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"Staffing Planning at COMPUTERCO: A Personal Computer Analysis"

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Abstract

[Excerpt] This case study is used for student and executive development. It is intended to be used with the computer program EXTMOY, which is described in an accompanying Center for Advanced Human Resource Studies working paper #91-13 (Boudreau, 1991).

Keywords

CAHRS, ILR, center, human resource, job, worker, advanced, labor market, satisfaction, employee, work, manage, management, HRM, employ, model, industrial relations, computer, revenue profit, technology, training, quality, staffing

Comments

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**"Staffing Planning at COMPUTERCO:
A Personal Computer Analysis"**

By John W. Boudreau

Center Working Paper #91-12

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This case study is used for student and executive development. It is intended to be used with the computer program EXTMOV, which is described in an accompanying Center for Advanced Human Resource Studies working paper #91-13 (Boudreau, 1991).

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This paper has not undergone formal review or approval of the faculty of the ILR School. It is intended to make the results of Center research, conferences and projects available to others interested in human resource management in preliminary form to encourage discussion and suggestions.

Introduction

In this case exercise, you will use the IBM Personal Computer and a LOTUS 1-2-3 spreadsheet program to analyze the staffing policies of a hypothetical firm, called Computerco. The spreadsheet we will use makes use of the concepts outlined in the readings and in class concerning employee movement utility.

Specifically, the case problem involves deciding how best to spend resources on a combination of selection programs, turnover reduction programs, and turnover pattern control programs. The case summary provides a description of the company and its decision parameters. The computerized spreadsheet program allows you to quickly alter aspects of the staffing system and see the predicted results. The predictions are based on the relationships outlined in Boudreau and Berger (1985).

Think of the computer program as a kind of simulation. When you change a parameter of the staffing system (for example, using a more valid selection device), you can enter that change into the computer and "instantly" discover whether the organization is better or worse off. By successive analyses of this type, you should be able to explore the costs and benefits of different staffing alternatives, and to identify what alternatives and combinations offer the most promise for this organization.

At the same time, you will begin to understand the implication of utility theory for management staffing planning. The simulation frees you from the drudgery of computations, and allows you to let the computer do the tedious work while you do the planning and strategy formulation, and analyze the results.

Description of Computerco

Computerco is a regionally-located manufacturer of computer components. From modest beginnings, the company has enjoyed rapid growth in revenues and profits over the last 5 years. This is due largely to obtaining contracts to supply these components to the Nationally-known computer manufacturers (e.g., IBM, Digital Equipment Corp., Data General, AT&T, etc.).

The operation began (literally) in the current Chairman and CEO's garage, but quickly expanded. At present, the manufacturing organization is housed in a central plant. Moreover, the organizational structure has changed substantially due to the expansion. Computerco now employs over 6,000 people in manufacturing, marketing, technology development and the other traditional management staff functions. You were hired by Computerco one year ago based on your outstanding credentials and training from a Northeast Industrial Relations School. Computerco's Human Resource Management Director (Ms. Celia Baxter) impressed you as a dedicated and professional administrator. As she indicated in the interview, Computerco's strategic planning places great emphasis on the quality of their human resources. The company's Chairman believes firmly that high-quality human resource management is a key to becoming a leader in this field. Therefore, he has emphasized obtaining high-quality administrators for this area, and is supportive of new ideas.

As a new organization, however, emphasis must be placed on bottom-line considerations. No one in the company can expect to gain influence without such a perspective. In fact, the power and influence often flows to those who can make the best "business case" for their ideas. This is one of the most important reasons you were hired. Ms. Baxter was quite impressed with the quality of your Industrial Relations training, and by your ability to understand how human resource management (HRM) can and should contribute to the goals of the organization.

The Staffing Situation

Your first year at Computerco has been largely spent learning the ropes. You have assisted Ms. Baxter in analysis and decision making regarding all of the human resource functions related to the manufacturing operation. You have been able to gain a first-hand understanding of the manufacturing processes, as well as an understanding of the role of HRM in the process. Now, however, Ms. Baxter has given you your first really independent assignment. She has asked you to gather data on the staffing situation at Computerco, analyze that data, and present your conclusions and recommendations to her. If the analysis and conclusions have merit, she plans to have you present them to the Chairman.

Ms. Baxter characterized the staffing situation as a "turnover and selection problem." The focus of her attention is on the employees currently employed in the manufacturing process. There are 1,565 employees in this group, and the number of employees needed in the future is expected to remain constant. These employees are hired based on resume screening and an informal interview. They usually (but not always) possess high school degrees, and many of them come to the company with advanced degrees in non-technical areas. Their jobs are carried out on the "shop floor." They range from simple monitoring, loading/unloading and record keeping to more complex levels of inspection, testing, planning and organizing.

For some time now, Ms. Baxter has been concerned about the quality of programs used to select these individual's initially as well as the company's ability to retain the best employees. She has collected information in the past that indicates that the selection process has little value in choosing the best applicants (however, it is a valuable way to get line managers involved in the process, and it serves as a good initial job preview). She is also concerned because the turnover rate for these employees is currently 20% per year. This is somewhat higher than the industry average of 15%.

Ms. Baxter asked you to look into the situation, determine where the problems lie, generate a set of alternatives designed to address the problems and then make a recommendation for your favored alternative. She emphasized that the more "bottom-line oriented" your analysis is, the better. She also encouraged you to use computerized methods, because this is a direction she would like to pursue.

The Results of Your Analysis So Far

You decided to use the employee movement utility framework to guide your analysis. Briefly stated, this perspective examines the quality and quantity of employees acquired into a job as well as the quantity and quality of employees retained in the job when separations take place. In addition, this perspective accounts for the costs of programs designed to alter the quality/quantity of acquisitions or the quality/quantity of retentions (see Boudreau & Berger, 1985).

As a first step, you constructed the diagram shown in Figure 1 to depict the decision situation. Each box describes a component of the utility model for separations and acquisitions.

Figure 1
Diagram of the Employee Movement Utility Concept

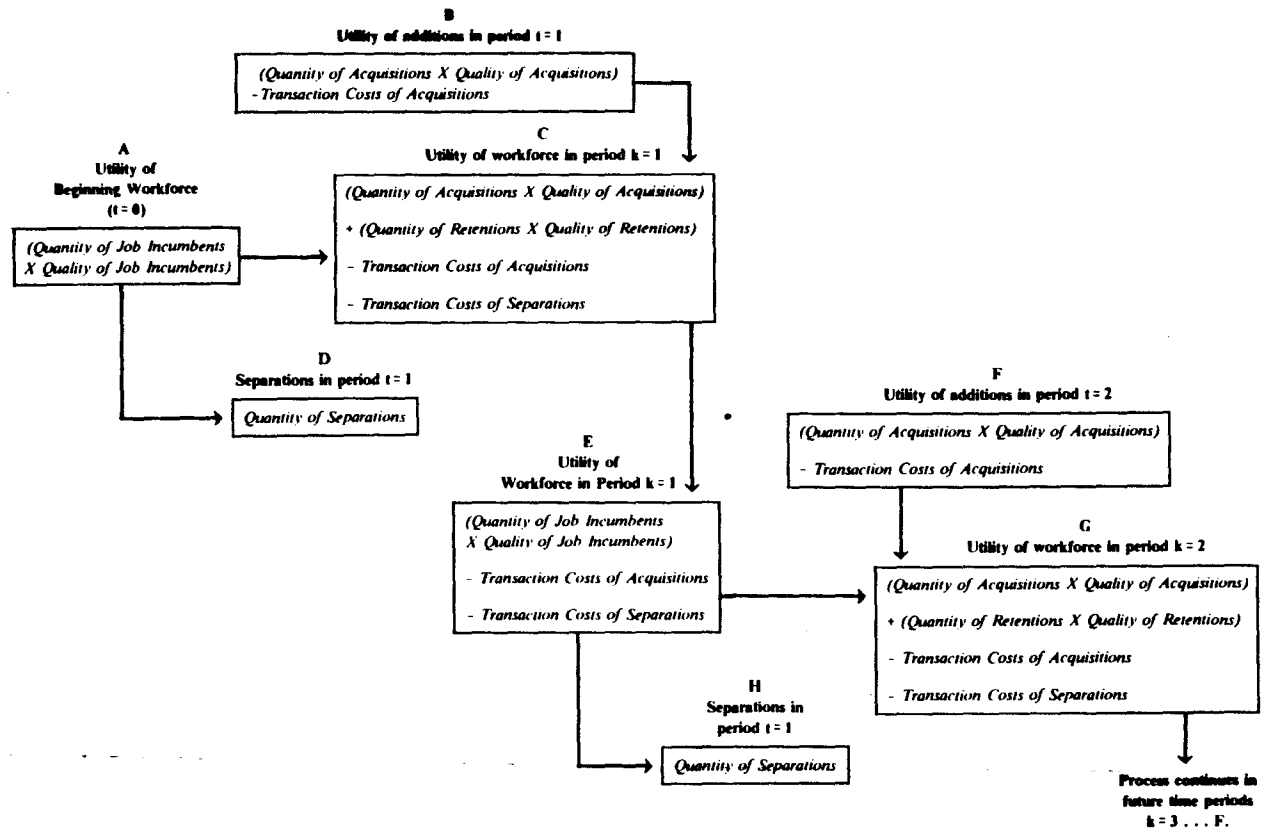


Figure 1 presents two periods of employee acquisitions and separations, with the workforce utility at the end of the first period (Box C) serving as the starting point for the next period (Box E), as indicated by the lines connecting the two boxes. Box A represents the workforce utility at the beginning of the analysis (i.e., in the period prior to implementing programs to change the quantity or quality of employee movement). In each time period, two processes may occur to change the utility of the workforce. First, employees may be added. The utility of acquisitions in the first time period (t = 1) is represented by Box B. The utility of the acquisitions becomes part of the utility of the workforce following acquisitions, as indicated by the arrow from Box B to Box C, and by the description within Box C. Second, some quantity of employees may separate. IN the first period, this is shown in Box D. These separations will affect the quantity and/or quality of those retained from the beginning work force. This effect is indicated by the arrow between Boxes A and C and by the description within Box C. In the second period (shown in Boxes E through H), the same processes occur, except that the beginning workforce utility is taken from the workforce at the end of the first time period and the quantity, quality and cost of acquisitions and retentions may differ from the first period. Finally, as indicated at the bottom of the Figure, the process is assumed to continue for the duration of the analysis (time periods 3 through F).

In order to put your analysis properly within the organizational context, you have gathered some general information about the current movement processes and other organizational factors relevant to your analysis.

Facts Related to the Movement Pattern

Presently, the organization has 1,565 employees in this workforce, and this is expected to remain stable for the foreseeable future. Each year, 20% of these employees separate (producing 313 separations). Through a cost analysis, it has been determined that each separation involves activities that cost roughly \$3,000. In addition, each acquisition currently costs roughly \$3,250.

Facts Related to the Organization and Capital Budgeting Decisions

Following the logic of movement utility analysis, you have gathered information regarding certain organizational characteristics. First, your discussions with corporate financial planners indicate that this organization requires a 10% pre-tax return on all investments (i.e., this is the discount rate), that it plans on a 45% tax rate, and that the normal analysis period is 10 years. Second, you have analyzed cost information for these jobs, and have determined that for every dollar increase in job performance, the costs of maintaining and supporting employees goes up by about five cents (i.e., there is a 5% variable cost rate).

Regarding the current employees, you have done some rough estimates, and have concluded that the value of services produced by these employees is about \$32,550 per year, on average. Furthermore, the costs involved in paying, training and otherwise maintaining their performance tends to average about \$24,350 per year. Thus, on average, these employees produce about \$8,200 net of their costs. Over the 1,565 employees, this is a productivity level of \$12.83 million per year.

The Current Separation/Retention Process and Options

Currently, as noted above, there are 313 separations per year, representing a turnover rate of 20%. Each time an employee separates, certain activities must be carried out (e.g., an exit interview, processing, severance pay), with a total cost of \$3,000 per separation. Moreover, you have conducted an analysis of the performance levels of those who remain after turnover and those in the workforce prior to turnover. You found that on average the organization tends to lose better performers than it retains. In fact, you conducted some in-depth interviews with supervisors and they estimated that, on average, the 1,252 employees remaining following turnover tend to produce about \$1,000 per-employee, per-year less than the group of 1,565 that existed before the separations took place.

At present, there are no special programs designed to influence the separation rate or the separation pattern. Obviously, it would be nice to retain more of the better performers, and it might be nice to reduce the turnover level. You have studied the available and feasible options and have come up with the possibilities shown in Table 1. The Table shows that you could do one of four separation rate reduction programs and one of five retention pattern management programs. Of course, you could combine different options as well.

Table 1

Summary of Retention Management Options

Options to Affect the Separation Level: Improved Employee Counselling

Your investigation revealed that employees are not well aware of the attractive benefits of working for Computarco versus some of your competitors. The company has designed some creative health and pension benefits, but most employees do not know about them. Based on the experiences of other companies you studied, it appears that helping employees become more aware of these benefits improves their job satisfaction and reduces their desire to leave.

To facilitate your analysis, you considered three levels of employee counselling. The first is to do nothing (the present case), and this adds nothing to the costs of retention, and it would probably leave the turnover rate at the present level of 20%. The second option involves a moderate campaign to reach employees through pamphlets and bulletins, and it would cost roughly \$800.00 per employee in the workforce. You estimate that this program would reduce the turnover rate to about 15%. The third option would involve a more personalized campaign with employee conferences in addition to the publications. This option would cost \$2,000 per employee and would probably reduce the turnover rate to 10% per year.

Options to Affect the Separation Pattern: Incentive Recognition

In studying the tendency for your best employees to leave, you discovered that many of the leavers felt that their unique contributions were not recognized. They were not so much interested in promotions (they liked the work they were doing), but they felt that other employers better recognized that they were special performers. A consulting firm has proposed a solution to this problem that would involve innovative recognition awards and one-time bonuses for outstanding performers. Your research indicates that some of the high performers who left would have stayed if such a recognition program had been in effect.

You considered five levels of recognition/bonus programs. First, you can do nothing. This will add nothing to the cost per employee, and would probably result in a continuation of the current pattern whereby those remaining are about \$1,000 less productive per year than the group before the separations. The other four options involve progressively more visible and expensive recognition systems. For simplicity, you have summarized them by their cost per employee in the workforce, and their likely effect on the value of the retained workforce as follows:

Option Between Stayers	Cost per Employee	Performance Difference and the Previous Workforce
Do Nothing	\$ 0	-\$1,000/employee/year
A	\$ 400	-\$ 500/employee/year
B	\$ 900	\$ 0/employee/year
C	\$1,500	\$ 500/employee/year
D	\$2,000	\$1,000/employee/year

The Current Selection Process and Options

Vacancies created through separations are filled by selecting new employees using the resume screening process and an informal interview with a personnel representative. However, no systematic effort has ever been devoted to making sure that the screening or the interview is job related. In fact, you believe they are probably not job related because your discussions with personnel representatives indicates they do not know what the jobs require and are basing their decisions on a "general feeling". This process involves costs of about \$3,250 per applicant.

At present, Computerco screens and interviews about twice as many applicants as it has positions. The number of applications filed by job candidates is substantially larger than the number that gets screened. Under the current system, when vacancies arise, the personnel representatives go to the application file and take them in order of the most recently-submitted. These applications are screened, and then the individuals are called in for interviews. The current custom is to gather about twice as many applications as vacancies to produce "a good number of applicants to look at."

You are considering two types of programs to affect the quality of acquisitions. The program options are summarized in Table 2. Obviously, it would be nice to have a selection program that would let you choose the very best applicants from those evaluated for hiring. In addition, it might be useful to examine more applicants (i.e., review more resumes and conduct more interviews) so that you can be as choosy as possible. However, these programs have their costs, and you must consider the payoffs in light of these costs. Table 2 shows that you have identified two selection programs, producing four selection options. Each selection option produces a different level of predictive power (validity) at a different cost. Also, you have identified five recruitment options, varying in their choosiness and cost. Of course you could combine these options. Moreover, you could combine different sets of selection/recruitment options with different sets of separation options.

Budget Limitations

Due to the tight budget situation currently facing Computerco, Ms. Baxter has advised you to keep any proposals you make within a certain budget limit. Currently, you have estimated that the organization spends \$1.956 million per year just to accommodate the present level of turnover (i.e., 313 turnovers per year, with a cost of \$3,000 per separation and \$3,250 per acquisition). Specifically, she wants your recommendations to be feasible within a budget of \$6.5 million per year, over the life of the program. This six million would include expenditures for regular separations and acquisitions (i.e., costs that do not include any additional programs to alter the staffing quantity or pattern), as well as any additional costs incurred by the new programs you may recommend.

Table 2

Summary of Acquisition Management Options

Options Designed to Increase Validity:

The current process of informal application screening and interviewing by personnel representatives with little job knowledge has little relationship to future job performance. From your training, you realize that there are ways to select employees more systematically. In fact, you have come up with two programs that you feel would enhance the organization's ability to select top future performers.

The first program option would involve improving the way that application forms are evaluated. You have studied this issue and already developed (with the help of a consultant) a "Weighted Application Blank" (WAB) procedure, which involves scoring various pieces of information from the application blank and then "weighting" or multiplying them by importance factors. The sum of the weighted scores is used as a predictor of future performance. Based on previous research, you believe that this procedure is likely to increase validity from its present level (of 0.0) to .20. However, the process of scoring and evaluating the application blanks carries a cost of \$500.00 per applicant.

The second option involves improving the interview procedure for applicants. In this procedure, you would have applicants report to the consultant's offices for an in-depth interview and evaluation of their job worthiness. The fee for this procedure would be \$2,000 per applicant. The consultant would furnish you with a summary of the results. Based on this consultant's past record, you expect that the results of this carefully constructed in-depth interview would produce a validity of .30.

Thus, you really have 4 selection options: (1) Do nothing, and keep the current regular selection costs per applicant, with zero validity; (2) adopt the WAB, adding \$500 per applicant cost and producing a validity of .20; (3) adopt the interview, adding \$2,000 per applicant cost and producing a validity of .30; and (4) adopt the combination of the WAB and interview, adding \$2,500 per-applicant cost and producing a validity of .35.

Options to Change the Selection Ratio

The other approach you might take to improving selection involves changing the ratio of selectees to applicants (i.e., the selection ratio). Currently, you screen and interview twice as many applicants as you hire, producing a selection ratio of .50. You know from your training that the selection ratio is related to the average standardized predictor score of those hired. Essentially, the smaller the ratio, the more you tend to get the "cream of the crop," or the top scorers on the predictor. Of course, the more choosy you are, the more applicants you must evaluate to get one hire. Depending on the costs of your selection procedures, this can get very costly. For purpose of analysis, you have decided to consider four levels of selection ratios (shown below with their corresponding Z_x scores).

Selection Ratios	.30	.40	.50	.60
Corresponding Z _x scores	1.16	.96	.80	.65

Tool for Assisting in Your Analysis

You have at your disposal a computer program developed to simulate the effects of various staffing management decisions. This program (called EXTMOV) was developed by John Boudreau to provide an interactive tool for conducting analyses of the costs and benefits of staffing decisions and options. Professor Boudreau has already customized the program to reflect your organization's decision parameters (i.e., he has set it to compute utility for 10 years, using a discount rate of 10%, a tax rate of 45% and a variable cost rate of 5%). In addition, you have already set up some of the program's parameters to reflect the nature of your present workforce (i.e., you have already assumed you have 1,565 employees, that their average per-year value and cost are as noted above, and that the parameters reflecting current selection and retention programs are as described above).

Using this computer program on the IBM PC, you can input different staffing program assumptions, examine their effects and keep a printed record of the information you develop. You have been eager to try out this tool on a real problem, and this is your chance.

The computer program allows you to change all of the parameters discussed above and in Tables 1 and 2. In addition, it displays a detailed table reflecting the assumptions of each analysis, the utility consequences for the workforce over the 10 years of the program, and the yearly budget (in millions) required to support the program options chosen.

A detailed description of the computer program and how it is used is available in an accompanying Center for Advanced Human Resource Studies Working Paper #91-13 (Boudreau, 1991).

Your Assignment

Assume the role of the personnel staff person in this case. Using the information presented here and the EXTMOV computer program, conduct an analysis of the selection system options you wish to consider. You will probably want to conduct a number of analyses before you finally arrive at a set of options you can recommend. Please address at least the following issues:

1. Identify the two top options you would recommend to Ms. Baxter, indicating your preference for one of them based on your utility analysis. That is, describe which of the program combinations you would recommend, and then briefly describe the utility consequences of each one. Provide a printout of the summary table from the EXTMOV program that shows the consequences of the current system and each of your two best options. Explain the numbers in the table so that Ms. Baxter could understand the consequences of the alternatives.
2. Discuss whether turnover reduction is always a cost-effective approach. If you conclude that it is not, explain what other factors affect its cost-effectiveness.
3. Discuss whether improved selection validity is always a cost-effective approach. If you conclude that it is not, explain what other factors affect its cost-effectiveness.
4. Discuss the effect of the \$6.5 million yearly budget limit. Did it force you to reject some useful alternatives, or did all of the most useful alternatives come in within that budget? If you did reject some useful alternatives, make a case for getting an additional \$1 million per year. What would you spend it on? What would be the predicted utility effects?

5. Suppose Ms. Baxter challenges your assumptions or data. Specifically, consider the possibility that she thinks your validity estimates for the program alternatives could be wrong. Suppose she thinks that all three of the validity estimates described in Table 2 might be off by 5% up or down. Would such an error make a difference to your recommendations? Tell what difference various possible errors could make.
6. Discuss the limitations of the utility analysis. Specifically, discuss any important factors that may not have been considered in the dollar-valued utility predictions, but might be important to the decision. What would you recommend doing about these factors?

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