THE CURRENT STATE OF QUANTITATIVE MEASUREMENT AND COST BENEFIT ANALYSIS IN THE HUMAN RESOURCE DEPARTMENTS OF LARGE, PUBLICLY HELD CORPORATIONS

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CHAPTER I

INTRODUCTION

Our country has been described as moving from an industrial nation to an informational society. Along with this evolutionary and transitional process, our descriptive terms and our accounting philosophy of the nation's workforce has also changed.

During the 1960's, along with the information explosion and the developing awareness of human rights, the term "human resources" became popular. While many companies continue to have a personnel department, that department is now frequently called the human resource department.

Business and industry have been developing their techniques to measure important resources and have been using cost benefit analysis to make managerial decisions for many decades. It has long been thought, however, that it was impossible to measure the value of human resources or perform cost benefit analysis on various aspects of the human resource function.

Human resource accounting (HRA) began to emerge in the 1960's (Flamholtz, 1985). Most of the early work was theoretical and too complex for adoption by the typical personnel/human resource manager. But in the last decade new approaches and formulas have been published. Flamholtz (1985) has developed a model for determining the value of human resources. Cascio (1987) has been developing techniques to measure behavior for the purposes of cost benefit analysis in such things as attitudes, performance, absenteeism, turnover, and smoking in the workplace. Fitz-enz (1984) has identified ways of measuring various aspects of the training and development, planning and staffing, employee relations, and compensation and benefits functions within the human resource department.

Managers involved in the administration of human resources, especially the training and development function, have long felt their credibility with upper level management was low. This

low level of credibility was thought to result in part from an inability to prove the economic value of their programs and activities (Fitz-enz, 1980). The advent of new quantitative measurement models and techniques provides a way to prove the worth of those human resource programs and activities.

Statement of the Problem

The problem which gives rise to this study is that while the literature indicates that human resource accounting and sophisticated measurement techniques have been available for several years, there has been no documentation of the range of usage. There has been no attempt to establish that the credibility of the human resource function may be higher in companies which have adopted these newer measurement techniques than in those which have not. There has been no attempt to establish a relationship between the use of these techniques and competitive success of the company.

If these new techniques are being used, and if their usage improves the credibility of the human resource function and has an impact on the competitive success of the company, that information should be documented for the benefit of the professionals in management capacities in the human resource and training and development functions.

Purpose

The purpose of this study was to determine the current state of quantitative measurement and cost benefit analysis in the human resource departments of large, publicly held corporations.

Research Questions

This study attempted to answer the following questions:

1. Are human resource managers using quantitative measurement and cost benefit analysis in the four subsystems of the human resource department?
2. Are human resource managers developing the ability to measure benefits?
3. Are human resource managers making quantitative measurements in areas

previously thought to be unmeasurable or too difficult to measure?

4. Has the human resource function been automated providing human resource managers with the ability to quantify quickly?

5. How do human resource personnel perceive the credibility of the human resource function in the eyes of upper level management at this time?

6. What reasons do human resource personnel give for not using more quantitative measurement and cost benefit analysis?

Assumptions

The following assumptions are made for purposes of this study:

1. The information on cost measurement techniques is available to practicing human resource managers.

2. Large, publicly held corporations which are accountable to stockholders are knowledgeable of HRA methods and quantitative measurements.

3. The use of quantitative measurement by human resource departments improves the credibility of the human resource function in the eyes of upper level management as perceived by human resource management personnel.

Limitations

The study was limited by the following factors:

1. The population constraints of personal interview prevent obtaining an all inclusive list of current quantitative measurement usage.

2. The population was limited to large, publicly held corporations in the State of Oklahoma which are evaluated by Value Line Investment Survey.

Definitions

The following definitions of terms were used in this study:

Compensation and Benefits: This is one of four subsystems of human resources. It includes

wage and salary and benefits administration.

Cost Benefit Analysis: Cost benefit analysis is a comparison of the costs versus benefits of any given program for decision making purposes. It can also be a comparison of the costs of two or more programs versus the benefits derived from each.

Cost Management: Cost management is a cost accounting system that captures all costs for the purpose of cost benefit analysis in human resource decisions.

Employee Relations: This is one of four subsystems of human resources. It includes all programs which develop and maintain the cultural climate which allows the corporation to meet its primary objectives.

Human Resource Accounting: This is a method of accounting whereby human resources are treated as capital and amortized over time rather than as expenses. It also includes the quantitative measurement techniques used to develop cost and value in economic terms.

Human Resource Function: The human resource function includes the following four subsystems: Training and Development, Staffing, Employee Relations, and Compensation and Benefits.

Qualitative Measurement: Qualitative measurement is the measurement of quality.

Quantitative Measurement: Quantitative measurement is the measurement of quantity or amount.

Staffing: Staffing is one of the four subsystems of human resources. It includes recruitment, selection and placement of personnel.

Training and Development: Training and development is one of the four subsystems. It includes both internal and external learning programs focused on specific job and management training and development.

Value Line Investment Survey: The Value Line Investment Survey is an independent, weekly, investment advisory service registered with the United States Securities & Exchange Commission. In terms of numbers of subscribers and annual revenues, it is the largest in the world.

Value Management: Value management is the identification of the value outcomes to specific beneficiaries in terms of specific benefits. Nonmonetary values of these benefits are converted to

monetary values by line management.

Summary and Overview

This chapter provides an introduction to the study. It also explains the problem, purpose, assumptions, limitations and definitions of terms used in the study. Chapter Two presents a literature review of human resource accounting and the practical application of quantitative measurement and cost benefit analysis in the human resource system. Chapter Three defines the population, data gathering methodology, research design, development of the interview questions and instruments, implementation of the research project, analysis of data, and validity and reliability. Chapter Four describes the findings of the study. Chapter Five states the conclusions, recommendations for practice and research and the implications of the study.

CHAPTER II

REVIEW OF LITERATURE

Human resource accounting is not a new concept and most of the techniques used in measuring various aspects of the human resource function are not new.

Human resource accounting is "the process of identifying, measuring, and communicating information about human resources to promote effective decision-making. It involves measuring the acquisition cost, replacement cost, and economic value of human resources, and their changes over time." (Brummet, 1968)

Flamholtz (1985) spoke of it as both a way of looking at human resource issues and as a set of measures for quantifying the effects of human resource management strategies.

Dierkes (1975) described it as "a tool in monitoring manpower utilization in a business environment."

The American Accounting Association's Committee on Human Resource Accounting has defined human resource accounting (HRA) as "the process of identifying and measuring data about human resources and communicating this information to interested parties."

The term "Human Resource Accounting " (HRA) therefore has taken on two meanings. It is an accounting term and the way the accounting department allocates various aspects of the human resource function . The meaning of HRA in this study refers to the various quantitative measurement techniques that permit developing costs and/or values of both human resources and the various activities of the human resource function and reporting those costs and/or values in economic terms.

What is new is the concept that human resources can be treated as capital and amortized over time. Also new are the various quantitative techniques that have been developed or synthesized to measure aspects of the human resource function. Earlier these were thought to be unquantifiable

in dollar and cent values. The change in philosophy and this synthesis process has provided the human resource manager an ability to conduct meaningful cost benefit analysis.

Measurement of Human Resource Value

Early research studies in HRA were developed at the University of Michigan. The research team in 1967 included Rensis Likert, R. Lee Brummet, William C. Pyle and Eric Flamholtz. Their objective was to develop concepts and methods of accounting for human resources as assets. Through their research at the R. G. Barry Corporation, a small soft goods manufacturer in Columbus, Ohio, they developed an accounting system for the historical costs of human resources as assets.

During the 1970's, this team published a great many articles on HRA and popularized the idea of human resources as assets. By 1974 Flamholtz had published Human Resource Accounting in which he presented the theoretical framework for human resource accounting. His framework included the following three models:

1. Input-Output Model of the Human Resource Management System: This concept considers the individuals and groups which make up the organization as the inputs into the system. These human resource inputs are managed through the acquisition, allocation, development, utilization, conservation, evaluation and compensation processes. They exit this system as human resource outputs either as individual or group services with value. The transformations that take place while in the system can all be costed, albeit some with surrogate measures or by pure estimation.

2. Model for Measuring Human Resource Replacement Costs: The concept of "positional replacement cost" is the sum total of all costs necessary to replace another person capable of providing an equivalent set of services in that position. It includes both direct and indirect separation, acquisition, and training costs. This is quite different than simply hiring costs.

3. Model for Determining an Individual's Value to a Formal Organization: This model depicts the "individual's expected realizable value" as including his/her conditional value and the probability of maintaining organizational membership. The elements of conditional value include promotability, productivity and transferability and the determinants of conditional value which

are skills and activation level (motivation). The probability of maintaining organizational membership includes the individual's level of satisfaction with his/her role and rewards in the organization.

By 1985 Flamholtz had reported the use of quantitative measurements to develop costs and value in economic terms in a number of studies described below.

1. Replacement Costs of Tellers and Management Trainees in a Large Bank: This model study was devised to resolve a debate over the true cost of tellers and management associates. Total costs per hire including acquisition and total development costs were used. A list of steps involved in recruiting, selection and training of tellers and management associates was developed. Cost components associated with each step were then determined. Ultimately this model was used as a cost benefit study between tellers and automated teller machines (Flamholtz and Kaumeyer, 1980).

2. Replacement Costs of Civilian Industrial Engineers by the Office of Naval Research: This study done in the public sector was a model for the cost benefit issue of whether to train internally or hire experienced personnel. Positional replacement costs which include total acquisition and total development costs were used in this model (Flamholtz and Geis, 1984).

3. Value of Executive Level Travel Time: The objective of this study was to determine the commensurate advantage, if any, of using corporate aircraft over the commercial alternatives. The opportunity costs of executive time saved by taking corporate aircraft was calculated by projecting the number of hours saved times the value of those hours (Flamholtz, 1985, pp. 312-319).

4. Projected Turnover Costs Associated with Variable Periods of Layoff: In this study a company that was experiencing a sales lag considered a temporary layoff of 4, 8, 12, or 16 weeks. The savings in payroll for a layoff for each of these time periods were determined. Supervisors were then asked to project the number of employees that would permanently leave the company if the layoff lasted 4, 8, 12 or 16 weeks. Supervisors were also asked to develop productivity graphs for performance after a return to work after 4, 8, 12 and 16 weeks layoff. This cost benefit analysis indicated that a layoff of 8 weeks or less would cost more than it would save

(Flamholtz, 1985, pp. 319-329).

5. Development by a Big Eight Accounting Firm of an Operational System for Accounting for the Cost and Value of Human Resources: The objective of this study was to develop a fully integrated human resource accounting system for four types of information: recruitment planning, replacement cost, turnover analysis, and human resource value. This firm was considering offering such a human resource accounting service to clients in a variety of situations such as cost benefit analysis for layoff purposes, layoff or relocation of personnel, valuation of personnel in an acquisition of another firm, and estimation of the value of athletes (Flamholtz and Searfoss, 1985).

The Concept of Costing Human Behavior

Wayne F. Cascio (1987) has taken another approach to costing human resources. He attaches dollar estimates to the behavioral outcomes produced by working in an organization. He measures the economic consequences of behavior rather than the value of the people. He measures behavior "in terms that are taken seriously by executive decision makers--absenteeism, turnover, job performance, attitudes and the cost of smoking in the workplace." Cascio believes that all aspects of human resource management can be measured and quantified in the same manner as an operational function. Cascio believes that each behavior has associated with it distinct costs and that these costs can be developed. In instances where historical costs have not been developed, he believes one can generally make a pretty realistic guess as to the cost.

Cascio's approach to costing the human resource function switches the emphasis from assigning a value to employees to assessing the economic consequences of their behavior. In many instances, the human resource department has the descriptive data but has not converted that data into dollars and cents.

Human Resource Accounting and the Human Resource Function

Flamholtz (1985) believes these new human resource accounting concepts/ philosophies/approaches serve in three ways for the human resource function. First, they serve

as a framework to facilitate decision making in the human resource function. Secondly, they provide numerical information about cost and value of the people as organizational resources. And thirdly, they motivate line management to adopt a human resource perspective in their decisions involving people. These theories allow the human resource manager to put dollar and cent values on various aspects of the human resource function.

Cost Benefit Analysis

Cost benefit analysis is the process of comparing the costs with the benefits of the program under consideration. Until measurements of costs and value in the human resource function were developed, it was impossible to make objective cost benefit evaluations. The acceptance of such an accounting system and measurement of human behavior as well as the acceptance of surrogate measurement and educated guesstimates have laid the groundwork for costing the various aspects of the human resource function.

The Practical Application of HRA Theory

The human resource management process described in Flamholtz's Input-Output Model of acquisition, allocation, utilization, development, conservation, evaluation and compensation become the administrative tasks of recruitment, selection, placement, policies and procedures, performance evaluation, training and development, and wage and salary administration.

Fitz-Enz (1984) describes the human resource function as a system. That system has four subsystems: training and development, staffing and planning, employee relations, and compensation and benefits.

Fitz-Enz has developed formulas to measure both direct and indirect costs of the products of each of those subsystems. He has also developed formulas for measuring the efficiency and effectiveness within each of those subsystems.

He suggests a matrix approach to develop a list of independent and dependent variables of the things one can see within the department. One can see people, things and processes being performed. He believes that anything that can be seen can be measured in terms of cost, time,

quantity or quality.

These quantitative measurements then establish a base of information which permit computing the benefits or value of activities and programs in dollar and cent terms. Fitz-Enz believes human resource professionals have had difficulty proving worth or benefit in the human resource function because they have not been exposed to measurement methodology.

Measurement

Human resource accounting and cost benefit analysis for management decisions in the human resource function do not use any new kinds of statistical measurements.

Data collection in the form of descriptive measurements such as numbers, mean, standard deviation, mode, median, and percentages have been used to monitor these various tasks. They have also been used as a base line on which to make comparisons after making some type of corrective change.

Correlation coefficients and regression equation statistics have been used in some aspects of the human resource function such as determining the utility in preemployment testing.

The remainder of this chapter will look at the measurement techniques described in the literature to quantify both costs and benefits in the four subsystems of the human resource functions of training, staffing, employee relations and compensation and benefits.

Training and Development

Costs associated with the development of job specific training programs are easy to compute. Costs for development and implementation of other specific training programs are also easy to compute. However, indirect costs associated with these programs are not always calculated.

The benefits derived from specific training programs have been more difficult to establish. This has been especially true of management training programs because many of the benefits appear to be intangible and difficult to quantify. However, Paquet, Kasl, Weinstein and Waite (1987) were able to establish the benefits in dollars and cents of three management training programs at Cigna Corporation.

Fitz Enz (1988) has published a cost accounting system for training programs using a Training Value Analysis (TVA). He suggests listing the outcomes the trainee will be able to do at the completion of the training as well as the beneficiary and the benefits of each of the outcomes. He then describes the values of those outcomes in nonmonetary terms. The operations personnel are asked to determine those values in dollar and cent figures.

Bell (1983) encourages training professionals to focus on "before and after training results such as sales, turnover, number of defective items produced, volume of customer complaints, etc." These are things which can be seen and consequently measured.

A cost benefit analysis model for evaluating the cost of structured and unstructured training was developed by Cullen et al. (1978). This model develops the training costs which include training development, training materials, (both expendable and unexpendable), training time, and production losses. It then develops the data on the training returns. These include the time to reach job competency, job performance, and work attitudes. An analysis is made of the training time, production rate, performance test, product quality, raw material efficiency, worker attitude, as well as the cost of the two programs.

The training department must have (a) base line data to prove a change resultant from the training, (b) measurements in important bottom line variables, and (c) knowledge of the cost associated with those variables, to establish benefits in dollar and cent figures. In many instances, costs associated with the variables must be obtained from the operations personnel.

Staffing

Fitz-Enz has published 17 formulas in which various aspects of the staffing function can be quantified. They are: cost per hire, source cost per hire, interviewing costs, source cost per hire (per interview), time issues (response time and time to fill), referral factor, job posting response rate, job posting response factor, job posting hire rate, internal hire rate, recruiting efficiency, hire ratios, hit rate, quality of hire, recruiter effectiveness, requisitions opened.

These formulas measure both the products and the service of the staffing function.
If the department has documented the costs of the various aspects of the staffing function, a

reduction in time or quantity and /or improvement in quality can be quickly converted into dollar and cent figures.

Lapointe and Verdin (1988) report the development of a seven step decision evaluation cost model which they used to evaluate relocation costs of personnel in a consolidation feasibility study of four offices. The model was designed to treat the relocation/consolidation decision as an investment decision. The seven basic steps include:

Step One: Develop a list of cost elements.

Step Two: Develop and identify subcomponents of each cost element.

Step Three: Develop the model structure.

Step Four: Collect data to estimate costs of each element.

Step Five: Develop alternative scenarios.

Step Six: Run the model.

Step Seven: Develop "what if" analyses.

Government regulations have made it necessary to document the validity of tests used for selection purposes (Equal Employee Opportunity (EEO) Regulations). The implications of the validation process are that the benefits of the selection tests are established. If standard training costs per new hire have been developed, a percentage improvement in trainee success and completion can easily be converted into dollar and cent figures and presented as a savings benefit resulting from the preemployment testing program.

Employee Relations

The Employee Relations Department conducts a wide range of activities, many of which are dissimilar and vary from company to company. It includes such diverse activities as affirmative action and employee assistance programs. Monitoring turnover, absenteeism and sick leave fall in this department. Attitude surveys to determine the current cultural state of the organization are also the responsibility of this department.

Turnover and absenteeism. Companies have reported turnover numbers and percentages for

decades. The Department of Labor publishes turnover statistics for various industries on a regular basis. Turnover studies in which the total costs for separation, replacement and training are not that common, however. Development of these costs include prorating of management and employee time in the administrative functions of the termination as well as the direct costs such as separation pay, moving expenses, and medical examinations. While proration of time and salary is not difficult, these indirect costs have not been developed as frequently because a) management was not aware of the methodology available for such calculations, b) time did not permit such extensive study, or c) there had not been any insistence from management for cost comparison or cost benefit analysis.

Cascio (1987) has published a model for defining the various costs associated with turnover and described how the calculations can be made. While various aspects of separation, replacement and training costs have been studied, developing the indirect costs outlined in his model are relatively new. His model includes computations for the following:

SEPARATION COSTS: Exit interview, administrative functions, unemployment taxes, and separation pay.

REPLACEMENT COSTS: Communicating job availability, preemployment and administrative functions (entrance interviewing, testing, staff meeting time), travel and moving expenses, postemployment acquisition and dissemination of information, and medical examinations.

TRAINING COSTS: Informational literature, instruction in a formal training program, instruction by employee assignment.

Absenteeism studies are not uncommon in the literature, but the conversion of the raw data numbers into total costs of absenteeism are relatively new. Cascio has developed an 11 step process which converts raw data into dollar and cent calculations. The costs include employee benefits as well as wages, cost of supervisory hours lost to the absenteeism, and other incidental costs associated with absenteeism. His 11 step model is shown below:

Step One: Compute total employee hours lost to absenteeism for the period.

Step Two: Compute weighted average wage or salary/hour/absent employee.

Step Three: Compute cost of employee benefits/hour/employee.

Step Four: Are absent workers paid? If Yes, compensation lost/hour/absent employee = wage/salary + benefits. If No, compensation lost/hour/absent employee = benefits only.

Step Five: Compute total compensation lost to absent employees (1. x 4a. or 4b. as applicable).

Step Six: Estimate total supervisory hours lost to employee absenteeism.

Step Seven: Compute average hourly supervisory salary + benefits.

Step Eight: Estimate total supervisory salaries lost to managing absenteeism problems (6. x 7.).

Step Nine: Estimate all other costs incidental to absenteeism.

Step Ten: Estimate total cost of absenteeism (Sum 5., 8., 9.).

Step Eleven: Estimate total cost of absenteeism/employee (10. divided by the total no. of employees).

Monitoring absenteeism, sick leave and turnover is not new. What is new is the inclusion of costs relating to time and production loss and the conversion of raw numbers into dollar and cent values. These techniques provide the employee relations department with the ability to develop baseline data which can then be used in cost benefit analysis of specific programs or activities.

Employee Relations Programs. If the department knows (a) the standard costs for one day of absenteeism, and (b) the number of days lost in the past year for those enrolled in the employee assistance program, it can compare the cost of the program versus the cost of absenteeism associated with that specific problem and make a dollar and cent value judgment.

If the department develops baseline information on its counseling activities and knows the standard cost per hour for counseling employees, it can compare those counseling costs with a decrease in counseling hours resulting from a management training program.

The ability to develop the value of benefits lies in the ability to develop standard costs and monitor the department's activities using quantitative measurements. This provides the baseline information in economic terms so that cost benefit analysis can be made after a change or program

has been implemented.

Models for computing the costs associated with smoking in the work place are reported by Cascio (1987). The list of possible cost benefit studies can be as endless as the number and variety of problems for which the employee relations department is responsible.

Compensation and benefits

Compensation is an ongoing program and the techniques of wage and salary measurement have been established. Compa-ratios, the weighted average salary as a percentage of the weighted midpoint, are an accepted method of monitoring the wage and salary system. Standard costs for major labor classifications have been established either through union contract or wage and salary surveys and market value. Savings in dollars and cents are easily documented because baseline information is readily available.

The value of many specific benefit programs is easily established. The baseline data are easy to obtain because the data base originates within the department. Also insurance carriers assist human resource personnel in developing the value associated with a specific program.

With the productivity emphasis of the 1980's, more and more companies began to link pay with performance. Performance standards became an issue from a legal standpoint.

Job Performance. Efficiency studies date back to the work of Frederick Taylor and Frank Gilbreth. Productivity studies since the 1970's have been numerous. Employee attitude surveys are also common.

Studies of the impact of attitude on job performance have been made by Mirvis and Lawler (1977). Only short term direct costs associated with the behavior were used. Their study examined bank teller errors and attitudes and projected the cost savings in dollars of a .05 standard deviation improvement in motivation.

Cascio and Ramos developed the (CREPID) approach to estimate job performance in dollars and cents. The approach was used with American Telephone and Telegraph Company and tested in the Comptrollers Division of a Bell operating company. The model includes the following 8 step

process:

Step One: Identify principal activities.

Step Two: Rate each principal activity in terms of time/frequency, importance, consequence of error, and level of difficulty.

Step Three: Multiply the numerical rating for time/frequency importance, consequence of error, and level of difficulty for each principal activity.

Step Four: Assign dollar values to each principal activity. Take an average of pay of participants in the study and allocate it across principal activites according to the results obtained in Step Three.

Step Five: Rate each principal activity on a 0-200 point scale.

Step Six: Multipy (for each principal activity) its dollar value by point rating assigned (expressed as a decimal number).

Step Seven: Compute overall economic value of job performance by adding together results of Step Six.

Step Eight: Over all employees in the study, compute the mean and standard deviation of dollar-valued job performance.

As the need to accurately measure performance increases, so will our determination to become innovative in our techniques to measure performances. A study released September 21, 1987 by the Office of Technology Assessment indicates that computer monitoring has been used to measure performance in such areas as number of keystrokes, time to complete a transaction, and time between transactions of operators. This technique not only could be used to measure the performances of clerical but professional, technical and managerial employees.

Summary

The concept of human resource accounting has been with us since the 1960's allowing us to consider human resources as assets and to evaluate human resource factors in economic terms. Basic statistical measurements have been available before that time (Guilford, 1956). New ways

have been developed to more accurately measure the costs of turnover, absenteeism, standard performance, and training programs. Models have been established to develop costs in human resource variables such as behavior that were thought to be impossible to put in economic terms. The need to convert nonmetric measurements to dollars and cents is recognized. The techniques are established in the literature.

As human resource professionals develop their quantitative measurement techniques, so will they develop their abilities to document the benefits of their programs and policies in economic terms. It would also seem logical that the ability to document the value of programs and the benefits derived from suggested changes would have a positive impact on the credibility of human resource professionals in the eyes of upper level management.

CHAPTER III

METHODS OF INVESTIGATION

Introduction

The purpose of this study was to determine the current state of quantitative measurement and cost benefit analysis in the human resource departments of large, publicly held corporations.

The assumption was that large, publicly held corporations which must be accountable to stockholders would be on the leading edge of sophisticated measurement techniques in the field of human resources and have accepted the practice of human resource accounting.

The research questions were:

1. Are human resource managers using quantitative measurement and cost benefit analysis in the four subsystems of the human resource department?
2. Are human resource managers developing the ability to measure benefits?
3. Are human resource managers making quantitative measurements in areas previously thought to be unmeasurable or too difficult to measure?
4. Has the human resource function been automated providing human resource managers with the ability to quantify quickly?
5. How do human resource personnel perceive the credibility of the human resource function in the eyes of upper level management at this time?
6. What reasons do human resource managers give for not using more quantitative measurement and cost benefit analysis?

This chapter describes the population, research design, development of the interview questions and instruments, implementation of the research project, analysis of data, and validity and reliability.

Population

The population for this study was large, publicly held corporations operating in the State of Oklahoma which are on the list of corporations evaluated by Value Line Investment Survey. "Value Line" is the largest investment advisory service registered with the United States Security and Exchange Commission. Value Line publishes information on 1700 publicly held corporations. Corporations reviewed by Value Line are constantly scrutinized by the investment community. Therefore it seemed logical that corporations under such constant evaluation would be using cost and value management techniques in the human resource function.

Compac Disclosure Data Base listed 36 publicly held companies headquartered in Oklahoma with more than 350 employees. Fifteen of those companies were evaluated by Value Line.

The 1987 Directory of Corporate Affiliations, 1988 Sibbold Guide to Oklahoma, 1986-1987 Rotan Bosle Guide and the 1988-1989 Oklahoma Directory of Manufacturers and Processors were used to identify branches, plants and subsidiaries in Oklahoma of corporations that were evaluated by Value Line. These directories provided the names of an additional six subsidiaries and thirteen branches or plants with more than 350 employees.

These 34 companies operating in the State of Oklahoma and evaluated by Value Line included a cross section of industries. This population included public utilities, government contractors, oil and gas and automotive industries, food distribution, a variety of manufacturers (tools, tires, military aircraft, computers and recreational products) and forest products. The companies were geographically dispersed throughout the state.

Research Design

The personal interview was selected as the best method to obtain the information sought in this study. Info-line: Surveys from Start to Finish (Lori, 1986) lists the face to face interview as appropriate for use "when complex questions that require explanatory answers" are sought, when all possible responses to an issue cannot be anticipated and when respondents are experts in their field or are in upper management.

"The interview also allows the investigator to observe both what the respondent has to say and the way in which it is said. If the interview is structured, or standardized, it is similar to the administration of individual intelligence tests. How the subject responds may be as important as response content." (Sax, 1979, p. 233)

Van Dalen (1979, p. 158) states, "Through respondent's incidental comments, facial and bodily expressions, and tone of voice, an interviewer acquires information that would not be conveyed in written replies. These auditory and visual cues also help him key the tempo and tone of the private conversation so as to elicit personal and confidential information and to gain knowledge about motivations, feelings, attitudes, and beliefs."

A structured interview was determined to be the most appropriate approach to obtain this information systematically. The structured interview is "positioned as a formal, fact-finding affair; it is scheduled, planned, has rules of conduct, and a defined focus." Additionally, "the results are formally analyzed in some fashion." (Zemke, 1986, p. 100).

The following rules suggested by Zemke were considered important in the actual interviews:

1. Don't touch content until you've built a trusting relationship with the interviewee.

2. After the relationship matters are taken care of, clarify your expectations of the interview. This is done by reviewing the purpose of the interview.

3. Tape record and take notes.

Sax (1979) suggests that errors in recording responses can be reduced if the interviewer both tapes the interview and takes notes.

Development of the Interview Questions and Instruments

There were two major concerns in the development of the interview questions. The first was how one might get a meaningful handle on the current use of quantitative measurement and cost benefit analysis. How could one ask meaningful and specific questions on such a broad and general topic? The second was how the questions might be tied to the literature but structured in a nonthreatening way so the interviewee would grant an interview.

The first problem, that of getting a meaningful handle on the current use of quantitative

measurement and cost benefit analysis in the human resource department, was resolved by adopting the Fitz-enz four subsystems model. This provided an intelligent and meaningful approach to ask specific questions. It allowed one to ask open-ended questions that were specific enough that human resource managers could give an intelligent response. Therefore those four subsystems, training and development, staffing, employee relations and compensation and benefits were used as the focal points for exploring use of quantitative measurement and cost benefit analysis within the human resource department.

The second problem was that of developing structured questions based on the literature in a nonthreatening way so that the interviewee would grant an interview. The interviewee population was high level human resource management personnel of large corporations holding such titles as Vice President of Human Resources, Director of Organizational Effectiveness and Human Resource Director. It was thought that interviewees at this level of management would be more inclined to grant an interview if the outline of content appeared reasonably simple and short. Ultimately the researcher decided that questions in some areas such as automation could be asked quickly during the course of the interview and need not be included in the advance interview outline. It seemed more important to limit this outline of questions to one page than include the entire interview content.

Therefore two instruments ultimately were developed:

1. The Interview Outline, (Appendix B), a one page outline of questions sent to the interviewee along with the letter requesting an interview.

2. The Structured Interview Form, (Appendix C), a four page instrument which followed the Interview Outline sequence but included some additional short questions and topics such as automation. This form provided a structured format for conducting the interview and for taking notes.

The development of these instruments is described below.

The Interview Outline

A preliminary draft of questions was developed based on the literature. This draft was

submitted to the research committee for appropriateness. After modifications were made to the outline to soften the language and prevent a threat of inquiry or embarrassment to the interviewees, the draft was mailed to four human resource management personnel for review. Individual appointments of a minimum of one hour were made with each of these managers to discuss the content, format and appropriateness of the questions and to gather their insights and suggestions for inclusion. Their suggestions were then included either in the interview outline or the structured interview form.

The interview outline contained a statement indicating responses would remain confidential, all information from the study would be reported in the aggregate, and responses could be brief.

Based on the literature and 16 years' experience as a Human Resource Director, Employee Relations Manager, Training Director and Wage and Salary Administrator, and the researcher's discussions with colleagues, the researcher concluded some departments would be ahead of others in the measurement process. The questions in each of the four subsystems should relate to the specific issues in that subsystem and take into consideration the level of quantification developed by that function. The logic was that if quantitative measurements are made, the human resource manager has the base on which to make an analysis and the ability to measure impact, effect, and/or benefit in dollar and cent terms. Cost benefit analysis implies a dollar and cent evaluation. To inquire only about cost benefit analysis would preclude information about quantitative measurement activity especially if the human resource manager had made quantitative measurements but had not proceeded to the level of a cost benefit analysis.

The logic for the questions in each of the four subsystems is set out below:

Training and Development. Classroom discussions indicated training and development managers were not using much quantitative measurement or cost benefit analysis. From the literature and discussion with training and development personnel, it was concluded that measuring the benefits/value of training programs was an issue. Therefore the questions were directed at determining how benefits of training programs are measured and presented to management. This appeared to be a less threatening way of inquiring about quantitative measurement and cost benefit analysis but would provide that information. The literature

suggested an additional question to determine if the company was allocating training costs as expenses or investments.

Staffing. Quantitative measurement is required in utility analysis, validation of selection procedures and tests as well as in cost benefit analysis. To ask about cost benefit analysis would eliminate learning about other quantitative measurements that might be used. Therefore the questions were directed at determining how the department measured the benefits of its staffing policies and programs.

Employee Relations. The first question asked what programs in this area were being measured or monitored. The human resource manager's response to this question provided a reference point to inquire about how the programs were measured. The questions were directed at determining the extent of quantitative measurement in the department and if cost benefit analyses were performed.

Compensation and Benefits. This department has been working with numbers in wage and salary administration for a long time and would be at the cost benefit level of sophistication. To inquire about quantitative measurement would be asking for too much detail. Based on the literature, a major issue in this area was "pay for performance". That issue brought about a desire for companies to measure performance in quantitative terms. Therefore the questions in this area were directed at learning if job performance was quantified in new and different ways such as the CREPID method developed by Cascio and quantified measurement with computers mentioned in the literature. The questions, however, were open ended and non-leading.

The fifth section of questions in the outline, entitled "Other Quantitative Measurements", was directed at learning what is now measured quantitatively that previously was considered either unmeasureable or too difficult to measure. Additionally, it inquired about other areas the human resource department would like to measure quantitatively if it had the time and resources to do so.

Structured Interview Form

The objectives of the second instrument, the structured interview form, were threefold: First, it provided a way to ask the same questions in the same sequence to each interviewee.

Secondly, it provided an organized way to take notes. Thirdly, it provided a way to standardize the inclusion of questions in three topic areas that were not included in the one page interview outline provided the interviewee.

Additional items standardized in the structured interview form and explored during the course of the interview included:

1. Are standard costs developed so baseline information is readily available for cost benefit purposes?
2. Where appropriate, do human resource personnel obtain dollar and cent figures from operations to prove their impact in economic terms or can they develop those figures on their own?
3. Has the human resource function been automated providing them with the ability to quantify quickly?
4. What reasons do human resource managers give for not using more quantitative measurement?

In addition to these items, the interviewee was presented a 3 x 5 card and asked to rate, using a 1-5 Likert scale, the credibility of various functions in the eyes of upper level management. This question was similar to Question 12 in an earlier survey reported in the Training and Development Journal (Stephan, 1988).

The structured interview form was printed so it could be read and followed easily. Bold face type pointed up key words which could be quickly and easily seen. Information the researcher wanted to keep in mind during the interview also was printed on the form.

Expected alternative answers and points were listed below the question. These words could be quickly circled. This made note taking quick, easy, and efficient.

Implementation of the Research Project

A file folder was developed on each of the 34 companies designated as the population. A log of contacts beginning with the initial telephone call to identify the name of the highest ranking human resource professional in the Oklahoma office, division or plant, and the correct mailing address

was noted on the left side of the file. A letter (Appendix A) requesting an interview was then typed and mailed to that human resource manager. The carbon of the letter was attached to the right side of the file. An outline of the interview content (Appendix B) was enclosed with the letter. The outline contained a statement indicating responses would remain confidential, all information from the study would be reported in the aggregate, and responses could be brief.

Letters were sent out in groups of ten on Fridays. On the following Tuesday, a follow up phone call was made to schedule an interview time. This proved to be a good time frame because the interviewee generally received the letter on Monday and it was still fresh in his or her mind when the call was made on Tuesday.

The company file provided an excellent way to keep track of the contact status with each company. The date the phone call was made to the human resource manager again was recorded on the left, along with the date agreed upon for the interview or the response and necessary follow up information. The 3 x 5 card to be used for the credibility question and a copy of the structured interview form on which the notes were to be recorded were immediately inserted into the file as soon as an appointment had been made. This procedure proved helpful in keeping track of the progress with each of the companies and was a handy way to carry the needed information to and from the interview. After the interview was completed, the notes taken on the structured interview form were quickly reviewed in the car and it and the 3 x 5 card were placed in the file for safe keeping.

Upon returning home, the tape of the interview was reviewed along with notes on the structured interview form. The structured interview form questions had been set up in the computer. The human resource managers' responses were entered into that computer data bank. Analytical observations made during the interviewing process and the interviewee's direct quotations were also entered into this data bank. The tape of the interview was reviewed during this process to assure accuracy of the direct quotes and the interviewee's responses.

A total of 29 interviews were completed. Five companies were unable to participate in the study because of scheduling difficulties within the time frame. Of the 29 interviews, five were prearranged telephone interviews because of scheduling and traveling complications. In each of

those instances, the interviewee agreed to a telephone interview at a designated time. The interviewee was called at the time agreed upon. The structured interview form was followed just as it had been followed in the face to face interviews.

Analysis of Data

At the conclusion of the 29 interviews, a printout of the data bank was made. This provided the 29 responses to each question which then could be analyzed for categorization and commonality. This provided easy access to all pertinent information during the final analyzation of the data. Tables were developed to present information that was clearly quantifiable. Qualitative information was determined best presented in text form. The data are presented in response to the research questions.

Validity and Reliability

The validity of the content was established through the literature and lengthy work sessions with the four human resource directors who acted as consultants. The final interview outline was approved by the consulting human resource directors and the research committee. "Face validity refers to the assumption that the index actually directly represents the reality we are trying to measure." (Gordon, 1980, p 40). "Content validity is established by logical examination of the test and the methods used in its preparation." (Cronback, 1960, p. 364).

Reliability was established through the structured interview format, the note taking instrument, taping of the interviews, and field testing the instrument. The field tests indicated the respondents understood the questions, were stimulated to answer the questions and the questions flowed smoothly. The interviewees appeared relaxed while answering the questions and their responses appeared to be candid. Sax (1979) suggests four sources of possible error in the interview process: errors in asking questions, probing, motivating respondents, and recording the responses. Errors in recording the responses can be eliminated by taping the interviews and taking notes.

The two instruments, the Interview Outline (Appendix B) and the Structured Interview Form (Appendix C), the request letter (Appendix A) and the detail of how the research plan was implemented proffers a subsequent researcher the ability to replicate this research study.

"Reliability of any measure or observation refers to the probability that an observation if repeated at a different time by the same person, or at the same time by another competent observer, will give the same result. Of course this assumes that conditions are such that the nature of the object or property of the object being observed has not changed with repeated observation." (Gordon, 1980, p. 39). To claim an instrument is reliable is to take the position that it will perform consistently from one time to the next. (Nickerson, 1985).

Summary

The population surveyed included 29 human resource managers in large, publicly held corporations in the State of Oklahoma which were evaluated by Value Line. Thirteen of those corporations were headquartered in Oklahoma. Sixteen were branches or subsidiaries with more than 350 employees in Oklahoma.

The method for obtaining the data was a structured interview. Two instruments were used. The first was a one page interview content outline mailed to the interviewee with the letter requesting an interview. The second was the structured interview form used for note taking during the interview. Interviews were taped unless prohibited. The content validity for this study was attained through (a) connection with the literature, (b) lengthy consultations with four human resource managers in the developmental stages, and (c) review and approval by the human resource consultants and the research committee as to appropriateness for the study. The instruments were field tested. Reliability, the ability to replicate the study, is provided through the two interview instruments, the request letter and the description of how the study was implented. Data were analyzed by reviewing the computer printout and categorization of the responses to each question. The data are presented in response to the research questions.

CHAPTER IV

ANALYSIS OF DATA

Introduction

The purpose of this study was to determine the current state of quantitative measurement and cost benefit analysis in the human resource departments of large, publicly held corporations. The data were obtained through interviews with human resource management personnel in 29 large, publicly held corporations in the State of Oklahoma.

The data are presented in response to the six research questions:

1. Are human resource managers using quantitative measurement and cost benefit analysis in the four subsystems of the human resource department?

2. Are human resource managers developing the ability to measure benefits?

3. Are human resource managers making quantitative measurements in areas previously thought to be unmeasurable or too difficult to measure?

4. Has the human resource function been automated providing human resource managers with the ability to quantify quickly?

5. How do human resource personnel perceive the credibility of the human resource function in the eyes of upper level management at this time?

6. What reasons do human resource personnel give for not using more quantitative measurement and cost benefit analysis?

Measurement Usage in the Four Subsystems

The first research question was, "Are human resource managers using quantitative measurement and cost benefit analysis in the four subsystems of the human resource

department?"

The usages of quantitative measurement and cost benefit analysis reported by the 29 companies will be reviewed under the four subsystems: Training and Development, Staffing, Employee Relations and Compensation and Benefits.

The interview questions were directed to the major quantification or cost benefit issues in the specific subsystem as indicated by the literature and the human resource personnel consulted during development of the interview instrument.

Training and Development

In the training and development subsystem, the items of interest were (a) how the benefits of training programs are measured, (b) how the results are presented to management and (c) how training expenses are allocated by the accounting department.

How benefits of training programs are measured. Of the 29 companies in the study, 72% reported some type of evaluation or measurement of their training programs. The types of measurement are shown in Table I. In some instances a company used more than one type of measurement or evaluation.

Participant feedback on quality of program content, instructor, and visual aids was the most popular method of measuring training programs. Forty-eight percent of the human resource managers stated this was how the department measured its training programs. Seventeen percent reported measuring programs in terms of results such as proficiency on the job, production standards, increased efficiencies, fewer complaints, better safety records, lower scrap and rework rates, or signs of better supervision: decreased absenteeism, lateness, complaints, fewer accidents. Fourteen percent indicated a subjective followup with the supervisors or subordinates. Other methods mentioned were anecdotes from supervisors and others (3%), post test to determine level of proficiency (3%), trainee's statement as to how the company would benefit from his/her participation in the program (3%), and pre-test/post test to determine level of competency (7%).

TABLE I

METHODS OF MEASUREMENT
TRAINING PROGRAMS

Method of Measurement	Companies	Percentage
Participant feedback on quality of program content, instructor, and visual aids.	14	48%
Participant questionnaire requesting statement on how company will benefit from training in program.	1	3%
Pre-test, post test to determine level of competency.	2	7%
Post test to determine level of proficiency.	1	3%
Subjective followup with supervisors or subordinates.	4	14%
Anecdotes from supervisors and others.	1	3%
Objective questionnaire to supervisors requesting quantification information on benefits of program.	1	3%
Results: Proficiency on the job, production standards, increased efficiencies, fewer complaints, better safety records, lower scrap and rework rates, or signs of better supervision: decreased absenteeism, lateness, complaints, fewer accidents.	5	17%

N=29

As the table indicates, few companies (17%) have advanced to connecting the benefits of training programs to results.

How results of training programs are presented to management. Table II shows the types of information reported to management. Demographic information such as type of program, trainee classifications, number of persons trained, length of course, total training hours and date of course is the more commonly reported information (52%). Only 7% of the companies indicated

TABLE II

HOW TRAINING RESULTS ARE REPORTED TO MANAGEMENT

Type of Information	Number of Companies	Percentage
No presentations are made	6	21%
Demographic information such as type of program, trainee classifications, number trained, length of course, total training hours, date of course	15	52%
Results such as participant feedback	6	21%
post course survey results	3	10%
efficiency and effectiveness measures such as status on key indicators (safety, customer relations) with charts and graphs	3	10%
Total direct costs	5	17%
Cost benefit analysis	2	7%

they had reported the results of training programs to management in terms of a cost benefit analysis; while 21% report participant feedback, 10% post course survey results, and 17% report only the direct costs of the programs. Efficiency and effectiveness measures such as status on key indicators (safety, customer relations "with charts and graphs") were mentioned by 10% of the human resource managers.

How training costs are allocated by the accounting department. Training costs continue to be allocated by the accounting department as expenses by most (76%) of the companies. Human resource managers in ten percent of the companies cited in house training, purchase price or the developmental cost of a training program and the "hard items" as investments. One interviewee suggested, "Philosophically, we think of training as an investment." Another human resource manager stated "Communications call it an investment." A third interviewee said "We are beginning to treat it as an investment."

Staffing

In the staffing subsystem, the items of interest were (a) how benefits of pre-employment testing programs and selection policies are measured and (b) what other quantitative measurements have been made in this subsystem.

How the department is measuring the benefits of its pre-employment testing programs and selection policies. Seventy-two percent of the human resource managers indicated they are not measuring the benefits of pre-employment testing programs and selection policies. Forty-five percent stated they are using job related skill tests only; while another 28% indicated they are testing other than job specific skills. Ten percent of these companies reported validty or utility studies in progress, another 10% reported data collection in process in anticipation of conducting a study shortly and another 7% stated the company had previously validated a test. This data is shown in Table III. One additional company is presently considering revalidation of a test. Another company stated that their "computerized system selects qualified applicants."

TABLE III

QUANTITATIVE MEASUREMENT
STAFFING

Measurement	Number of Companies	Percentage
No measurement	21	72%
Validity and/or utility studies in progress	3	10%
Data collection in process and anticipate validity and/or utility study shortly.	3	10%
Validity and utility established previously and no study anticipated at this time.	2	7%

N=29

In place of measurement of benefits, 41% of the companies mentioned they look at retention at six months and a year and general turnover statistics. Some do a follow up with the supervisor of the hiree. One company stated it looks at exit interview and performance evaluations.

Other quantitative measurements in the staffing subsystem. The following other quantitative measurement usages were reported:

Chi Square in a destaffing study
Quantifying the learning curve associated with pre-employment test scores
Retention rates correlated with specific universities
Manpower forecasting
Ratio of job offers to acceptances
Internal vs. external placement rates
Internal posting system responses
Time jobs are left unfilled
Human resource ratio to total number of employees
Analysis of recruitment sources
EEO monitoring statistics

These results indicate that the staffing departments are conducting quantitative measurement studies in such areas as destaffing, the learning curve associated with pre-employment tests, and retention of employees from specific universities. Additionally, the staffing department is quantifying a number of factors associated with the efficiency measures within the department such as the length of time jobs remain open.

Employee Relations

A variety of activities fall in the employee relations department. To determine current usage of quantitative measurement and cost benefit analysis, the questions were directed to inquiring what programs were measured quantitatively and how the programs were measured.

Companies mentioned having a variety of Health and Stay Well and Employee Assistance programs. The Health and Stay Well programs include such health issues as smoke cessation, weight control, stress management and exercise. These programs are measured against medical costs, lost time, accident rates and absenteeism costs.

While companies are monitoring these programs, human resource managers reported that actual cost benefit analysis is difficult. One interviewee stated, "There are so many variables it is difficult to prove." The costs of Employee Assistance Programs, for example, are known but the benefits have been hidden because of the anonymity of the beneficiaries. Some quantified monitoring is provided by the vendor. In referral cases, problem resolution is tracked. Companies are trying to connect the cost of these programs with absenteeism, sick leave and turnover.

Some quantitative measurement is done with the results of attitude surveys. Frequently, this is simply a measure against a benchmark survey but some companies try to correlate policy changes with significant changes in the survey.

One company mentioned that it was doing some quantitative measurement with its educational assistance program. The company is monitoring course sign up rates with payout costs. It is also

studying course completion with performance and promotion.

Some companies have put in programs without doing cost benefit analysis. These companies either implemented programs because "everybody was doing it" or their decision was based on studies in the journals.

Thirty-eight percent of the companies indicated they were doing some type of quantitative measurement and cost benefit analysis in the employee relations area.

Compensation and Benefits

This study concentrated on new uses of quantitative measurement in the area of performance because "pay for performance" has become an issue. The study indicated that there is a great deal of interest in measuring performance. Fifty-nine percent of the companies indicated some quantitative measurement or cost benefit analysis involvement in the compensation and benefits area. This is activity other than the typical wage and salary administrative measurements.

Table IV shows 13 occupations companies cited measuring in some new way. It is interesting to note that only four have been tied to compensation. Companies cited union contracts or the desire to wait until all jobs could be quantified as the reasons for not tying them to compensation at this time.

In addition to quantitative measurement in the 13 classifications described above, companies reported other efforts to measure performance. One company reported moving to a ten factor program to evaluate nonexempt workers. One of the factors included is compexity and impact on business. In white collar exempt classifications, performance results have been quantified and weighted. Performance standards have been developed.

Another type of job performance measurement identified in this study was a time curve study on salary ranges for professional personnel such as engineers.

TABLE IV

QUANTITATIVE MEASUREMENT OF PERFORMANCE FACTORS

OCCUPATION	MEASUREMENT	TIED TO COMPENSATION	
Claims Administrator	Quantity/quality of production	Yes	
Factory worker	Individual's production is posted daily		No
Coin collector	Coins are counted Bags counted previously		No
Craft worker	Measured by clock Paper report previously		No
Crew performance	Benchmarks determine number of man hours and number of personnel to dispatch		No
Operator	number of calls		No
Order puller	performance standards	Yes	
Order Selector	Computer determines standards for order completion.		No
Trucker Drivers	Computer develops info (Delivery) on idle time and truck abuse.		No
Customer service	Customer satisfaction is routinely surveyed	Yes	
Plant labor	Daily "Clean up audit" standards.	Yes	
Assembly worker	Time standards		No
Customer service	Computer tracks orders.		No

The Ability to Measure Benefits

The second research question was, " Are human resource managers developing the ability to measure benefits?"

Fitz-enz had suggested that the development of standard costs, the identification of benefits and the ability to convert those benefits into economic terms were essential to cost benefit analysis. An attempt was made to determine if human resource personnel were developing standard costs in the training and development and staffing functions. An attempt was also made to determine if training and development personnel were involving operations personnel in the identification of the benefits of training programs and if those benefits were converted into economic terms.

Human resource personnel in 55% of the companies indicated that they had developed some variation of standard costs such as cost per trainee, cost per trainee hour or trainee day. Indirect costs such as trainee and trainer salaries were not always included, however. Twenty-eight percent of the companies indicated that they developed internal vs. external costs for a training program.

Human resource personnel in 41% of the companies indicated that they had developed some variation of standard costs in the staffing function. Seventeen percent of those companies indicated that those standard costs included the indirect costs of interview time. This information is shown in Table V.

When asked if they obtained dollar and cent figures from operations to prove their impact in economic terms, only ten percent of the human resource personnel indicated they did so. Seventeen percent, however, indicated they had the capability of developing these figures on their own.

TABLE V

ABILITY TO MEASURE BENEFITS

Ability	Number	Percentage
Develop Standard Costs		
Training		
Developed one or more of the following:*		
Cost per trainee, trainee hour, or day	16	55%
Developed internal vs. external costs	8	28%
Staffing		
Developed standard cost per hire	12	41%
Interview time calculated and included in cost per hire	5	17%
Obtain Dollars and Cents Values from Operations		
Training	3	10%
Ability to Develop Dollars and Cents Values On Their Own		
Training	5	17%

*Indirect costs such as trainee and trainer salaries were not always included.

Quantification in New Areas

The third research question was, "Are human resource managers making quantitative measurements in areas previously thought to be unmeasurable or too difficult to measure?"

Question 5a. in the interview outline was a further attempt to determine what else human resource personnel might now be measuring that they previously considered either unmeasurable or too difficult to measure. The following responses indicate that quantitative measurement is used in new and different ways and that the computer is used in this process:

> "We now have a standard cost system on production."
>
> "We are monitoring industrial hygiene (toxicology)."
>
> "we are trying to quantify why people leave the company."
>
> "Our absenteeism is now on Lotus."
>
> "The cost of 'unquality'--what it costs to fix things (production) that should have been done right the first time."
>
> "Employee moving expenses are now on the computer."
>
> "We are tracking health care costs by employee, type of injury, and hospitalization statistics."
>
> "Effectiveness of the EAP. What does it really save?"
>
> "We are using an organizational effectiveness measurement survey." (Quantified on a statistical basis)
>
> "We used to do least squares on compensation. Now we do regression on all survey data."
>
> "We are establishing benchmarks."
>
> "We are tracking benefits more."
>
> "We measure company progress vs. other companies and the industry in benefits, compensation, and organizational studies. There is more and more information available and it is easy to get to. It is easier to correlate. There are lots of ways to measure your company's product vs. the industry."
>
> "We were able to recover a substantial savings through our ability to monitor overseas taxes on the computer."

Question 5b. in the interview outline asked about other areas the human resource department would like to make quantitative measurements if it had the time and resources to do so. Their responses, identified by subsystem, are shown in Table VI. Their responses indicate an interest especially in developing expertise in quantitative measurement in the training and development

and compensation and benefits areas. They indicated a desire to do more sophisticated measurement and cost benefit analysis in training. There appears to be a high interest in measuring white collar productivity and performance.

TABLE VI

QUANTITATIVE MEASUREMENT STUDIES HUMAN RESOURCE MANAGERS WOULD LIKE TO CONDUCT IN THE FUTURE

Type of Study	Number of Responses
Training and Development	9
Responses indicated a desire to do more sophisticated measurement in the training area and the ability to do cost benefit analysis. Also mentioned was an interest in developing training as an investment.	
Staffing	4
Responses indicated an interest in quantitative studies in hiring procedures and testing, computer skill bank and success, performance appraisal and management development.	
Employee Relations	1
Longitudinal studies of health and fitness programs and absenteeism and medical costs.	
Compensation and benefits	7
Responses indicated an interest in measuring white collar productivity and performance, a summarization of the cost of benefits in relation to salary, and computing a job description and job evaluation factor.	

Automation

The fourth research question was, " Has the human resource function been automated providing human resource managers with the ability to quantify quickly?"

A number of questions were asked to determine if the human resource function had been automated and if human resource personnel could generate their own information. While 62% of the human resourcce personnel interviewed had computers on their desks, 90% had access to the mainframe. This information is shown in Table VII. When the interviewee did not have a computer on his/her desk, he or she frequently had access to one just outside his or her office. As one interviewee stated, "I no longer have one in my office because I'm burned out."

TABLE VII

AUTOMATION CAPABILITY OF THE HUMAN RESOURCE DEPARTMENTS

Type of ability	Number of Companies	Percentage
Skills bank on computer	16	55%
Programmer on staff	5	17%
Computer on their desks	18	62%
Access to the mainframe	26	90%
Ability to generate their own reports	23	79%
Management has committed resources and training to automate the human resource function	25	86%

One human resource manager offerred "Our absenteeism is now on Lotus." Another stated "Employee moving expenses are now on the computer. Companies also cited the use of computer in tracking performance and selecting qualified candidates. One company cited the ability to make a considerable cost savings through their ability to track overseas taxes.

Human Resource Credibility

The fifth research question was, "How do human resource personnel perceive the credibility of the human resource function in the eyes of upper level management at this time?"

The human resource managers were asked to rate, in the eyes of upper level management, their perceptions of the credibility of various functions. Of 29 interviews, only 19 responses were obtained. The number of responses was limited because (a) time did not permit this final question, (b) the interviewee declined giving an opinion or (c) the interview was by phone.

The interviewees were given a 3 x 5 card with the question "How credible are the following functions? They were asked to rate the following six functions on a 1-5 Likert scale: Finance, Operations/Manufacturing, Engineering/Research and Development, Human Resources, Marketing/Sales, and Training and Development. The results are shown in Table VIII.

The question was patterned after the Fortune 500 study published in the January edition of the Training and Development Journal. The major difference in the studies is that the Fortune 500 study included only "Human Resource Development". The present study included human resources as a function and also training and development as a function.

Because of sample size and difference in the question structure, no conclusions should be drawn from the responses regarding the credibility of various functions in the eyes of upper level management. It is interesting to note, however, that at least in this study, human resource managers perceived themselves as having more credibility than the marketing function and above the training and development function. Human resource managers and professionals were also the respondents in the Fortune 500 study.

TABLE VIII

HUMAN RESOURCE CREDIBILITY

The results of this study and the Fortune 500 study are shown below.

Scale: Extremely Credible 5 4 3 2 1 Not Credible at All

	Mean		5 only		4 & 5	
	This Study	500 Study	This Study	500 Study	This Study	500 Study
Finance	4.21	3.64	37%	18%	84%	52%
Operations/Mfg.	3.95	3.99	11%	26%	84%	72%
Eng./R&D	3.58	3.65	16%	19%	58%	55%
Human Resources*	3.42	-	0%	--	53%	--
Marketing/Sales	3.32	3.75	5%	24%	47%	63%
Training & Development	3.21	3.48	5%	11%	42%	47%

*Human Resources were not included in the Fortune 500 Study. That study included Human Resource Development which is the same as Training and Development.

Why Human Resource Personnel Do not Use More Quantitative Measurement

The sixth research question was, "What reasons do human resource personnel give for not using more quantitative measurement and cost benefit analysis?"

In response to the question, "Why don't human resource personnel use more quantitative measurement?" the following reasons were given:

The economy.
Inadequate manpower.
Insufficient time.
It is difficult to do.
Inadequate knowledge of statistical values.
The culture of the company.
Reactive rather than proactive management.
Lack of management persuasion.
Human resource personnel are not quantitative oriented.
Human resource personnel are not comfortable with mathematics.
Human resource personnel do not know how to quantify issues.

The following quotations represent this point of view:

> "There is not a payoff to doing cost benefit analysis. Additionally, there is a long history of inertia--of not knowing how to measure and no one asks them to do it. They do cost analysis but not cost benefit analysis because it is too d--- hard and it is questionable."
>
> "Management is budget driven. Management doesn't push for quantitative measurement and cost benefit analysis. It is not a priority. There is not enough time to do it."
>
> "Quantitative measurement is used extensively in payroll, benefits and employment to meet government regulations. It is not used in training because they don't know how and management does not see the need."

The following quotations indicate that human resource personnel are beginning to use more quantitative measurement.

> "It's a copout that you can't measure. You can measure against the factory indices."
>
> "It's an easy copout that the soft side of management can't be measured. I have come to the conclusion that if work is going on, you can measure it. This has been a revelation."
>
> "A lot of it revolves around the maturity of the human resource function within the company. Some look at it as a recordkeeping function....I can't think of the last 'new idea' that I took upstairs that somebody didn't ask how much is it going to cost and how are we going to get a benefit out of it. Looking at the on-going things, we don't measure those as much. But everything that is new, we do"
>
> "Entering professionals now do use quantitative measurement. Earlier most human resource personnel were not quantitatively oriented. Schools are doing a better job now."

Four of the interviewees volunteered they had read How to Measure Human Resource Management by Fitz-enz.

Summary

This chapter analyzed the interview responses of 29 human resource managers in large, publicly held corporations in the State of Oklahoma to the six research questions.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS FOR PRACTICE AND RESEARCH AND IMPLICATIONS

Summary

The concept of human resource accounting has been with us since the 1960's allowing us to consider human resources as assets and to evaluate human resource factors in economic terms. Various quantitative techniques have been developed or synthesized to measure aspects of the human resource function. The change in philosophy and this synthesis process has provided the human resource manager an ability to conduct meaningful cost benefit analysis.

The purpose of this study was to determine the current state of quantitative measurement and cost benefit analysis in the human resource departments of large, publicly held corporations. The concept advanced by Fitz-enz of four subsystems within the human resource function was adopted for purposes of this study. This permitted focus and specificity. The four subsystems are: Training and Development, Staffing, Employee Relations, and Compensation and Benefits.

The assumption was that large, publicly held corporations which must be accountable to stockholders would be on the leading edge of sophisticated measurement techniques in the field of human resources and have accepted the practice of human resource accounting.

The population was large, publicly held corporations operating in the State of Oklahoma which are on the list of corporations evaluated by Value Line Investment Survey.

The research design was a personal interview with the highest accessible ranking human resource manager. Two interview instruments were developed with the assistance of four human resource managers and the research committee. A short one page interview outline was sent to the interviewee with the request letter. A four page structured interview form was used for note

taking. The instruments were field tested. The interviews were taped unless prohibited. The data were presented in response to the six research questions.

Conclusions

1. Training programs are more likely to be measured subjectively than quantitatively. Few human resource personnel are measuring training programs in terms of results. Participant feedback is the most often used method of measurement. The results of training programs are more likely to be presented to management in demographic terms than in economic terms. Training continues to be considered an expense rather than an investment by most companies, although a few companies are beginning to think of some training costs as investments.

2. Few human resource managers are measuring the benefits of their pre-employment testing programs and selection policies at this time. However human resource managers are using quantitative measurement in a variety of studies related to staffing activities such as destaffing, the learning curve associated with pre-employment tests, and retention of employees from specific universities. Additionally, the staffing department is quantifying a number of factors associated with efficiency measures within the department such as the length of time jobs remain open.

3. Human resource managers are monitoring employee relations programs but the actual cost benefit analysis is considered too difficult because there are so many variables involved. The costs for programs such as Employee Assistance Programs can be readily determined, but the benefits are frequently hidden because of the anonymity of the beneficiaries. Attitude surveys are measured against a benchmark and some companies try to correlate policy changes with significant changes in the survey, thus showing a benefit associated with the policy change.

4. Companies are measuring job performance in new and different ways. Most of the measurement has been with hourly and non-exempt classifications, but performance standards which are quantifiable and sometimes weighted have been developed for white collar exempt classifications. Compensation is not always tied to the performance measurement.

5. Although human resource managers may develop standard costs associated with training

programs, few have developed their ability to measure the benefits of their training programs in economic terms.

6. Human resource managers are making quantitative measurement in a number of areas previously thought to be unmeasurable or too difficult to measure. They also appear to be interested in the ability to make more sophisticated measurements.

7. The computer is providing human resource personnel an additional ability to perform quantitative measurement and cost benefit analysis. Human resource personnel are using computers to track human resource costs such as absenteeism, moving expenses, and tax costs. Many have access to the mainframe so they can generate their own reports. Some companies have at least some portions of the employee population in a skill bank. The computer allows the department to quickly develop costs and baseline information.

8. Because of sample size and difference in the question structure, no conclusions should be drawn from the responses regarding the credibility of various functions in the eyes of upper level management. It is interesting to note, however, that at least in this study, human resource managers perceived themselves as having more credibility than the marketing function, and above the training and development function.

9. There are varied reasons why human resource personnel have not used quantitative measurement and cost benefit analysis. These include corporate cultural reasons such as reactive rather than proactive management, lack of management persuasion, inadequate manpower and insufficient time. Other reasons appear to be related to the human resource manager's skill level and orientation.

Recommendations for Practice

The following approach is suggested as a guide for those wanting to develop their accountability in quantitative measurement and cost benefit analysis.

1. For the cost side of the equation, all costs associated with the decision, project or program under consideration are calculated. Costs include indirect costs as well as direct costs.

Step One: All costs, direct and indirect, are defined. Direct costs are immediately and

easily recognized as costs. Indirect costs are more difficult to determine. Indirect costs can be measured in terms of time or quantity.

Step Two: The indirect costs are calculated through a conversion variable. For example, interviewing costs can be determined by calculating average interview time prorated by the interviewer's salary.

Step Three: The direct and indirect costs are summed for the cost side of the equation.

2. For the value side of the equation, the value in economic terms is calculated. Anything that can be seen can be measured. Benefits can be measured in terms of cost, time, quality or quantity.

Step One: The benefits associated with the program or policy are identified. Who will benefit? How will the individual or group benefit? What exactly are the expected benefits? One can't measure until one can identify.

Step Two: How these benefits will be measured are determined. These are the important bottom line items--sales, turnover, fewer complaints, fewer errors, higher production, fewer grievances, more counseling resolutions, etc.

Step Three: The benefits are converted into value in economic terms (dollar and cent values). Two methods of obtaining this information are accessing corporate reports and/or discussions with operations personnel.

The value does not have to be a precise measurement to be valid as a measure to conduct cost benefit analysis. It merely needs to be close enough to make a value judgment. That value judgment is based on (a) does the value outweigh the costs and (b) by a large enough margin to make the effort to impliment the change worth while.

The more accurately one can develop the indirect costs on the cost side and identify the benefits in terms of quantity, quality, or time and convert those factors into dollar and cent terms for the benefit side, the more accountable is that value judgment.

In some instances human resource managers only wish to show the value or the benefit of a program or decision. The cost side of the equation is not developed. In these instances the objective is to show the value or benefit resulting from implementation of a specific program or policy. Baseline information is necessary to prove a change has taken place. The process is

outlined below.

Step One: The benefits are identified.

Step Two: The value of the benefits in economic terms are determined.

Step Three: A baseline of information is established so that change can be measured or shown.

Step Four: The change is implemented.

Step Five: The data are collected.

Step Six: A before and after comparison in terms of cost, time, quality or quantity is made.

Step Seven: The amount of change is converted into economic terms based on the dollar and cent value determined in Step Two.

Standard costs can be useful in establishing baseline information. The computer can be used to retrieve cost information, including standard costs, providing quick and important information for cost benefit analysis.

Recommendations for Research

This was a global type of study to determine the current state of quantitative measurement and cost benefit analysis in human resource departments. The following research to further develop our understanding of quantitative measurement and cost benefit analysis usage by human resource managers is recommended.

1. A comparison of human resource managers' quantitative measurement and cost benefit analysis skill and their perception of the importance of that skill to success as human resource managers.

2. A comparison of quantitative measurement skill level of human resource managers and the credibility of the human resource function in the eyes of upper level management.

It would seem logical that human resource managers who saw quantitative measurement and cost benefit analysis skill as important to their success as human resource managers would develop that skill. It would also seem logical that their skill level would have some correlation with credibility in the eyes of upper level management.

Implications

Cost benefit analysis appears to be an appropriate measure at startup time to develop costs and approximate benefits for decision making purposes. Once the decision has been made, quantitative measurement is more in the form of monitoring for control and possible comparative purposes. Therefore cost benefit analysis is not something that is done on a continuous basis on a specific issue. However, a company may be continually engaged in cost benefit analysis of the current issues as they arise.

Cost benefit analysis activity is difficult to track because: (a) the activity may be in process at the company's headquarters and the branch or subsidiary may or may not have that information; and (b) by nature it is not a continuous activity. It is a start up or reevaluation activity. Consequently at any one time a survey is made, some of the population may have done a cost benefit analysis but fail to mention that activity because it is a closed issue and does not come to mind at the time of the survey.

The extent of quantitative measurement and cost benefit analysis activity in the human resource department will depend on a number of factors: size of the human resource staff, the staff's knowledge and skill in measurement techniques, upper level management's request to quantify and the automation capabilities of the department.

Cost benefit analysis will be done where management personnel decide there is an issue. An issue arises when the costs are great, large numbers of the workforce are involved, a new idea is under consideration, the company is or could be at risk, and/or management demands justification for some value judgment.

If the value of a program has been established, the cost benefit issue is closed until there is some hint that reevaluation is in order.

While value in some programs may be difficult to define and put in dollar figures, broad judgments are based on general ideas of the value of the program or policy under evaluation. For example, lawsuits, death, accidents are costly items. Exact cost may not be known but "ball park figures" are acceptable in making a value judgment. Therefore, while cost benefit analysis may not be reduced to a presentation in ledger format, a cost benefit value judgment has been made. The

ability to make undocumented value judgments lies in the individual's base of knowledge. That base of knowledge includes quantitative measurement "know how".

The level and extent of quantitative measurement used by the human resource manager may depend on the type of industry. The human resource departments of manufacturing industries may be ahead of others in quantification skill and knowledge because they have had to project product cost. Human resource variables have been a part of that cost. Therefore costs and benefits have been examined to a greater extent in the manufacturing industry. In service industries or where manpower costs have been a smaller portion of the overall operating costs of the company or where the product profit margin has been very large, human resource cost and value management have not been as big an issue.

There is probably an historical sequence to the use of quantitative measurement in the human resource function. Probably the first quantitative measurement in the human resource function was that used in wage and salary decisions. As the value of testing and selection devices became apparent, quantitative measurement was used to justify those decisions or prove the value of those programs. Quantitative measurement in the areas of employee relations and training have not reached such a level of maturity. The benefits or values of the programs in these two areas have been considered more difficult to measure. However, there are indications that human resource managers are beginning to identify those benefits with the aid of new techniques and the idea that benefits and value of human resource activities and programs can be measured is gaining acceptance.

BIBLIOGRAPHY

American Accounting Association Committee of Accounting for Human Resources, Report of the Committee on Human Resource Accounting, The Accounting Review Supplement to Vol. XLVIII, 1973.

Barsby, Steve L. Cost Benefit Analysis and Manpower Programs, Lexington, MA: Lexington Books, D. C. Heath and Company, 1972.

Bell, Chip R. "How Training Departments Win Budget Battles." Training and Development Journal, 37 (2), 42-47, 1983.

Bell, James D. & Deborah L. Kerr. "Measuring Training Results: Key to Managerial Commitment." Training and Development Journal, 41 (1)70, 1987.

Bove, Robert. "New Wave HRD Accounting." Training and Development Journal, 41 (12), 36-37, 1986.

Brogden, H. E. "When Testing Pays Off." Personnel Psychology, 2, 171-183, 1949.

Brummet, R. Lee, Wm. C. Pyle and Eric G. Flamholtz. "Accounting for Human Resources." Michigan Business Review, 20 (2), 20-25.

Cascio, Wayne F. Costing Human Resources. 2nd Ed. Boston: Kent Publishing Company, 1987.

Cascio, Wayne F. and Elias M. Awad. Human Resource Management: An Information Systems Approach. Reston, VA: Reston Publishing Co., Inc., 1981.

Cheek, L. M., "Cost Effectiveness Comes to the Personnel Function." Harvard Business Review, 51, (May-June) 96-105, 1973.

Cook, John D., Sue J. Hepworth, Toby D. Wall and Peter B. Warr. The Experience of Work: A compendium and Review of 249 measures and their use. New York: Academic Press, a subsidiary of Harcourt Brace Jovanovich, 1981.

Cronbach, Lee J. Essentials of Psychological Testing, 2nd Ed. New York: Harper & Row, 1960.

Cullen, J. G., S. A. Sawzin, G. R. Sisson, and R. A. Swanson. "Cost Effectiveness: A Model for Assessing the Training Investment." Training and Development Journal, 32 (1), 24-29, 1978.

Cumming, Charles. "Linking Pay to Performance", Personnel Administrator, 33 (5), 47-52, 1988.

Dahl, Henry. "Four by Four: What Should Human Resource Accounting Systems Count?" Training and Development Journal, 42 (7), 20-25, 1988.

Desatnick, Robert L. The Business of Human Resource Management: A Guide for the Results Oriented Executive. New York: John Wiley & Sons, 1983.

Dierkes, M. and R. Coppock. "Human Resources Accounting: A tool for measuring and monitoring manpower utilization in a business environment." Measurement of Human Resources. Ed. W. T. Singleton and P. Spurgeon. New York: Halsted Press, 1975.

Eaton, Newell K., Hilda Wing and Karen J. Mitchell. "Alternate Methods of Estimating the Dollar Value of Performance." Personnel Psychology, (38), 27-40, 1985.

Finkel, Coleman Lee. "The True Cost of a Training Program", Training and Development Journal, 41 (9), 74-76, 1987.

Fitz-enz, Jac. How to Measure Human Resources Management. New York: McGraw-Hill Book Company. 1984.

Fitz-enz, Jac. "Proving the Value of Training." Personnel, 65 (3), 17-23, 1988.

Fitz-enz, Jac. "Quantifying the Human Resource Function." Personnel, 57 (3), 41-52, 1980.

Flamholtz, Eric G. Human Resource Accounting, 2nd Ed. San Francisco: Jossey Bass Publishers. 1985.

Flamholtz, Eric G. and Richard A. Kaumeyer. "Human Resource Replacement Cost and Personnel Decisions: A Field Study." Human Resource Planning, 3 (3), 111-138, 1980.

Flamholtz, Eric G. and George G. Geis. "The Development and Implementation of a Replacement Cost Model for Measuring Human Capital: A Field Study." Personnel Review, 13 (2), 25-35, 1984.

Flamholtz, Eric G. and D. Gerald Searfoss. "Developing an Integrated System." Human Resource Accounting, 2nd Ed., San Francisco: Jossey Bass Publishers, 1985.

Fowler, Alan. "Proving the Personnel Department Earns Its Salt." Personnel Management, 5, 26-29, 1983.

Gordon, Raymond L. Interviewing Strategy, Techniques and Tactics, 3rd Ed., Homewood: The Dorsey Press, 1980.

Greenberg, Eric Rolfe. "Measuring White Collar Productivity." Management Review, 75 (9), 65-66, 1986.

Greenberg, Eric Rolfe. "Workplace Testing: Results of a New AMA Survey." Personnel 65 (1), 36-44, 1988.

Guilford, J. P. Fundamental Statistics in Psychology and Education, 4th Ed. NewYork: McGraw-Hill Book Company, 1956.

Hekimian, J. S. and C. H. Jones. "Put People on Your Balance Sheet." Harvard Business Review, 45, (January-February),105-113, 1967.

Hoffman, Frank O. "A Responsive Training Department Cuts Costs." Personnel Journal, (2), 48-53, 1984.

Ideas and Trends in Personnel. Chicago: Commerce Clearing House, Inc., No. 153, (10-2-87), 153-156.

Kearsley, Greg and Terry Compton. "Assessing Costs, Benefits and Productivity in Training Systems." Training and Development Journal, 35, (1), 52-61, 1981.

Kirrane, Diane E. "Cost Accounting Today." Training and Development Journal, 40 (9), 24-27, 1986.

Kraut, Allen I. "Predicting Turnover of Employees from Measured Job Attitudes." Organizational Behavior and Human Performance, 13, 233-243, 1975.

Kuzmits, F. E. "How Much is Absenteeism Costing Your Organization?" The Personnel Administrator, 24 (6), 29-33.

Lapointe, Joel, and Jo Ann Verdin. "How to Calculate the Cost of Human Resources." Personnel Journal, 67 (1), 34-45, 1988.

Lawler, Edward E. III. "Human Resources Management: Meeting the New Challenges", Personnel, 65(1), 22-27, 1988.

Likert, R. "Human Resource Accounting: Building and Assessing Productive Organizations, Personnel, 50 (5), 8-24, 1973.

Likert, R., and D. G. Bowers. "Improving the Accuracy of P/L Reports by Estimating the Change in Dollar Value of the Human Organization." Michigan Business Review, 25 (2),15-24, 1973.

Long, Lori, "Surveys from Start to Finish." Info-line. Ed. Gerry Spruell. American Society for Training and Development. Alexandria, VA., December, 1986.

Macy, B.A, and P. H. Mirvis. "Measuring the Quality of Work and Organizational Effectiveness in Behavioral-Economic Terms." Administrative Science Quarterly, 21, 212-226, 1976.

Madsen, David. Guide to the Successful Thesis and Dissertation. San Francisco, CA: Jossey-Bass, 1983.

McKeon, W. J. "How to Determine Off-Site Meeting Costs." Training and Development Journal, 35 (5), 116-122, 1981.

Merlo, Nicholas S. "Subjective ROI." Training and Development Journal, 42 (11), 63-66, 1988.

Mirvis, P. H. and E. E. Lawler, III. "Measuring the Financial Impact of Employee Attitudes." Journal of Applied Psychology, 62 (1), 1-8, 1977.

Morrison, James H. "Profiling the New HR Management Style." Personnel Administrator, 33 (6) 88-92, 1988.

Nance, Harold W. and Robert E. Nolan. Office Work Measurement. New York: McGraw Hill Book Company, 1971.

Nickerson, Eilen. The Dissertation Handbook. Dubuque, IA: Kendall-Hunt Publishing Co., 1985.

Paquet, Basil, Elizabeth Kasl, Laurence Weinstein, and William Waite. "The Bottom Line." Training and Development Journal 41 (5), 27-33, 1987.

Rao, D. Prabhakara. Human Resource Accounting. New Delhi, India: Inter-India Publications, 1986.

Rogow, Robert B. and Charles P. Edmonds. "Tallying Employees as Assets." Personnel Administrator, 33 (6), 168-170, 1988.

Rollins, Thomas. "Pay for Performance: Is It Worth the Trouble? Personnel Administrator, 33 (5), 42-46, 1988.

Sax, Gilbert. Foundations of Educational Research. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1979.

Schmidt, F. L., J. E. Hunter, R. C. McKenzie and T. W. Muldrow. "Impact of Valid Selection Procedures on Work-Force Productivity." Journal of Applied Psychology, 64 (6), 609-626, 1979.

Sheppeck, Michael A. and Stephen L. Cohen. "Put a Dollar Value on Your Training Programs." Training and Development Journal, 39 (11), 59-62, 1985.

Singleton, W. T., & P. Spurgeon. Measurement of Human Resources. New York: Halstead Press, 1975.

Sloan, Richard P. and John P. Allegrante, "Corporate Health Is More Than a Robust Balance Sheet." Training and Development Journal, 39 (12), 57-59, 1985.

Stephan, Eric, Gordon E. Mills, R. Wayne Pace, and Lenny Ralphs. "HRD in the Fortune 500, A Survey. Training and Development Journal, 42 (1), 26-32. 1988.

Survey of Research Center. Interviewer's Manual. Ann Arbor: The University of Michigan, 1976.

Sutherland, R. J. "Hiring as an Investment Decision: The Recruitment Policies of the Professional Football Club", Managerial Finance, 12 (1), 20-24, 1986.

Tagliaferri, Louis E. "Taking Note of Employee Attitudes", Personnel Administrator, 33 (4), 96-102, 1988.

Van Dalen, Deobold B. Understanding Educational Research. New York: McGraw-Hill, 1979.

Wagel, William H. "A Software Link Between Performance Appraisals and Merit Increases." Personnel, 65, (3), 10-14, 1988.

Wood, W. D. and H. F. Campbell. Cost-Benefit Analysis and the Economics of Investment in Human Resources. Industrial Relations Centere, Queen's University.

Zemke, Ron and Thomas Kramlinger, Figuring Things Out. Reading, MA: Addison-Wesley Publishing Company, Inc., 99-115, 1986.

APPENDIX A

INTERVIEW REQUEST LETTER

Dear . . . . . .

As a doctoral student at Oklahoma State University, I am completing a "Study of current usage of quantitative measurements in the human resource departments of large publicly held corporations in the State of Oklahoma".

. . . . . .was identified for inclusion in this study because it is a large publicly held corporation that is evaluated by Value Line Investment Survey.

The objective of this study is to determine how extensively quantitative measurement is being used, the kinds of quantitative measurements being used and the purposes for which they are being used by human resource departments.

I am interviewing human resource management personnel to collect this information and would appreciate an opportunity to interview you. To compensate you for your time I will give you the results of the study.

I will call you shortly to determine if this is agreeable with you.

Yours very truly,

Ruth Crane
3815 East 56th Place
Tulsa, Oklahoma, 74135

APPENDIX B

INTERVIEW OUTLINE

INTERVIEW OUTLINE

The objective of this interview is to determine how extensively quantitative measurement is being used, the kinds of quantitative measurements being used, and the purposes for which they are being used by human resource departments.

Your responses will remain confidential. All information resulting from this study will be reported in the aggregate. Your responses can be brief.

---

1. TRAINING AND DEVELOPMENT

   a. How is the department measuring the benefits of its training programs?

   b. How are the results of training programs presented to management?

   c. Are training costs allocated by the accounting department as expenses or investments?

2. STAFFING

   a. How is the department measuring or monitoring the effectiveness of its pre-employment testing programs and selection policies?

   b. What other measurements have been made of the staffing policies?

3. EMPLOYEE RELATIONS

   a. What employee relations programs are being measured or monitored for effectiveness?

   b. How are those programs being measured?

4. COMPENSATION AND BENEFITS

   a. What job performance factors are now being measured that were previously thought to be unmeasurable?

   b. How are the measurements tied to compensation?

5. OTHER QUANTITATIVE MEASUREMENTS

   a. What is the department now measuring quantitatively that previously it considered either unmeasurable or too difficult to measure?

   b. In what other areas would the department like to make quantitative measurements if it had the time and resources to do so?

APPENDIX C

STRUCTURED INTERVIEW FORM

STRUCTURED INTERVIEW FORM

The objective of this interview is to determine how extensively quantitative measurement is being used, the kinds of quantitative measurements being used, and the purposes for which they are being used by human resource departments.

Your responses will remain confidential. All information resulting from this study will be reported in the aggregate. Your responses can be brief.

I. TRAINING AND DEVELOPMENT

a. How is the department measuring the benefits of its training programs?

_____

_____

b. How are the results of training programs presented to management?

_____

_____

c. Are training costs allocated by the accounting department as expenses or investments?

Expenses Investments

1. What **standard costs** are developed for the Training and Development function?

Cost per trainee
Cost per trainee hour
Program costs per day
Internal vs. external programs

Is the department developing standard costs? Yes No

2. Does the training department obtain **dollar and cent figures from operations** to prove their impact in economic terms?

Yes No

2. STAFFING

a. How is the department measuring or monitoring the benefits, impact or effectiveness of its pre-employment testing programs and selection policies?

_____

b. What other measurements have been made of the staffing policies?

_____

1. Has the department established **standard costs**?

(a) Cost per hire Yes No
(b) Interview time Yes No

3. EMPLOYEE RELATIONS

a. What employee relations programs are measured in quantitative terms?

Are any of the following measured? Yes No

Smoking in the workplace
Employee attitudes
Drug & alcohol
Health and fitness
Stress management
Counseling

b. HOW ARE THESE PROGRAMS MEASURED?
(What quantitative measurements are used to establish the benefits of the program(s)?)

Turnover Absenteeism Number of counseling hours per topic, dept?

_____

_____

1. Are **standard costs** developed for this function? Yes No

_____

_____

4. COMPENSATION AND BENEFITS

a. What job performance factors are now measured that were previously thought to be unmeasurable?

_____

_____

b. Are the measurements tied to compensation? Yes No

1. Are **standard costs** developed? Yes No
   - Salary benefit ratios Yes No
   - Aaverage hourly wage Yes No
   - Cost to supervise Yes No
   - Processing cost per transaction Yes No
   - Record keeping costs, etc. Yes No

5. OTHER QUANTITATIVE MEASUREMENTS

a. What is the department now measuring quantitatively that previously it considered either unmeasureable or too difficult to measure?

_____

_____

_____

b. In what other areas would the department like to make quantitative measurements if it had the time and resources to do so?

_____

_____

_____

AUTOMATION:

1. Do you have a **SKILLS BANK** on the computer? Yes No

2. Is there a **programmer on the HRD staff?** Yes No
   Anyone with systems experience? Yes No
   If not, how many people from Data Processing are dedicated to the Personnel function on full or part time basis? _____

3. Does the HRD manager have a **computer on his/her desk?** Yes No

   Who has them? _____ What percent of department? _____

4. Do HRD personnel have **access to the mainframe or just PC's?** Mainframe PC

5. **Reports**:

   a. Can the department generate its own reports? Yes No

   b. Does the department have access to production runs or can it access the specific information it needs? Production runs Direct Access

6. Has management **committed financial resources and training** to automate the human resource function? Financial resources Training

HUMAN RESOURCE CREDIBILITY

Present 3 x 5 card and ask the human resource manager to indicate his/her opinion using the 1-5 Likert scale on the credibility of the functions listed, in the eyes of upper level management.

In your opinion, **WHY DON'T HUMAN RESOURCE PERSONNEL USE MORE QUANTITATIVE MEASUREMENT?**

_____

_____

_____

_____

_____

_____

Thank them for their time.

Promise to send copy of the results.

VITA

Ruth Ann Crane

Doctor of Education

Thesis: THE CURRENT STATE OF QUANTITATIVE MEASUREMENT AND COST BENEFIT ANALYSIS IN THE HUMAN RESOURCE DEPARTMENTS OF LARGE, PUBLICLY HELD CORPORATIONS

Major Field: Occupational and Adult Education

Biographical:

Education: Received Bachelor of Arts in Industrial Psychology from the University of Tulsa in 1971; received Master of Arts in Industrial Psychology from the University of Tulsa in 1972; completed requirements for Doctor of Education degree at Oklahoma State University in May, 1989.

Professional Experience: Consultant, City County Health Department, 1972-1973, President, Test Validation & Professional Services, Inc., 1973-1979, Expert Court Witness, Bureau of Hearings and Appeals, Social Security Administration, 1978-1980, Civil Service Commission, City of Tulsa, 1974-1979, Chairman, 1977-1979, Co-author of "Self Evaluation--Career Guide", 1978, Adjunct Professor, Tulsa Junior College, 1976-1978, Employee Relations Manager, Quik Trip Corporation, 1980-1983, Certified Wage and Salary Administration, American Compensation Association, 1981, Personnel Director, Florafax International, Inc., 1983-1984, Vocational Evaluator and Expert Court Witness, Intracorp, 1985-1989.