widely adopted reward programs such as merit pay, incentive pay, bonus programs, and profit sharing. Many students will be familiar with such programs, making it easier for them to see the value of linking the expectancy theory elements and financial outcomes.

Prior to assigning the exercise, it is important for the instructor to set the stage by demonstrating analytic methods for translating human resource management activities (e.g., selection, training, incentive programs) into economic terms. In this regard, the successful use of statistical and economic methods in professional sports can be persuasive. For example, the analytic methods described in “Moneyball” (Lewis, 2003) enabled managers of the Oakland Athletics to more accurately identify the crucial skills and economic value of baseball players, and thus gain a competitive edge against much more affluent teams. These analytic methods have since been further developed and refined, resulting in new game strategies and training methods to increase the chances of winning (Keri,

2011; Moskowitz & Wertheim, 2011). The analytic approach to evaluating athletes as “skill portfolios” having a financial impact on the team has been extended to athletes’ motivational states as well. For example, analysts have investigated the motivational effects of multi-year contracts on athletes’ performance. Consistent with both intuitive notions of incentive effects and expectancy theory predictions, athletes’ performance tends to improve during the last year of their contract (Winston, 2009). In sum, the professional sports domain has demonstrated the effective use of analytic methods for accurately measuring the financial impact of athletes’ skills and motivation.

In sports, the definition of success is simpler and more likely to be unidimensional (e.g., win-loss record) than is the case for other organizations. Nevertheless, the same types of analytic methods can be used in other organizations. There is a substantial literature on statistical and economic measures of the effectiveness of recruitment and selection procedures (e.g., Cooper, Robertson, & Tinline, 2003; Schmidt, Hunter, & Pearlman, 1982). Cascio (1991) and Cascio and Boudreau (2008) have extended these methods to a wide variety of human resource practices and programs. Methods for “costing human resources” have been applied to assess the financial impact of absenteeism, turnover, smoking bans, EAPs, wellness programs, collective bargaining agreements, and training the development programs. Most relevant to our exercise is the development of analytic methods for translating “soft” variables such as work-related beliefs, attitudes, and values into financial outcomes. Cascio (1991), for example, illustrated a method for determining how organizational involvement, intrinsic satisfaction, and intrinsic motivation among bank tellers affected bank branches’ financial outcomes. This method required determining the association between these attitudes and work-related behaviors such as tardiness, absenteeism, and

making errors in balances (shortages). By measuring the costs of these behaviors, Cascio found that teller attitudes had a substantial effect on financial outcomes. He calculated that improving the average attitudes of the 160 bank tellers by .5 standard deviations would result in aggregate savings of over \$266,000 in a one-year period.

Another prominent example of costing human resources was provided by a large analytical project conducted by Rucci, Kirn, and Quinn (1998) at Sears Corporation. Using data from over 800 stores, these analysts developed a model showing that employee attitudes toward their jobs and toward Sears affected their workplace behavior and performance, which in turn affected customers’ perceptions of service quality and of Sears as a “compelling place to shop,” which would affect revenue growth. Using the model, Sears management determined that a 5% improvement in employee attitudes would produce a 1.3% improvement in customer satisfaction, which in turn would result in a .5% improvement in revenue growth. Sears used this “employee-customer-profit” model to develop employee training programs that produced an increase in revenue of \$200 million (Rucci, Kirn & Quinn 1998). In sum, organizations in the domains of professional sports, retailing, and several other areas have applied analytic methods to demonstrate systematic linkages between “soft” variables such as attitudes and beliefs and “hard-nosed,” quantitative, bottom-line financial outcomes.

A similar data-driven, analytic method is feasible in the case of expectancy theory cognitions. To conduct such a method, it will be necessary to examine organizational data on the three cognitive elements ($E \rightarrow P$, $P \rightarrow O$, V), and the linkage of these elements to observable work behaviors and outcomes. In outline form, this method would proceed as follows: The analyst would measure, in a large sample of employees, the three cognitive elements and their

Exhibit 2

Estimated costs associated with achieving average levels of $E \rightarrow P$

Level of expectancy ($E \rightarrow P$)	Cost of achieving given average levels of expectancy ($E \rightarrow P$) (e.g., by implementing training)
1	\$4,000.
2	\$8,000.
3	\$14,000.
4	\$30,000.
5	\$60,000.
6	\$100,000.
7	\$160,000.

Note. $E \rightarrow P$ is measured on a 1-7 scale, with 1 = very low and 7 = very high.

(multiplicative) product. Then, using regression analysis, the associations of the elements and their multiplicative product with work-related behaviors such as quantity and quality of work, tardiness, and absenteeism would be determined. The costs associated with these behaviors would be measured. Finally, the resulting equations would be used to project the financial gains that would result from given increases in the expectancy theory cognitions.

An important component to include in this analysis is the cost of increasing the expectancy theory cognitions. Specifically, to increase an employee's $E \rightarrow P$, it will be necessary to increase the employee's skill level and confidence that exerting effort will lead to achieving a performance standard. The most direct way to do this would be to use training. Measuring the fixed and variable costs of training is fairly straightforward. Further refinements in costing the training would involve determining the amount of training and the effect of varying amounts of training on change in $E \rightarrow P$. With respect to increasing $P \rightarrow O$, the major consideration would be making clear to employees what P , the performance standard, is, and clarifying and strengthening the actual and perceived linkage between performance and job outcomes such as pay and recognition. This would entail clear goal setting, the communication of these goals, and possibly publicizing examples of employees who received positive outcomes upon achieving performance goals. Here, too, the costs of such goal-setting and communications practices could be assessed in a straightforward manner.

With respect to V , the key consideration would be providing outcomes that are valued by the employees. There may be costs associated with changing the work outcomes available (e.g., increasing merit pay, sharing of financial gains due to quality improvement), which should be fairly simple to measure.

Having explained the methods for costing the

expectancy theory cognitions and methods aimed at increasing them, the instructor can present charts that show hypothetical but realistic estimated costs associated with each level of the three components. Exhibit 2 illustrates the estimated costs associated with each level of $E \rightarrow P$ across the organization, measured on a scale of 1 (very low) to 7 (very high). Note that low levels of $E \rightarrow P$ are associated with low costs, but the cost for raising $E \rightarrow P$ to each additional level escalates. Of course, the exact relationship between costs and $E \rightarrow P$ levels will differ across settings, and will depend on the nature of the work and employee attributes.

Exhibit 3 illustrates the estimated costs associated with each level of $P \rightarrow O$ across the organization, measured on a scale of 1 (very low) to 7 (very high). Again, the costs escalate as $P \rightarrow O$ levels increase. It is important for students to understand that the estimates shown in the two charts are derived empirically, by applying the methods for costing human resources described by Cascio (1991) and Cascio and Boudreau (2008).

Once the data have been presented and explained, the exercise can proceed. This entails the following steps:

1. Students administer the expectancy theory survey (Nadler & Lawler, 1977; Doyle, 2003, pp. 79-81) to a sample of employees (typically 8-15 who hold the same or similar jobs) in their own workplace. This survey measures each employee's perception of 11 work-related outcomes (e.g., pay, promotion, recognition, sense of achievement) as the basis for measuring the strength of each of the three expectancy theory elements on a 7-point scale. The survey also indicates each employee's perception of the reward system's overall level of effectiveness, the "total work motivation score." This score has a theoretical range of 1 – 343, with the highest possible score resulting from a maximum score on each of the three elements

Exhibit 3 Estimated costs associated with achieving average levels of $P \rightarrow O$.

Level of instrumentality ($P \rightarrow O$)	Cost of achieving given average levels of instrumentality ($P \rightarrow O$) (e.g., by communicating, clarifying, and demonstrating performance standards and linkages with outcomes)
1	\$3,000.
2	\$6,000.
3	\$14,000.
4	\$27,000.
5	\$46,000.
6	\$80,000.
7	\$130,000.

Note. $P \rightarrow O$ is measured on a 1-7 scale, with 1 = very low and 7 = very high.

($7 \times 7 \times 7 = 343$). Generally, the average of students' total work motivation scores has been in the 130 – 160 range.

2. Once students have collected their data, scored the surveys, and summarized the results, they submit a memo to the instructor reporting the results. These include the means, ranges, and standard deviations of the three elements ($E \rightarrow P$, $P \rightarrow O$, V) and their product (the total work motivation score). The report also includes a verbal evaluation of the reward system's relative strengths and weaknesses, as indicated by the three elements. Very often, one of the three elements will stand out as the "weakest link." Students should make particular note of such a finding. In addition, students should provide basic pay data (wages or salaries) for the jobs of the respondents.
3. Students now develop a plan to implement changes to the workplace to increase the level of work motivation and performance of employees. Typically, this would entail changing one or more of the expectancy theory elements. In developing their plans, students need to take into account both the financial costs and gains of changing these elements. Exhibits 2 and 3 indicate the (hypothetical) costs associated with each level of $E \rightarrow P$ and $P \rightarrow O$. Exhibit 4 presents (hypothetical) estimates of the economic value per employee associated with different levels of the total work motivation score. The estimates presented in this chart would be derived empirically from the methods described by Cascio

(1991) and Cascio and Boudreau (2008). Note that the payoffs for higher motivational levels follow a pattern of diminishing returns: Once a moderately high level of motivation has been reached, further increases in motivation produce progressively smaller financial gains.

4. After developing their change plans, students should be able to provide a rationale for the types of changes they have recommended. This rationale should be based on their survey results and on a calculation of the financial costs and benefits of the projected changes in motivation. In short, students should be able to justify their plan, as Cascio (1991) has stated, in "the language of business." In addition, students should describe the organizational factors that are likely to hinder or facilitate the adoption of their recommendations. These can include financial and other resource-related factors, as well as behavioral and psychological factors. This part of the exercise is intended to encourage students to take a systems perspective, in which every intervention is likely to have both intended and unintended consequences on a variety of outcomes.

Example

The following example shows the process of analysis and the development of the change plan:

A student worked as one of four sales associates in a sporting goods store. All four sales associates answered

Exhibit 4
Economic value associated with total work motivation score (per employee)

Total work motivation score	Economic value
≤ 50	\$1,500.
51 – 75	\$3,000.
76 – 100	\$5,000.
101 – 125	\$8,000.
126 – 150	\$11,000.
151 – 175	\$15,000.
176 – 200	\$20,000.
201 – 225	\$26,000.
226 – 250	\$32,000.
251 – 275	\$34,000.
275 – 300	\$36,000.
≥ 301	\$37,000.

Note: Total work motivation scores can range from 1 – 343.

the expectancy theory survey. The results are shown in Exhibit 5; the student's scores are shown in the column for Associate A. The student noted that the average total work motivation score of approximately 152 out of a maximum possible 343 was within the average range of 130-160. Clearly, there was substantial room for improvement in this score. She further noted that for all four sales associates, $E \rightarrow P$ was high, V was moderately high, and $P \rightarrow O$ stood out as the "weak link." Exhibit 4 illustrates the data.

Given these data, she recommended that the store adopt practices to increase $P \rightarrow O$. Relying on the cost chart in Exhibit 2, she noted that raising the average $P \rightarrow O$ to 5.5 from 4.5 would cost \$46,000 – \$27,000, or \$19,000. Raising the average $P \rightarrow O$ to 6.5 from 4.5 would cost \$80,000 - \$27,000, or \$53,000. By calculating the overall effect of the $P \rightarrow O$ increase on the total work motivation scores, and then translating the total work motivation scores into the equivalent economic value, she determined her recommendation as follows:

Raising $P \rightarrow O$ to 5.5:

- Cost = \$19,000.
- Effect on average total work motivation score: increase to 187.1
- Financial gain per employee from increase in total work motivation score: \$20,000 - \$15,000 = \$5,000
- Number of employees (4) x \$5,000 = \$20,000 in total financial gain

Raising $P \rightarrow O$ to 6.5:

- Cost = \$53,000.
- Effect on average total work motivation score: increase to 221.1
- Financial gain per employee from increase in total work motivation score: \$26,000 - \$15,000 = \$11,000
- Number of employees (4) x \$11,000 = \$44,000 in total financial gain.

She concluded that raising $P \rightarrow O$ to 5.5 would be projected to produce a net financial gain of \$1,000, while raising $P \rightarrow O$ to 6.5 would be projected to produce a net financial loss of \$9,000, mainly because boosting $P \rightarrow O$ to such a high level would be very costly. Her recommendation was for store management to take actions that would increase the average $P \rightarrow O$ the equivalent of 1 point on a 7-point scale, by emphasizing more specific weekly sales goals and making sure to consistently link rewards to goal attainment.

In discussing the results of her analysis and recommendations, the student raised the issues of trust and competence. First, in order for the recommendations to be adopted, the key decision makers (e.g., those responsible for human resource training and development, and managers of the sales units) must perceive that the motivational model, expectancy theory, is reasonably valid. They must also perceive that the research linking motivational cognitions to financial outcomes is valid. In sum, they must trust the prior research findings and its relevance to their own organization. Second, the key decision makers must believe that the organization has sufficient competence to carry out the recommendations. For example, they must believe that management has the capability of changing the goal-setting and communication activities that can boost employees' $P \rightarrow O$ cognitions. These issues turn out to be precisely the "stickiness" issues raised in Szulanski's (1996) model.

It should be noted that the student could have conducted additional analyses to determine the projected effects of raising $E \rightarrow P$ or V as well. We have not provided the cost estimates for increasing V , but it is certainly possible to do so. We have used this simplified example to illustrate how students can use a psychological theory of work motivation to evaluate and improve motivation and performance in actual work settings. More important, this exercise is aimed at making students aware that beliefs and attitudes have real effects on work performance, and that these effects can be translated into financial measures. This requires adopting a systems perspective that views changes in one functional area (e.g., human resources

Exhibit 5

Summary expectancy theory survey data from four sales associates in a sporting goods store.

	Sales associate A	Sales associate B	Sales associate C	Sales associate D	Average
$E \rightarrow P$	6.3	6.7	6.3	6	6.3
$P \rightarrow O$	4.2	4.5	5.1	4.1	4.5
V	5.6	5.2	5.4	5.2	5.4
Total work motivation score	149.3	156.8	173.5	127.9	151.9

Note. Expectancy theory elements are on a 1-7 scale, with 1 = very low and 7 = very high. Total work motivation scores can range from 1 – 343.

management) as having both intended and possibly unintended effects others (e.g., finance). Finally, the exercise illustrates the importance of the distinction between making recommendations, on one hand, and the ability and motivation of the organization to implement these recommendations, on the other.

The purpose of the exercise is not to have students actually carry out the process of costing human resource activities or programs, as the financial data are provided by the instructor. The purpose is to have students practice using data that are made available by the organization to address specific questions and develop potential action plans. The exercise emphasizes the view that organizations are systems comprising multiple levels, and that data can be used to systematically evaluate and improve the working of the system at multiple levels (individual and unit or organization).

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