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ABSTRACT

A study was conducted to provide a scientific database about the prevalence, dynamics, and effectiveness of pay-for-knowledge plans. (Pay-for-knowledge is an innovative compensation system that bases salaries, not on particular job classifications, but rather on the repertoire of skills that an employee possesses.) A four-pronged research design was developed: (1) an extensive literature review; (2) interviews of a national probability sample of 154 corporate personnel officers; (3) a mail survey of 19 plants using pay-for-knowledge; and (4) analysis of employee attitudinal and behavioral data from three plants using pay-for-knowledge. The study found that pay-for-knowledge plans are in use in about 8 percent of major U.S. corporations, primarily in manufacturing industries. Although the plans vary widely, they are similar in terms of using pay-for-knowledge in conjunction with a team-based managerial approach, an emphasis on performance appraisals, skill rotation, the wage structure relative to local wage markets, and the kinds of employees covered. Among the major benefits of pay-for-knowledge are work force flexibility, employee development, and improved productivity, work force stability, employee attitudes and behaviors, and labor-management relationships. Some problems in logistics occur, with no effective ways yet developed to solve them. The study concluded that pay-for-knowledge plans will continue to be used and might become more widespread as more organizations learn about them. (Six-page reference list.) (KC)

Exploratory Investigations of Pay-For-Knowledge Systems

U.S. Department of Labor
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Bureau of Labor-Management Relations
and Cooperative Programs
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FOREWORD

With little publicity, and under a variety of labels, growing numbers of companies are experimenting with an innovative compensation system--pay-for-knowledge. In these organizations, workers are no longer paid for the specific job they do; rather they are paid for the range of jobs they are capable of doing.

What are these compensation systems? How do they work? How well do they work? What considerations are important in using them? Exploratory Investigations of Pay-For-Knowledge Systems, a research study funded by the Bureau of Labor-Management Relations and Cooperative Programs, provides some of the first basic data available on these and other issues.

As the study shows, pay-for-knowledge compensation systems can provide work force flexibility to management and the opportunity for better pay for workers. These possibilities are characteristic of a more cooperative labor-management relationship.

Since cooperative arrangements are increasing, we may well see more companies using pay-for-knowledge systems. At a time when American industries are undergoing fundamental changes in their labor relations policies and practices in order to become more productive and competitive, information such as that contained in this study should be helpful for unions and companies seeking to make informed choices about their future.

EXECUTIVE SUMMARY

Pay-for-knowledge is an innovative compensation system that bases salaries, not on particular job classifications, but rather on the repertoire of skills that an employee possesses. This compensation system has been promoted as offering many benefits to organizations, employees and, indirectly, to the national and local economies. But systematic evidence supporting these claims about pay-for-knowledge are rare.

The present study was designed to begin providing a scientific data base about the prevalence, dynamics, and effectiveness of pay-for-knowledge plans. To achieve this objective, a four-pronged research design was developed. One, an extensive review of the published and unpublished, popular and academic literature on pay-for-knowledge plans was conducted. Two, a national probability sample of 154 corporate personnel officers were interviewed. Three, a mail survey of 19 plants using pay-for-knowledge was conducted. Four, employee attitudinal and behavioral data from three plants using pay-for-knowledge were analyzed.

These data shed light on several issues relevant to pay-for-knowledge plans. It was found that pay-for-knowledge plans are in use with one or more facilities of about 8% of U.S. corporations listed on the American and New York Stock Exchanges, primarily in the manufacturing industries. Although the specific plans in use vary widely across companies, they also share some similarities. Particularly noteworthy are similarities in terms of the use of pay-for-knowledge in conjunction with a team-based managerial approach, an emphasis on performance appraisals and skill rotation, and the wage structure relative to local wage markets. The plans are also similar in the kinds of employees covered.

Among the major benefits of pay-for-knowledge are work force flexibility and employee development, although productivity, work force stability, employee attitudes and behaviors, and labor-management relationships may also improve as a consequence of using pay-for-knowledge. Partly because pay-for-knowledge plans are still new and experimental, some problems occur in their logistics, problems such as "topping out" and "hold-ups." As yet, it appears that companies have not worked out effective ways to solve these problems.

The data indicate also that several conditions are likely to facilitate the effectiveness of pay-for-knowledge plans. These include managerial support and commitment, a good "fit" of the pay-for-knowledge plan with the organization and its employees, and careful implementation of the system. Labor and legal issues do not seem to be a severe problem among pay-for-knowledge companies. Contrary to popular opinion, the data also suggest that pay-for-knowledge can be quite effective in unionized settings if labor-management relationships are good, and if labor officials and members are involved in the development and implementation of the plan.

The results indicate that pay-for-knowledge plans will not only continue to be used by companies already using them, but that they might become more widespread as organizations learn about these systems and their benefits.

Taken together, the data suggest that national and organizational decision-makers could do much to facilitate the wider use of pay-for-knowledge. More research on many critical issues is needed, however, before pay-for-knowledge plans can be adopted with prudence and knowledge.

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CHAPTER I

INTRODUCTION

In recent years, the American workplace has been undergoing radical changes, attributable largely to a confluence of economic and technological dynamics. Technological innovations have rendered many traditional organizational structures and methods inefficient or obsolete; international competition and the reputed success of the Japanese "quality circles" approach to management has provided renewed impetus to American business and industry to review and revamp its prevailing philosophies and viewpoints; and the altering nature of the work force has necessitated serious rethinking about management-labor relationships.

These changing dynamics have resulted in a variety of different workplace innovations, such as the use of quality of work life committees, labor-management committees, autonomous work groups, employee stock ownership, and different forms of profit-sharing and gainsharing by employees (Scanlon plans, Improshare, etc.). This report focuses specifically on one kind of workplace innovation, namely, pay-for-knowledge compensation plans. These plans are designed to encourage the development of a multi-skilled work force as a way to improve productivity and the quality of work life.

At least three major reasons can be identified for conducting a detailed and systematic investigation of pay-for-knowledge systems (and other innovative plans tried recently in workplace settings). The first is the increasing urgency of implementing systems and processes in the workplace that are responsive to current and anticipated changes in the international and domestic economy, in technological sophistication, and in labor dynamics. The second is the dearth of descriptive and evaluative information about the prevalence, the nature, and the effects of innovations such as pay-for-knowledge. The third is that without a supportive scientific base of knowledge, the effectiveness of future attempts to revitalize the workplace and to develop and implement labor-related policies can be severely jeopardized. Each of these reasons is discussed briefly below.

Increased Urgency. Many economists claim that the U.S. has lost its competitive edge in the international marketplace, and that it is rapidly being superceded by Japan as the leading manufacturer, particularly in the area of high technology. Although these claims are not completely supported by historical statistical trends (Economic Report of the President, 1984), there *is* reason to believe that the gap between the international trading partners in manufacturing output and employment is narrowing. This places special pressure on American business and industry to increase workplace productivity, thereby emphasizing its status as the international economic leader.

Domestically, fluctuations in manufacturing output and employment, and the value of the dollar, have created at least short-term problems. In industries such as automobile and steel, which were especially affected, poor management decisions (e.g., relaxing quality control, slowness in adopting new technologies) have aggravated these problems. Thus, if foreign firms continue to produce goods at lower costs than American firms, the latter have two choices in reducing cost differentials: increase productivity or reduce wages.

The first option is usually preferred, although recently a number of firms have attempted and succeeded with the second.

Technological advances in the last two decades have also drastically affected the structure of the workplace. Many old jobs are being rendered obsolete, and the need for new "classes" of jobs is rising. Management and control systems appropriate in earlier times are becoming outmoded, and new structures and processes more consonant with the changing technological environment are necessary. Work innovations such as "quality circles" and "pay-for-knowledge" have been developed, at least in part, in response to this growing mandate. Their consistency with the technological status of the organization (and with its economic and environmental status in general), however, is still open to question, as is their long-term effectiveness in improving productivity and quality of work life (for example, the quality circle approach is already coming under attack [Lawler & Mohrman, 1983]).

The nature of management-labor relationships has also undergone vital changes in recent times. The U.S. Department of Labor (1980) noted that, since 1960, labor policy has experienced a drift toward direct governmental regulations of the terms and conditions of employment, with little regard for the role of collective bargaining. Likewise, relationships between management and labor have become increasingly more polarized. Employers often put more effort into opposing union organizing attempts than into improving their collective bargaining performance. This is compounded by a decline in union membership and more defensive union attitudes (U.S. Department of Labor, 1980). Polarization of attitudes has limited the ease of solving workplace problems. New workplace structures and processes (such as pay-for-knowledge) that hold the potential for increasing benefits for both management and labor may be the key to fostering better management-labor relationships in the future.

Dearth of Available Evidence. We know through anecdotal accounts and reported personal experiences that many organizations have tried to restructure their management policies to be consonant with the current environmental dictates. We also know that many new organizations created recently are designed in an innovative fashion (Huse, 1980; Lawler, 1978). These remain mostly anecdotal accounts and personal impressions, however, and there is little solid empirical evidence about their nature, their extensiveness, and their effectiveness.

The U.S. Department of Labor (1983), for instance, provided a long list of in-plant, cooperative management-labor programs. Innovations attempted by organizations include management-labor committees, Scanlon plans, worker participation, etc. Obviously, this list is not exhaustive of organizations using such structures; it is certainly not exhaustive of the different kinds of innovations currently in use. Pay-for-knowledge tends to constitute an integral element of most "new design" plants (Jenkins & Gupta, 1983; Lawler, 1978). Yet pay-for-knowledge is rarely mentioned among the innovative management-labor approaches compiled by the U.S. Department of Labor (1983). Indeed, the number of "new design" plants, and the number of plants using pay-for-knowledge compensation systems, has not been clearly determined in the published data to date. Moreover, such issues as the industries in which these systems tend to occur, the factors determining their use, and the number of such plans that have been discontinued, also still remain unresolved.

More problematic than the dearth of knowledge about the number of pay-for-knowledge systems is the absence of systematic data about the effectiveness of such systems. Little is known about how well these plans work, the conditions under which they are most likely to succeed, the possible unanticipated consequences of such plans, and the impact of such plans on workers, on management, and on management-labor relationships, both in the short and the long runs. Until these issues are addressed, it is somewhat precipitous to urge the widespread use of such plans.

Organizational and Federal Policy Formulation. The Economic Report of the President (1984) argues that, to foster more rapid economic growth, the primary focus of government policy should be on strengthening the natural forces of the private economy by reducing the burdens and disincentives imposed by existing government laws. The Report argues that the most important goal of these changes should be to increase the rate of capital formation. Systems that increase productivity are uniquely suited to achieve this goal. But reasonable policies designed to increase capital formation through incentives for workplace innovations cannot be developed until the advantages and disadvantages, the conditions for success and failure, and the impact on productivity and quality of work life, of such innovations have been determined.

Likewise, labor policies focusing on collective bargaining, nondiscriminatory hiring and advancement opportunities, wage and price stability, etc., must recognize and incorporate the multiple ramifications of workplace innovations in general, and of pay-for-knowledge in particular, if they are to keep pace with the changing needs of the time. Again, the effectiveness, and just the intrinsic worth, of these policies is largely dependent on developing a comprehensive understanding of the issues, dynamics, and outcomes related to workplace innovations.

Managers and business executives must also make decisions about whether to implement workplace innovations, in what situations to implement them, and what the projected ramifications of these innovations are. Basing these decisions on empirical, rational grounds is, of course, preferable to basing them on impressionistic and perhaps whimsical anecdotes that may be colored by self-interest. Beyond overall strategy issues, the way that pay-for-knowledge plans are operationalized and institutionalized can have a significant impact on their ongoing effectiveness. In matters of both macro- and micro-organizational policy, then, a sound empirical data base can be of pivotal value in making or breaking organizational decisions.

In short, innovative ways to structure and operate organizations are mandated by many environmental influences. Systematic information about the dynamics of workplace innovations is scarce. But such information is vital for intelligent organizational and national policies to be formulated.

This report represents an initial attempt to summarize the state of current information about pay-for-knowledge compensation systems. It contains the results of a multi-perspective exploratory investigation about the frequency, nature, and dynamics of pay-for-knowledge systems. Answers to several research questions are sought in this report. Questions of interest include the following:

I. What is the nature of pay-for-knowledge systems?

This question is designed to elicit the many variations within the broad category of pay-for-knowledge.

II. How prevalent are pay-for-knowledge systems and where do they exist?

Because little is known about the frequency with which pay-for-knowledge systems are currently used, few generalizations are possible. This question attempts to establish the popularity of pay-for-knowledge in business and industry. It tries to determine the types of industry in which such systems are typically found, the occupational classifications where they are used, and many characteristics of the organizations in which they are used (size, age, technology, management philosophy, etc.).

III. What considerations determine the use of pay-for-knowledge systems?

This question attempts to determine the reasons for the choice of pay-for-knowledge over other compensation systems, the degree of consistency between other organizational processes and the compensation system, the relative weight given to factors such as local economy, cultures, the existence of a union, etc., in the choice of the compensation system, and the steps undertaken to design and implement the system.

IV. What circumstances affect the implementation of the system?

This question is designed to elicit the situational factors that affect the ease of implementing such systems. For instance, what problems and difficulties develop in operationalizing the system? Is resistance encountered, and where? How is it addressed? What are unexpected complications? How are they resolved?

V. What are the work force characteristics where these systems are implemented?

This question is designed to elicit the demographics, the background, and the ideological preferences of the work forces under pay-for-knowledge systems.

VI. What other innovations occur simultaneously with pay-for-k[illegible]edge systems?

Pay-for-knowledge plans are usually implemented simultaneously with other innovations. This question attempts to determine the other innovations with which pay-for-knowledge is particularly compatible.

VII. What are the outcomes of the use of these systems?

This question explores outcomes from the perspectives of the organization, the employee, and management-labor relationships. It delves into the long- and short-term consequences of the use of these systems.

VIII. What are the conditions under which pay-for-knowledge systems are particularly likely to succeed or fail?

This question attempts to establish boundary conditions for the success of pay-for-knowledge systems. Fluctuations in the economy, the external labor market, etc., can have a significant impact on the ongoing success of these systems. Likewise, personnel changes in the organization can alter the effectiveness of the system. It is these kinds of planned or unanticipated influences on the success of pay-for-knowledge systems that constitute the focus of this question.

IX. What are the legal ramifications of pay-for-knowledge systems?

Many legal aspects of pay-for-knowledge systems are still unknown. Changes in job assignments may be subject to arbitration. Peer performance evaluations may be questionable if they are deemed to be discriminatory. These and other legal issues stemming from the use of pay-for-knowledge systems constitute the focus of this question.

X. What is the future of pay-for-knowledge systems?

Does industry plan to continue their use? If so, under what conditions? What determines whether or not to use them further? In what industries? Under which technologies? These kinds of issues are captured in the foregoing question.

XI. What organizational and government policy implications do pay-for-knowledge systems hold?

This question is designed to integrate information from all sources to generate policy implications of pay-for-knowledge systems.

Four different data sources are used to address these questions. These data sources are:

- Extensive review of published and unpublished materials regarding pay-for-knowledge plans;
- Broad-brush survey of a probability sample of American corporations;
- Extensive mail survey of specific plants known to be using pay-for-knowledge plans; and
- In-depth analysis of employee attitudes and behaviors in three plants using pay-for-knowledge systems.

Details of these data sources and the information obtained from each are contained in the remainder of this report. Specifically, Chapter II summarizes information from the extensive literature review. Chapter III details the procedures used to develop and analyze the three empirical data bases. Chapters IV, V, and VI report the results from the corporate, plant, and individual data bases respectively. Finally, Chapter VII integrates the results from the study, puts them in perspective relevant to the current literature, and draws the policy implications of pay-for-knowledge based on this investigation.

CHAPTER II

REVIEW OF THE LITERATURE

The published literature is relatively sparse with respect to pay-for-knowledge systems. This literature review is based on published work identified through a search of several computerized data bases, through scanning various newspapers and magazines, and through examinations of published and unpublished works made available to the authors by other researchers and scholars pursuing the study of pay-for-knowledge systems and related workplace innovations.

This chapter is divided into several major sections. The first section discusses the characteristics and mechanics of pay-for-knowledge systems currently in use. The second section places pay-for-knowledge systems within the context of workplace innovations and managerial philosophies. The third section outlines the hypothesized advantages and disadvantages of these systems. The fourth section focuses on the implications of pay-for-knowledge systems for various constituencies and the diffusion and evolution of these systems. The final section draws conclusions about pay-for-knowledge systems from the published evidence to date.

II.1: Characteristics of Pay-for-Knowledge Systems

Traditionally, employees' pay rates are based on job evaluation procedures (Lawler, 1982; Lawler & Ledford 1984). Pay levels are tied to the specific jobs that employees perform. In setting wage rates, the focus typically is on the job rather than on the person doing the job. Pay-for-knowledge represents a radical departure from this procedure. In this section, pay-for-knowledge systems are defined, their various features are discussed, and the degree of their reported use is identified.

Definitions of Pay-for-Knowledge Systems

Pay-for-knowledge compensation systems are known by a variety of labels including skill-based compensation, knowledge-based pay, multiskill compensation, and pay-for-knowledge (Jenkins & Gupta, 1985; Lawler & Ledford, 1984). According to Lawler and Ledford (1984), pay-for-knowledge is an innovative compensation system in which "...individuals are paid for the number, kind, and depth of skills that they develop" (p. 6). Essentially, then, pay-for-knowledge plans pay employees for acquiring new skills or knowledge (Business Week, 1977; Jenkins & Gupta, 1985; Lawler, 1978, 1982; Lawler & Ledford, 1984; Walton, 1974; World of Work Report, 1980). Employees are paid on the basis of the jobs they are capable of performing, rather than on the basis of jobs they may be doing at a given point in time (Jenkins & Gupta, 1985; Lawler, 1982). With technical ladders and maturity curves, an employee's job actually does not change dramatically as more in-depth skill or experience is acquired. For instance, a teacher's basic job remains the same after an additional degree is obtained. With pay-for-knowledge, however, additional duties and responsibilities often accrue with skill increases. For instance, technical leadership and supervision are often part of the duties of individuals who have made advances through the pay-for-knowledge system.

Thus, pay-for-knowledge systems can be distinguished from the more common approaches to compensation. They are different from the technical ladders and

maturity curves often used with specific employee groups such as teachers, scientists, and engineers. Technical ladders, like pay-for-knowledge, focus on the skills and abilities of the person rather than on the job. Unlike pay-for-knowledge, however, they do not encourage breadth of the skill acquisition; thus, they do not permit the flexibility in placing employees, as is possible with pay-for-knowledge.

Pay-for-knowledge can also be distinguished from cross-training, where employees may learn several skills in the organization, but their pay levels depend on the specific job they do at a particular point in time. By contrast, pay-for-knowledge systems base pay levels on the number of jobs an employee can do.

In short, pay-for-knowledge is a unique form of "person" pay, distinct not only from the typical job evaluation type of compensation system, but distinct also from other kinds of person-pay that organizations have used for years.

Types of Pay-for-Knowledge Systems. Jenkins & Gupta (1985) identify two basic types of pay-for-knowledge systems. The first, multiskill-based pay systems, have pay levels linked to the number of skills an individual learns. Multiskill-based pay is especially well suited for production workers. The second type, increased-knowledge-based pay systems, have pay levels linked to increased knowledge and skill within a job category. This approach is often used with mechanics and skilled trades employees to help reward them for specializing in an area. Jenkins and Gupta (1985) point out that increased-knowledge-based pay is sometimes difficult to distinguish from traditional technical ladders used with skilled trades employees. As noted above, however, the nature of jobs tends to remain relatively stable in a technical ladder, whereas job responsibilities may change drastically under an increased-knowledge-based pay system. It is quite possible that multiskill-based pay and increased-knowledge-based pay systems would both be used simultaneously in an organization to cover the needs of different types of employees. Most of the published literature focuses primarily on multiskill-based pay systems because of the added benefits associated with work force flexibility and because this approach to compensation is so radically different from traditional approaches.

Lawler and Ledford (1984) present skill acquisition in a similar framework and identify three types of skill development around which a pay-for-knowledge system can be organized: 1) vertical skill acquisition, 2) horizontal skill acquisition, and 3) depth skill acquisition. Vertical skill acquisition entails learning skills that are either upwardly vertical or downwardly vertical. For example, a skilled employee could take on janitorial skills (downward) or management skills (upward). Likewise, a personnel manager could learn typing (downward). Horizontal skill acquisition is similar to multiskill-based systems, and occurs when individuals learn skills that would be considered horizontal to the tasks they already perform. For example, Lawler and Ledford (1984) suggest that the personnel director could learn accounting. Finally, depth skill acquisition is similar to increased-knowledge-based systems. Depth skill acquisition takes place when the individuals learn skills that allow them to perform their jobs in greater depth. For example, the personnel manager could learn more about personnel. These systems probably make the most sense in R&D and skilled trades situations. Technical ladders, which pay individuals for the depth of skill they develop in a technical specialty, are similar to pay-for-knowledge depth skill acquisition, and are widely used today (Lawler & Ledford, 1984). Traditionally, technical ladders have been treated as "job-based" pay

systems, but they can be viewed as a form of pay-for-knowledge depth skill acquisition if the nature of the job changes as individuals acquire more skill depth. In short, pay-for-knowledge is not a unidimensional compensation system. Different forms of pay-for-knowledge compensation can be used by organizations, either singly or in conjunction with other forms.

Characteristics of Pay-for-Knowledge Systems

Multiskill-based compensation systems constitute the primary focus of this report. A variety of features of these compensation systems provides the key to understanding the mechanics of pay-for-knowledge. These features are discussed below.

Skill Levels. A central feature of pay-for-knowledge systems is the number of skills an employee can learn. In typical pay-for-knowledge plans, pay increases are often tied to mastery of the different jobs in the work team or the work group, and to subsequent mastery of other jobs in the plant (Cherry, 1982; Walton, 1974, 1978a).

Once employees have learned the skills used within their own team, they are eligible to learn jobs on other teams, and eventually to reach the maximum pay rate in the plant (the "plant rate"). This approach has been applied successfully in team environments at the General Foods dog food plant in Topeka, Kansas (referred to here as the Topeka plant), the General Motors (GM) plant in Fitzgerald, Georgia, and the Norsk Hydro plant in Porsgrunn, Norway (Cherry, 1982; Walton, 1974, 1978a). At the GM plant in Fitzgerald, wages increase until the worker knows all jobs in his/her team. At this point, the worker has reached Level 4 (team rate) and is eligible to move to another team with a wage increase. The worker can eventually reach Level 6 (plant rate) when he/she has learned all jobs in two teams.

Sequencing of Skills. In some cases, jobs are ordered or sequenced, and the individual has a prescribed set of skills available to learn. In other cases, it is up to the team to decide which skills it must develop for current and future needs, and workers learn whatever skills are most desired by the team (Poza & Markus, 1980). Thus, in certain instances, the group actually determines the sequence in which skills are acquired.

Minimum Number of Skills. Some pay-for-knowledge plans require that employees learn a minimum number of skills (Lawler & Ledford, 1984; World of Work Report, 1984a). For example, at the McNeil Consumer Products Plant in Texas, team members are expected to be proficient in at least two jobs (World of Work Report, 1984a). This is designed to ensure that the worker can contribute multiple skills to the work team.

Minimum Time Periods. Pay-for-knowledge plans may also establish a minimum time period for employees to progress from one skill to another, and/or to reach plant rate (Jenkins & Gupta, 1985; Lawler, 1982; Poza & Markus, 1980; Walton, 1980). In the first case, the minimum time period is established as a "payback period" to ensure that the organization is reimbursed for its investment in employee training (Poza & Markus, 1980; Lawler & Ledford, 1984). For example, Sherwin Williams uses a six-month payback period at one of its facilities (Poza & Markus, 1980).

In the second case, a minimum time limit is set to ensure that employees do not pass through the skill acquisition phase too fast, learning few if any of the skills well. The Topeka plant uses a two-year minimum time period to reach plant rate (Lawler, 1982). A separate but related feature is one that requires that employees periodically demonstrate mastery of previously learned skills (Jenkins & Gupta, 1985). Again, the idea is to guarantee that skills are acquired and maintained in a way that is useful to the organization.

Quotas. Pay-for-knowledge plans also differ in whether there are quotas on the number of workers who can be at a given pay or skill level at any one time. Walton (1974, 1978a) suggests that eliminating quotas is wise since it reduces the negative consequences associated with competition for those spots. Without limits on the number of employees who can achieve a certain level, employees are much more willing to train each other, since they can teach each other skills without penalizing themselves. Thus training, a necessary function of the system, is enhanced by specifying no quotas or limits. This is consistent with Thurow's (1975) argument that seniority-based systems enhance training, since employees are more willing to train a potential successor if they themselves are protected against replacement.

Pay Scales. The actual pay scales used in pay-for-knowledge systems differ widely. The plant rate may be based on all skills available or a smaller number of skills (e.g., all the skills in a worker's group) (Lawler & Ledford, 1984). Another variation, used by Skandia Insurance, bases salaries on the most skilled task an individual can perform, and the number of tasks in which an individual is competent (World of Work Report, 1980). Pay-for-knowledge systems can also include a merit component to reward how well an individual performs his/her acquired skills (Lawler, 1981). Finally, profit-sharing plans or cost savings plans are sometimes used in conjunction with pay-for-knowledge systems (Jenkins & Gupta, 1985; Lawler, 1977, 1978, 1980; Walton, 1977b, 1978a).

Following are some other examples of how these systems actually administer pay.

- The Volvo Tuve plant's pay-for-knowledge system rewards workers with a $.05/hour (40 öre) "bonus" for each new skill learned, with a 5 skill limit (Bernstein, 1983). Therefore, workers can increase their pay up to $.25/hour by learning extra skills or tasks. In addition, the group representative at Tuve is paid $.125/hour (1 kronor) more for performing his/her function.

- At one of GM's Delco Remy plants, assembly line workers can increase their pay up to $.68/hour by acquiring new skills (Apcar, 1985).

- At GM's Buick City plant, installing a pay-for-knowledge system resulted in a possible $.72/hour gain for the workers (Espo, 1985). Before the pay-for-knowledge system was installed, workers were earning $12.56/hour for production jobs. After pay-for-knowledge was installed, the starting rate was raised to $13.09/hour, with a plant rate of $13.28/hour.

Overall, pay-for-knowledge systems can vary on a number of mechanical details across organizations and employees.

Extent of Use

It is generally not known where pay-for-knowledge compensation was first used (Lawler, 1982). Likewise, there is no true estimate of the number of organizations using pay-for-knowledge, although Lawler and Ledford (1984) estimate the number to be over 200. Pay-for-knowledge is most commonly used for production workers in new design and high involvement plants (Lawler & Ledford, 1984). U.S. companies specifically identified in the published literature as using pay-for-knowledge include the following: GM Delco-Remy Plant in Albany, GA; GM Plant in Fitzgerald, GA; GM Cadillac Engine Plant in Livonia, MI; GM Buick 81 Plant and GM Buick City Plant in Flint, MI; GM Plant in Brookhaven, MS, Gaines Dog Food Plant in Topeka, KS; Procter & Gamble in Lima, OH; Cummins Engine in Charleston, SC; J&L Steel in Youngstown, OH; Shenandoah Life in Roanoke, VA; Sherwin Williams in Richmond, KY; Best Foods in Little Rock, AR; TRW in Lawrence, KS; and McNeil Consumer Products (J&J) in Round Rock, TX (Apcar, 1985; Bernstein, 1983; Business Week, 1983; Engel, 1985; Espo, 1985; Herrick & Maccoby, 1975; Kochan, Katz & Mower, 1984; Lawler, 1982; Lawler, 1982; Myers, 1985; Poza & Markus, 1980; Singer, 1980; Wallace, 1981; Walton, 1978a, 1979, 1985; World of Work Report, 1983, 1984a, 1984b, 1985). Frequently, however, particular plants referred to in the literature are disguised with pseudonyms to protect the anonymity of the firms. Thus, it is impossible to determine exactly how many and which locations are in fact using pay-for-knowledge.

Several foreign firms are also identified in the literature as using pay-for-knowledge. These include Volvo (Sweden), Skandia Insurance (Sweden), Shell (Canada), and Norsk Hydro (Norway) (Bernstein, 1983; Herrick & Maccoby, 1975; Wallace, 1981; World of Work Report, 1983).

Summary

Pay-for-knowledge plans are known in the literature by a variety of labels. Several different kinds of pay-for-knowledge systems can be identified, the most typical being multiskill-based systems. Even multiskill-based systems vary widely across companies in their specific features. Although it is impossible to derive a precise estimate of the extent of use of pay-for-knowledge plans based on the literature, it is safe to argue that these plans are becoming increasingly prevalent.

II.2: Other Work Innovations Used with Pay-for-Knowledge

Generally, pay-for-knowledge systems do not exist in isolation in organizations. They tend instead to be accompanied by a number of other design features that support and reinforce the basic objectives of pay-for-knowledge. A significant aspect of most pay-for-knowledge plants is the use of the team concept in the organization of work. This part describes the team concept, other work innovations, and the managerial philosophies and cultures that typically accompany pay-for-knowledge systems.

The Team Concept

Most pay-for-knowledge companies are organized into work teams or self-managing work groups (Apcar, 1985; Bernstein, 1983; Business Week, 1977, 1983; Cherry, 1982; Edid, 1985; Engel, 1985; Hackman & Oldham, 1980; Kochan et al., 1984; Lawler, 1978, 1980; Poza & Markus, 1980; Salpukas, 1973; Singer, 1980;

Wallace, 1981; Walton, 1974, 1975, 1977b, 1978a, 1979; World of Work Report, 1980, 1983, 1984b, 1985).

Self-managing work groups exist under a variety of names including autonomous work groups and self-regulating work groups, to name a few. Teams are usually made up of anywhere from three to 20 workers (Bernstein, 1983; Business Week, 1983; Engel, 1985; Wallace, 1981; Walton, 1974, 1977b; World of Work Report, 1984a, 1984b, 1985). They are usually organized on a product or area basis rather than along functional lines. Table II.1 provides some specific examples of the use of work teams in pay-for-knowledge companies.

Benefits and Problems. There are several reasons why the team approach to management should fit well with pay-for-knowledge. First, the team approach provides a valid reason for workers to learn more skills, namely, learning more of the team's functions (Walton, 1974). For example, in some plants team members may be trained initially to perform three of the team's five skills so that all team members have a common base, while at the same time no one member knows all the skills. This balances homogeneity and heterogeneity in skills represented in the team (Hackman & Oldham, 1980). By contrast, at the Sherwin Williams plant, the goal is for all team members to learn all of the skills in their team (Poza & Markus, 1980).

Second, teams help institutionalize the exchange of information and the participation process, both of which are instrumental in operationalizing the system and work rule modifications which often accompany pay-for-knowledge (Kochan et al., 1984). Thus, the social power of the work group is mobilized to provide positive outcomes for both the individual and the organization. As a case in point, Shell Canada's pay-for-knowledge system was set up with very few rules in order to allow teams to develop their own norms (World of Work Report, 1983).

Still another reason for using the team concept is that it is often difficult to handle an entire process or whole unit of work on an individual basis. Therefore, groups provide a way of organizing work in a more meaningful fashion.

There are also some problems with the use of work teams in pay-for-knowledge plants. Facilitating work team or work group development through different stages is a big task for management. Teams usually require more training than necessary in traditional organizations. Work groups cannot be expected to discharge their responsibilities adequately if they lack the necessary training. Thus, management must identify and provide the training that groups need to function effectively (Hackman, 1977; Hackman & Oldham, 1980).

There is also no assurance that the group norms which develop will be beneficial to the organization (Hackman, 1977). Low productivity could be a group norm, much to management's chagrin. Organizations do sometimes succeed in helping groups to develop norms that promote successful task performance (Hackman & Oldham, 1980). Team building sessions are occasionally used to provide a better understanding of group dynamics to team members (Poza & Markus, 1980).

Table II.1

Examples of Pay-for-Knowledge Work Teams

GM Cadillac Engine Plant	15 departments Departments are divided into teams. Team size = 10 to 20
Shenandoah Life	5 teams Team size = 6
Volvo Tuve Plant	Group size = 4 to 8
Shell Canada	6 teams Team size = 18 Teams work 12-hour days Alternate 3 days on, 3 days off
TRW	8 work groups Group size = 3 to 15
Gaines Dog Food Plant	Team size = 7 to 14
McNeil Consumer Products	Team size = 5 to 15

Sources: Bernstein, 1983; Business Week, 1983; Engel, 1985; Wallace, 1981; Walton, 1977b; World of Work Report, 1984a, 1985.

Peer Evaluations. A component of many pay-for-knowledge systems is the use of peer evaluations, i.e., evaluations by team members, to determine when and/or how well an employee has mastered a particular skill. The advantages and disadvantages of peer evaluations have often been discussed in the literature (Business Week, 1983; Engel, 1985; Lawler, 1978, 1980, 1981, 1982; Lawler & Ledford, 1984; Poza & Markus, 1980; Walton, 1977b, 1978a; World of Work Report, 1985).

Arguments against the use of peer evaluations include the following: that people cannot necessarily maintain high performance evaluation standards, that people have problems being objective when evaluating peers, and that the resulting inequities could erode the pay-performance connection (Walton, 1977b, 1978a). Recommendations for reducing these problems include having employees develop objective tests of knowledge and setting minimum time periods (previously discussed) that must elapse before a new skill mastery can be evaluated (Lawler, 1978; Lawler & Ledford, 1984).

Arguments in favor of peer evaluation include the following: that peer evaluations increase employee commitment, that peer evaluations increase the employees' responsibility to make the system work, that peer evaluations increase employees' awareness of their interdependence, and that self-management of the reward system symbolizes low dependence on hierarchical authority (Walton, 1977b, 1978a). Furthermore, some evidence suggests that peer appraisals can be more valid than supervisor appraisals (Lawler, 1981).

In summary, the utility of peer evaluations has yet to be determined. Walton (1978a), while favoring peer evaluation, advocates caution in their use as initial features of pay-for-knowledge plans.

Team Leaders. Closely linked to the team concept is the use of a team leader instead of a first line supervisor (Bernstein, 1983; Business Week, 1983; Cherry, 1982; Lawler, 1978; Poza & Markus, 1980; Salpukas, 1973, Singer, 1980, Walton, 1977b). The team leader is responsible for communicating with the rest of the organization, and basically assumes the role of the first line supervisor. Team leaders are often elected by their group or team members and are sometimes paid an additional wage rate over their earned pay-for-knowledge level for the period they serve as team leaders (Bernstein, 1983; Cherry 1982). Team leaders may also be responsible for coordinating team meetings and training new members (Bernstein, 1983; Salpukas, 1973). In cases where a matrix design is used (i.e., where there are dual or multiple chains of command), team leaders have both functional and shift responsibilities and reporting relationships (Poza & Markus, 1980).

Overall, the team concept is commonly used in conjunction with pay-for-knowledge systems. On balance, the advantages of this pairing seem to outweigh the disadvantages.

Other Work Innovations

In addition to the use of the team concept, pay-for-knowledge plans are frequently accompanied by other work innovations. Some of these innovations are discussed below.

Reduced Levels of Hierarchy. The restructuring of work in pay-for-knowledge systems is often accompanied by a reduction in the levels of hierarchy in the organization (Lawler, 1978; Poza & Markus, 1980; World of Work Report, 1984, 1985). Typically, very few strata exist between the plant manager and workers, and in some cases the position of first line supervisor is entirely eliminated. For example, instead of using supervisors, Shenandoah Life uses six top level managers to serve as advisors to work groups on request (World of Work Report, 1985). Likewise, at a Sherwin Williams pay-for-knowledge facility, none of the following positions exists: production superintendent, assistant plant manager, shift supervisor, and area first line supervisors (Poza & Markus, 1980).

Employee Selection. A variety of techniques for employee selection are used in pay-for-knowledge plants, although there is some debate as to whether employees in pay-for-knowledge plants are really very different from employees in more traditional plants. Many organizations concentrate on providing job applicants with pre-employment counseling and accurate information about the job (Lawler, 1978; Poza & Markus, 1980). This is done for several reasons. First, it allows job applicants to make better decisions about whether they are really interested in joining the organization (Lawler, 1974). Second, it helps to reduce the probability that employees will have unrealistic expectations about the job or the system, expectations that could not be met later (Lawler, 1980; World of Work Report, 1984a).

Traditional selection tools such as aptitude and ability tests may be valid for assessing people's ability to perform particular jobs or skills, but they fail to measure how well an employee will "fit" in an innovative organization (Lawler, 1974). For this reason, many firms involve current employees in the selection of new employees (Lawler, 1980). This is done most often in work team environments where employees are allowed to choose new members for their teams. This process increases the likelihood of fit among the individual, the organization, and the team.

Egalitarian Design. Most pay-for-knowledge systems are used in plants organized around egalitarian principles (Business Week, 1977; Cherry, 1982; Engel, 1985; Ketchum, 1975; Lawler, 1978, 1981; Lawler & Olsen, 1977; Poza & Markus, 1980; Salpukas, 1973; Wallace, 1981; Walton, 1974, 1980; Poza & Markus, 1980; World of Work Report, 1984b). These plants usually have a common entrance used by all employees, a single cafeteria for all plant personnel, and no reserved parking spaces (Business Week, 1977; Cherry, 1982; Ketchum, 1975; Lawler, 1978; Lawler & Olsen, 1977; Wallace, 1981; Walton, 1974). The egalitarian approach is aimed at removing status symbols and social barriers across hierarchical echelons (Wallace, 1981).

The removal of class-oriented symbols such as time clocks, security guards, and buzzers at the end of coffee breaks also symbolizes trust on the part of management (Engel, 1985; Lynas, 1983; World of Work Report, 1984b). In one plant, everyone, including the plant manager, takes turns making coffee, cleaning the lunch room, and raising and lowering the flag (Walton, 1980). In another plant, workers are known as manufacturing technicians or manufacturing technologists and have their own business cards and their own keys to the plant (World of Work Report, 1984b).

In order to promote the egalitarian concept further, some pay-for-knowledge plants use an all-salaried work force and have all employees on the same

benefits package (Lawler & Olsen, 1977; Poza & Markus, 1980). The size of the office is likely to be a function of the work done, not the person's rank, and the carpeting in locker rooms is the same as the carpeting in office areas (Ketchum, 1975).

Sensing Devices. It is often recommended that innovative firms use sensing devices to monitor attitudes deemed most important to the overall health of the firm. Walton (1982) found that commitment levels at the Topeka plant were not constant over time, suggesting that organizations may need to measure employee attitudes periodically for ongoing estimates of employee reactions to the system. McNeil Consumer Products uses several sensing devices to help monitor performance of the system, including periodic employee attitude surveys and plant-wide meetings (World of Work Report, 1984a). Sherwin Williams uses attitude surveys to keep track of job satisfaction, quality of teamwork, and overall organizational climate (Poza & Markus, 1980). The GM Fitzgerald plant's sensing devices include interviews and attitude surveys (Cherry, 1982).

Work Design. Work design in pay-for-knowledge plants is aimed at changing the way work is organized, and the way work is managed (Walton, 1979). Work design affects the content of jobs, the compensation system, the plant's social structure, the status hierarchy, and the scope of worker responsibility for supervision and decision-making (Walton, 1977a). Job design research stresses that the attitudes and behaviors of organizational members are affected by factors such as: the importance of meaningful work, control over the work processes, performance feedback, and use of a variety of skills, learning, and interaction with other people (Rousseau, 1977). Hackman (1978) argues that many people are underused and underchallenged at work. Management often fails to realize that the performance of workers is based largely on what they are assigned to do (Walters, 1982).

Pay-for-knowledge compensation systems are designed to provide opportunities for skill variety and learning. In addition, work is often organized around products, a natural unit of work, or areas rather than functional responsibility (Hackman, 1977; Lawler, 1978; Walters, 1982). In service organizations, focus on the customer often replaces this functional focus (Walters, 1982). The objective is to provide more meaningful work by tying the work to a product rather than to a function (Lawler, 1980). Thus, pay-for-knowledge can be used to help satisfy the job dimensions of task significance skill variety, and learning.

Participation in work design by those most affected by the design is often desirable, and many systems have benefited from using employee involvement in the design stages (Hackman, 1977; Lawler, 1980; Wallace, 1981; World of Work Report, 1984b). In fact, Shell Canada found that team-designed work was superior to work designed by technical consultants (Wallace, 1981). Participation can help reduce worker skepticism about changes; it can also minimize the view that work redesign is merely "a stopwatch in sheep's clothing" (Hackman, 1977). Thus, the best strategy may be a cooperative effort in which employees work with architects and engineers to design the system.

Sherwin Williams allowed employees to tour facilities where the final product was being used (Poza & Markus, 1980). This strategy was useful for several reasons. It gave workers a better feel for the product and an understanding of how it was used. Workers also had a better understanding of who was using the product. Most important, workers were able to hear right from

the end user's mouth the consequences of delayed deliveries or substandard products.

At Shenandoah Life, the work group was given its own office area and allowed to control the design of work (World of Work Report, 1985). At Volvo's Tuve plant, the work environment received as much attention as the team process in the design of the plant and work (Bernstein, 1983). It has also been suggested that the boring jobs should be rotated throughout the work force (Schrank, 1974).

In short, many elements of work design can be structured to be consonant with a pay-for-knowledge system. Pay-for-knowledge plants have tried a variety of work restructuring techniques, with varying degrees of success.

The literature suggests overall that many work innovations may be implemented along with a pay-for-knowledge plan. The relative consistency among these innovations, and their general "fit" with pay-for-knowledge, may be the key to organizational success.

Managerial Philosophies and Cultures

The importance of focusing on managerial philosophies derives from the fact that philosophies are the engines that drive the overall managerial system. Design elements of an organization are directly affected by the management philosophy, and in turn affect the work culture that emerges in the company. Work culture mediates the impact of design elements on intended outcomes (Walton, 1979).

Management philosophies in pay-for-knowledge plants tend to differ radically from those in traditional plants. At the time of its creation, the Topeka system basically violated almost all traditional and "logical" plant designs (Walton, 1982). But this human resource approach to management is becoming more widely accepted in management circles today (Miles & Rosenberg, 1982). The "my-way-or-the-highway" approach to management is making way for more participative approaches (Engel, 1985). The newer management philosophy recognizes the importance of structuring the organization to fit and evolve with the needs, desires, and abilities of the work force (Lawler, 1974; Walton, 1982). Sociotechnical systems design often provides a natural context for pay-for-knowledge, since neither the social system nor the technology is taken as a given. Thus, the human system, the technical system, and the reward system can be designed to reinforce one another (Weisbord, 1985).

It is argued that managerial philosophies should be based on attaining two goals: human success and economic success. Walton (1979) cautioned against confusing these dual objectives as being one, and suggested that the balance maintained through the pursuit of both goals gives credibility to a work innovation effort among all relevant constituencies. He argued that "...in most work structures there is an abundance of opportunities to make changes that will advance both objectives" (p. 95).

At the center of the management philosophy is a belief that eliciting worker commitment is essential (Walton, 1985). To achieve this, the management philosophy must be conveyed symbolically in a manner that workers understand. Therefore, the management philosophy must be rooted in commitment to achieving the dual objectives of human and economic success. Both plant level and

corporate level support are vital for pay-for-knowledge plans to work (Walton, 1977). Pay-for-knowledge helps to operationalize this commitment. To further symbolize its commitment to the overall managerial system, management may incorporate a no-layoff policy and provide assurances to workers that high levels of output will not result in job reductions (Lawler, 1980; Walton, 1978b, 1980, 1985).

Work culture has been defined as "the combination of attitudes, relationships, developed capabilities, habits, and other behavioral patterns that characterize the dynamics of an organization" (Walton, 1979, p. 89). Central company concerns, usually productivity and the quality of employees' work experiences, help to shape the evolving work culture. The "meaning" of a work system is determined by the work culture. Thus, a "work team" can mean many different things, depending on the work culture in which it operates (Walton, 1980).

The work culture in most organizations using pay-for knowledge relies heavily on high levels of employee commitment for organizational effectiveness (Lawler, 1981; Walton, 1980, 1982). Other common characteristics of pay-for-knowledge work cultures include the promotion of learning, growth, skill acquisition, flexibility, mutual trust, informality, open communication, and equality (Lawler, 1981; Wallace, 1981; Walton, 1977a, 1979, 1982; World of Work Report, 1983). The work culture in most pay-for-knowledge plants enlarges the workers' scope of influence, leading to greater employee identification with the product and greater feelings of self-worth (Walton, 1977a). It should be remembered, however, that firms have often found creating a new work culture to be difficult (World of Work Report, 1984b).

Summary

Pay-for-knowledge plans are usually accompanied by other innovative ways of managing the workplace. These include the use of the team concept, a flat organizational structure, different techniques for employee selection, egalitarian design, the use of various sensing mechanisms, work redesign, and drastic changes in managerial philosophies and work cultures. It is the "fit" among these innovations, rather than a particular design element, that probably holds the key to the success of a pay-for-knowledge plan.

II.3: Advantages and Disadvantages of Pay-for-Knowledge Systems

Pay-for-knowledge plans have many hypothesized benefits and potential problems. These benefits and problems, however, may be so intertwined with the effects of other innovations usually accompanying pay-for-knowledge that it may be impossible to isolate unique pay-for-knowledge effects. This section attempts to focus on both the isolated and the synergistic benefits and problems of pay-for-knowledge for management, workers, and labor-management relationships.

Advantages for Management

Two of the most commonly hypothesized benefits of pay-for-knowledge are the work force flexibility and leaner staffing it provides (Apcar, 1985; Jenkins & Gupta, 1985; Kochan et al., 1984; Lawler, 1977, 1978, 1980, 1982; Lawler & Ledford, 1984; Schweizer, 1986; Walton, 1974; World of Work Report, 1985).

The flexible nature of the work force allows the organization to cover for overtime, absenteeism, turnover, and employees in training by using available personpower and moving personnel where needed. Thus, the result is leaner staffing for the organization. For example, the Topeka plant ended up operating with 70 people rather than the 110 originally thought necessary to operate the plant (Walton, 1974). Moreover, when pay-for-knowledge is used with work teams, leaner staffing can be accomplished due to a reduced need for supervision (Weisbord, 1985). A case in point is Shenandoah Life, which reduced its reporting ratio of staff to supervisors from 1:5 to 1:37 in an organization with 250 employees.

Work force flexibility is also instrumental to an organization's ability to adapt to changes in production needs and production bottlenecks. Thus, pay-for-knowledge acts as a buffer against the environment and enables the organization to adjust to fluctuations in the supply of inputs and the demand for outputs. It reduces significantly the need to hire temporary help or pay overtime wage rates (Doty, 1985; Jenkins & Gupta, 1985).

The reduction of job classifications which often accompanies pay-for-knowledge can result in significant changes in the way work is organized, thereby increasing flexibility. One GM parts plant now operates with one job classification instead of the usual 75 (Apcar, 1985). Another GM pay-for-knowledge plant has only four wage levels rather than the 45 job classifications (each with its own wage rate) in the old system (Business Week, 1983). Substantial savings can be realized from this flexibility. For example, workers no longer must wait for specialists to repair machines and perform skilled work. Instead, flexible work rules allow them to learn many of these skills themselves.

Flexible work rules accompanying pay-for-knowledge plans also allow for a total restructuring of work. For example, before installing its pay-for-knowledge system, a policy at Shenandoah Life passed through 32 people representing nine sections and three departments, and took 27 days to process (World of Work Report, 1985). Theoretically, one person could complete the entire task, but no one had the training, the incentive for training, or the authority. By redesigning the work and adding pay-for-knowledge, however, people were given the necessary training, incentive (pay), and authority. Thus, because pay-for-knowledge encourages skill development, it reinforces the idea of flexible work rules (Walton, 1974).

Pay-for-knowledge provides incentives for teaching, training, and cooperation among team members, outcomes usually desired by management (Walton, 1974). Peer pressure no longer keeps individuals from exceeding minimum standards as in a traditional organization (Walton, 1985). Pay-for-knowledge also fits well with the team concept since teams usually work best if members can perform multiple tasks (Lawler, 1978; Lawler & Ledford, 1984). Pay-for-knowledge also promotes the development of a broader knowledge and understanding of the organization's operations among the work force (Lawler, 1977, 1980, 1982; Lawler & Ledford, 1984). This understanding facilitates team problem-solving and improves decision-making. Likewise, team members can communicate problems more effectively, and feedback on quality control and production rates is more meaningful because workers understand the problems at different stages of production (Lawler & Ledford, 1984). Finally, this broader understanding of the organization leads to greater employee commitment (Lawler & Ledford, 1984).

Another hypothesized advantage of pay-for-knowledge is work force stability. The literature identifies a number of pay-for-knowledge plants that report either a reduction in absenteeism and turnover rates or, in the case of start-ups, comparatively low absenteeism and turnover rates (Bernstein, 1983; Business Week, 1977; Cherry, 1982; Jenkins & Gupta, 1985; Lawler, 1977, 1978; Pasmore, Francis, Haldeman, & Shani, 1981; Poza & Markus, 1980; Salpukas, 1973; Walton, 1975, 1978a). A Business Week (1983) article noted that changes in seniority rights are also likely to contribute noticeably to work force stability. As a case in point, the article cited a plant that used to require 93 moves (resulting from bumping) to fill 10 jobs, but has reduced by 30% the number of employees affected by a job opening.

High quality of output has been experienced by a number of pay-for-knowledge plants (Jenkins & Gupta, 1985; Pasmore et al., 1981; Schweizer, 1986; Walton, 1982; World of Work Report, 1984b). Jenkins and Gupta (1985) cite several reasons for this effect. First, workers better understand the different jobs and the problems associated with each of the different work stages. Second, quality control is usually the responsibility of all members of the organization and, as a result, most members are trained to recognize acceptable quality. Third, workers realize they may have to deal with the mistakes themselves since they could end up working on the product at another stage.

There are numerous accounts of productivity increases in pay-for-knowledge organizations, which in turn lead to substantial savings (Bernstein, 1983; Business Week, 1983; English, 1985; Jenkins & Gupta, 1985; Kochan et al., 1984; Pasmore et al., 1981; Poza & Markus, 1980; Walton 1982; World of Work Report, 1980, 1983, 1984a, 1984b).

Because pay-for-knowledge tends to be embedded within a system of work innovations, however, it should be remembered that productivity gains reported in the literature cannot be attributed solely to pay-for-knowledge. One pay-for-knowledge plant is reported as having output levels comparable to those of plants with twice the staff and twice the space (World of Work Report, 1984b). Furthermore, this plant has reportedly experienced a 40% reduction in overhead, and can reach the break-even point at 60% of capacity (other similar plants need 90 to 95% capacity to reach break-even). The plant is also reported to have experienced a 40% reduction in the time to produce a unit of output.

Walton (1982) reported that the Topeka plant had experienced productivity increases in every year except one. Skandia Insurance reported 10% productivity increases in the three years from 1972 to 1975 (World of Work Report, 1980). The Volvo Tuve plant is reported to be operating at an efficiency rate 16% greater than that of the older truck facility (Bernstein, 1983). Sherwin Williams' pay-for-knowledge plant reported productivity levels that are 30% higher than sister plants (Poza & Markus, 1980). McNeil Consumer Products also reported increases in productivity of 18.6% and 10% after its first and second years with pay-for-knowledge (World of Work Report, 1984a); the plant was running 27% ahead of the 1981 record when the Tylenol poisonings occurred in 1982.

Although the issue of safety improvements has not received much attention, there are a few reports indicating that safety may be improved by the introduction of pay-for-knowledge systems (Pasmore et al., 1981; Walton, 1974). The Topeka plant's safety record was one of the best in the company, and the

plant initially went for three years and eight months without a lost-time accident (Walton, 1978a).

Although it may be difficult to assess the overall economic gains resulting from these advantages of pay-for-knowledge systems, their true economic impact should not be underestimated. For example, the annual incremental benefits at the Topeka plant are estimated to be $1 million during the 1970s (Walton, 1977b, 1978a, 1982). This is a sizable savings for a company with 100 people and a $10 to $15 million capital investment (Walton, 1978a). At GM's plant in Livonia, worker suggestions saved Cadillac more than $1.2 million in 1982 (Business Week, 1983).

Advantages for Employees

One of the more obvious benefits of pay-for-knowledge for employees is the opportunity it provides for individual growth and development (Jenkins & Gupta, 1985; Lawler & Ledford, 1984; Lawler & Olsen, 1977). Thus, pay-for-knowledge reinforces the climate for personal advancement and feelings of self-worth (Walton, 1985). Workers are likely to feel better about themselves because of personal growth; they also feel better about the company because they see that growth is important enough for the organization to reward workers because of it. The investment in pay-for-knowledge required by the company is symbolic of the organization's commitment to each worker (Jenkins & Gupta, 1985). Hence, pay-for-knowledge employees are likely to have greater feelings of self-worth.

It is no secret that many pay-for-knowledge organizations have reported significant improvements in the quality of work life (Jenkins & Gupta, 1985; Lawler, 1977; Poza & Markus, 1980; Salpukas, 1973; Walton, 1975, 1977b, 1978b, 1979; World of Work Report, 1983, 1984a). Walton (1975) reports that about 80% of the Topeka plant's work force experienced a large gain in the quality of their working life. The New York Times reported a Topeka worker as saying, "You look forward to coming to work in the morning" (Salpukas, 1973, p. 1). Likewise, Poza and Markus (1980, p. 22) report the following worker comments at a Sherwin Williams pay-for-knowledge facility, "This is the best place I've ever worked," "I work harder on this job than I've worked anywhere else," and "This is the first job I've ever had that I didn't dread coming to work." Walton (1979) also cites an anonymous pay-for-knowledge company whose facilities are considered the best places to work in their communities by a wide margin.

Pay-for-knowledge has been reported to increase satisfaction and job attractiveness for workers (Business Week, 1983; Jenkins & Gupta, 1985; Lawler, 1978, 1982) Jenkins and Gupta (1985) suggest three reasons why higher levels of satisfaction occur in pay-for-knowledge organizations. First, workers are treated more like individuals. Second, pay-for-knowledge companies tend to be more progressive in their management style. Third, pay-for-knowledge "feels" different to employees. The work in pay-for-knowledge plants is also viewed as more meaningful, since employees have the opportunity to see a broader picture of how their work affects the organization (Schweizer, 1986).

A study by Lawler, Jenkins, and Herline (1974) found that the Topeka plant's employees had higher levels of pay satisfaction and involvement than employees in plants without pay-for-knowledge plans (Lawler, 1977, 1982; Walton, 1977b, 1978a). Lawler et al. (1974) also reported that employees felt that pay was administered well and fairly. Likewise, Walton (1982, p. 264) notes that the pay-for-knowledge concept at Topeka "...did produce a sense of equity...."

Thus, it appears that pay-for-knowledge can lead to a perception of more equitable pay distribution.

Pay-for-knowledge also gives the worker an incentive for accepting changes in work rules at a time when pushes for more flexible work rules are common (Lawler & Ledford, 1984). Without pay-for-knowledge, workers often feel "cheated" when work rule changes occur. Pay-for-knowledge, however, provides the worker with a legitimate avenue to accept work rule changes and still feel that he or she has benefited.

Since work force flexibility associated with pay-for-knowledge provides a more stable work force, employees experience greater job security (Jenkins & Gupta, 1985; Lawler & Ledford, 1984). Job security is also improved in organizations which negotiate or offer job security in return for the introduction of these changes. Workers also experience greater identification with company goals. As a result, pay-for-knowledge employees tend to have higher levels of commitment and loyalty to the organization.

Pay-for-knowledge systems are hypothesized to improve employee motivation. A major objective of pay-for-knowledge is to improve organizational effectiveness by aligning the reward system with the organization's goals (Doty, 1985). Organizations have to manage both the reality of how rewards are obtained and the workers' perceptions of how rewards are obtained (Lawler & Olsen, 1977). The perception component is extremely important; Lawler and Olsen (1977, p. 50) note, "...it is the perceived means of obtaining rewards that leads to the behavior." Unfortunately, the reward system is too often considered a "frill" and receives little attention in the design of work systems (Lawler & Bullock, 1978; Pasmore et al. 1981). This may be due to the fact that compensation is one of the least understood elements of new work systems (Walton, 1974).

Pay is one of the most important rewards people obtain from work (Lawler & Olsen, 1977). Pay-for-knowledge contributes to greater motivation by linking pay to performance (Jenkins & Gupta, 1985; Lawler & Ledford, 1984). Also, employees are not stuck in dead-end jobs that have no future (Jenkins & Gupta, 1985). Increased job variety because of rotation through skills can contribute to motivation as well (Jenkins & Gupta, 1985). Workers can also be motivated by the fact that they know and see that their work affects the entire organization.

Advantages for Labor-Management Relationships

Historically, innovations such as pay-for-knowledge have been viewed as having only negative consequences for organized labor. While it is true that organized labor has resisted many organizational change efforts, the historical view distorts the opportunities available to organized labor through innovations in work and pay design. Furthermore, this perspective clouds the fact that organized labor has cooperated with and benefited in many work and pay innovation projects. Therefore, this part of the chapter highlights some positive outcomes that organized labor can or has experienced from the implementation of pay-for-knowledge.

To begin with, collective bargaining agreements can be improved through the introduction of these systems. As a case in point, Shell Canada's Sarnia plant operates on a collective bargaining agreement only seven pages long (World of Work Report, 1983). Kochan and Katz (1983) cite a pay-for-knowledge firm with a

collective bargaining agreement only six pages long. The authors also report that arbitration was never used in the five-year history of the plant.

Skeptics should note that the brevity of the Shell contract is not all to management's advantage. For example, the agreement contains no management rights clause, a major "victory" for labor (Wallace, 1981). In turn, the union dropped the usual seniority provisions, except in cases of layoffs. Thus, seniority was preserved in the area most desired. Halpern remarked that "There has never been any suggestion that we go back to a more traditional form of organization at Sarnia" (Wallace, 1981, p. 12).

The pay-for-knowledge plan negotiated at the Buick City plant of GM provided 96% of the hourly workers with wage increases (Espo, 1985). In fact, the agreement increased input and job security as well as pay. The shop committee chairman viewed the agreement so positively that he expects other Buick plants will want similar agreements (Espo, 1985).

Schweizer (1986) has offered three basic reasons for organized labor to support the pay-for-knowledge concept. First, the increased productivity which often accompanies these systems improves the firm's competitive position, which in turn improves the chances of "job survival" for union members. Second, the higher wages which occur with pay-for-knowledge mean better income for union members. Third, job security is improved because of increased work force stability and a reduced need for layoffs. In addition, Kochan, Katz, and Mower (1985) conclude that the psychological rewards of quality of working life and worker participation programs are not sufficient by themselves to maintain commitment to the programs. Pay-for-knowledge provides an excellent vehicle for solidifying management, union, and worker commitment through the administration of tangible, yet symbolic rewards.

Certain myths about the impact of pay-for-knowledge and other innovations on organized labor are challenged by facts. Research done by Kochan et al. (1984) does not support the fear that worker participation programs lead to political opposition within the local union or threaten the security of union leadership. There is also evidence that unions gain greater voice for their members with the use of these innovative systems (World of Work Report, 1983).

In short, pay-for-knowledge plans hold many benefits for employers, employees, and labor-management relationships. As noted before, however, it is difficult to isolate the unique contributions of pay-for-knowledge to organizational effectiveness, since pay-for-knowledge plans usually occur in conjunction with other work innovations. Still, the literature is suggestive that pay-for-knowledge does offer some promise of improved productivity, quality of work life, and labor-management relationships.

Disadvantages/Problems

The successes of pay-for-knowledge are not unaccompanied by problems and difficulties. Many of these problems can be overcome with care and foresight; others are simply the "costs" of implementing a non-traditional system. This part describes some of the problems and disadvantages of pay-for-knowledge systems.

Problems with the Mechanics of Pay-for-Knowledge. Pay-for-knowledge plans require large investments in and commitment to training in order to function properly (Jenkins & Gupta, 1985; Lawler, 1977, 1980, 1982; Lawler & Ledford, 1984; Lynas, 1983; Schweizer, 1986; World of Work Report, 1984a). Walton (1980) warned that too many firms are guilty of "wishful thinking," believing that commitment is capable of meeting any challenge, and underestimating the need for technical skills and management systems. Mohrman (1983) noted that firms underestimate the amount of training and learning necessary to support these systems. The Shell Canada plant found that multiskill training was surprisingly difficult to schedule and complete and that skills were not being transferred effectively (World of Work Report, 1983). Therefore, after one year of operation, Shell hired a full-time resource person to deal with specific training issues among employees. Now Shell includes this position in its QWL projects from the start.

There is always a potential tradeoff between breadth and depth skill acquisition in pay-for-knowledge systems (Walton, 1985). Training time is also very costly (Lawler, 1982; Lawler & Ledford, 1984). With pay-for-knowledge, it is inevitable that the organization will have periods where inexperienced people do the work (Lawler, 1982).

Another training problem is that some employees demonstrate skill mastery before the minimum training time has elapsed (Poza & Markus, 1980). Poza and Markus (1980, p. 18) add that, "If anything, the designers underestimated the employees' enthusiasm for acquiring new skills." Furthermore, some firms have well developed training programs at plant start-up, but fail to develop the program as the plant grows (Walton, 1980).

Closely related to training is the problem of skill assessment. Subjectivity in assessments can cause inequities in the system. A major problem at the Shell Canada plant was that team members were moving too rapidly into new skills, causing operating deficiencies (World of Work Report, 1983). Many systems using peer appraisals express concern over the fact that workers gradually ease their standards (Business Week, 1977; Lawler, 1982; Walton, 1977b, 1978a). As late as 1978, Walton noted that "...there continues to be serious doubt (at the Topeka plant) about the ability of teams to make objective judgments about members' qualifications for pay increases" (Walton, 1978a, p. 45). Hence, efforts should be made to make skill assessment as well defined and as objective as possible (Lawler, 1982; Lawler & Ledford, 1984).

Walton (1978a) has found that employees want fair and accurate peer evaluations. Employees realize that pay increases that are given, but not justified, create inequities. Also, if skill assessments are not valid, individuals are assumed to have qualifications that they do not possess, forcing other team members to do their work. Finally, if skill assessment is not fair, workers feel that a basic tenet of the pay-for-knowledge system is violated.

Even with proper skill assessment, pay-for-knowledge systems can produce "jacks of all trades and masters of none" (Jenkins & Gupta, 1985). Several strategies have been advocated to prevent this from happening: include a mastery component whereby individuals demonstrate not only that a skill is learned, but also mastered; use refresher training; and require periodic demonstrations of proficiency in previously learned skills (Jenkins & Gupta, 1985; Lawler & Ledford, 1984).

Hold-ups occur when a worker is ready to move to a new job, but there are no openings available (Jenkins & Gupta, 1985). At this point, the integrity of the system is threatened, since the worker is ready to move on and increase his/her pay, but is not allowed. Jenkins and Gupta (1985) suggest that a special hold-up rate can be used to compensate the employee for the time he/she is held back.

"Topping out" or "maxing out" is discussed extensively in the literature (Hackman, 1978; Jenkins & Gupta, 1985; Lawler, 1982, 1982; Lawler & Ledford, 1984; Schweizer, 1986; Walton, 1974, 1985). Topping out occurs when a pay-for-knowledge employee has learned all possible jobs or skills. Jenkins and Gupta (1985) estimate that, in most pay-for-knowledge plants, it normally takes a minimum of two to three years before an employee tops out.

Unfortunately, no real solutions to this problem have been derived so far. Some firms do not adjust pay beyond the plant rate, except for merit or cost-of-living adjustments (Jenkins & Gupta, 1985). Other firms have added profit sharing plans and productivity bonuses as ways to keep topped out employees motivated (Jenkins & Gupta, 1985; Lawler, 1978; Walton, 1977b, 1978a). While these plans attempt to provide further pay incentives, they do not include any new learning opportunities; the focus of these systems is also so broad that the performance-pay link is, at best, weak.

Lawler (1982) suggested two possible ways to deal with the issue of topping out. First, interplant transfers could be used to allow employees to go to new plants where they could learn more skills. Second, group incentive plans could be used. Probably the most desirable approach to date is to implement an increased-knowledge-based pay system to allow depth skill acquisition for those employees who have topped out (Jenkins & Gupta, 1985).

Bonus systems are often introduced in conjunction with pay-for-knowledge for two reasons. First, they offer a way of dealing with the problem of topping out (Jenkins & Gupta, 1985; Lawler, 1978; Walton, 1977b, 1978a). Thus, as employees top out, there is still an incentive for them to keep productivity high and costs low. Second, bonus systems assure workers that they will be rewarded for their extra efforts and contributions.

A problem with bonus systems is that they often run counter to the philosophy of skill development and job rotation (Jenkins & Gupta, 1985; Lawler & Ledford, 1984). Workers who are learning new skills and rotating from job to job may not be as productive as those already competent in these jobs and, therefore, productivity is sacrificed for skill training (at least in the short run). Thus, there is a constant tradeoff between production efficiency and skill acquisition.

While ideally pay-for-knowledge is designed to remove inequities in pay, it has sometimes produced the opposite effect (Jenkins & Gupta, 1985; Walton, 1974). Feelings of inequity may result for several reasons. They could occur because different pay rates are given to people working together and performing the same or similar work. Subjectivity in judgments about the mastery of a skill could result in people who are not qualified getting pay raises and/or people who are qualified not getting pay raises. In some systems, employees may question whether there is equal opportunity for all workers to learn all the jobs. For example, one plant experienced a dispute over the pace at which workers progressed through the levels because the pay progression was occurring

faster in a low status area of work (Kochan et al., 1984). Likewise, in one GM facility, workers realized that the skills for certain jobs could be acquired more rapidly than the skills for other jobs, resulting in differential pay raises (Cherry, 1982).

Problems with Different Employee Groups. Pay-for-knowledge plans can potentially cause a variety of problems among employees. Problems can occur within specific employee subgroups; they can also occur across different levels of the organizational hierarchy.

Resistance to change is a difficulty often encountered in the implementation of pay-for-knowledge, particularly in established plants. The Wall Street Journal (1985) reported that some workers dislike pay-for-knowledge because they feel switching from job to job is too physically taxing. Employees in higher job classifications may also have vested interests to protect (Walton, 1985; Weisbord, 1985). For example, at one firm which installed a pay-for-knowledge system, those who performed "attractive" tasks (answering telephone inquiries) did not want to learn less prestigious tasks (e.g., statistical coding) (World of Work Report, 1980).

Skilled craftsmen often resist systems that require work rule changes (Business Week, 1983). At one GM plant, conflict developed between the skilled trades and operating teams because skilled trades employees wanted teams to leave the machinery alone (Cherry, 1982). Kochan et al. (1984) discussed a GM plant where skilled trades workers tried to discontinue pay-for-knowledge, but the plant work force voted to keep it. Employees may also be reluctant to give up traditional job classifications because they lose the protection from potential abuse by managers provided by job specifications and seniority rights (Kochan et al., 1984).

Employees not included in pay-for-knowledge plans may also be sources of resistance. Inequity may be perceived by non-pay-for-knowledge employees as they see pay-for-knowledge employees provided with growth opportunities and pay increases (Jenkins & Gupta, 1985). Lawler (1978) also discussed a situation in which office employees not included in the plan became jealous.

Supervisors in pay-for-knowledge plans can also be the focus of many problems and difficulties (Cherry, 1982; Engel, 1985; Hackman & Lee, 1979; Hackman & Oldham, 1980; Jenkins & Gupta, 1985; Lawler, 1978, 1980; Mohrman, 1983; Poza & Markus, 1980; Walton, 1977b, 1982, 1985; Walton & Schlesinger, 1979). Often, it is not easy for supervisors to adjust to their new roles in these plants. The goal of cooperation is facilitated by consultative rather than the traditional control pattern of supervision. Thus, the supervisor's role is to facilitate and lead, not direct and control (Walton, 1982).

First line supervisors in pay-for-knowledge plants often complain that there is confusion about which decisions are to be made by whom (Lawler, 1980). They also feel threatened because the pay gap between supervisors and workers narrows as workers acquire more skills (Jenkins & Gupta, 1985), and because their own expertise is challenged as subordinates gain greater skills and knowledge (Jenkins & Gupta, 1985). The problem is exacerbated because supervisors' roles may change as the organization adapts to changing technological demands (Walton & Schlesinger, 1979). To ease these problems, it is suggested that the recruitment, selection, and training of supervisors be given greater attention. The requirements for selection should consider the

technology used at the plant, the experience level of the work force, career paths available to supervisors, and the capabilities of management levels above the supervisor (Walton & Schlesinger, 1979). Walton and Schlesinger (1979) are particularly critical of the lack of training and preparation given to supervisors before they enact their new roles. They suggest that supervisors be given training in the following areas: human relations skills (performance appraisals, problem-solving, team meetings, communication), the manufacturing process, and how the work system functions.

In plants with work teams, supervisors are not prepared for realistic group development which often includes periods of erratic self-direction with temporary setbacks and/or plateaus (Walton & Schlesinger, 1979). Likewise, they sometimes do not understand that different groups are different. It is common for some work teams to complain that one supervisor is providing too much guidance while other teams complain the same supervisor is providing too little support (Walton, 1982). Thus, supervisors must be attuned to the fact that teams differ in the rate and ability to self-manage (Poza & Markus, 1980; Walton, 1982; Walton & Schlesinger, 1979). One firm, which had teams on set shifts but rotated supervisors, encountered a number of problems since strong relationships were never built between supervisors and work teams (Walton, 1980).

Another common error is the failure to tie the supervisor's evaluation and rewards to team development (Hackman & Oldham, 1980; Walton & Schlesinger, 1979). While the supervisor's job is to foster group development, the reward system often fails to link this function to his/her pay. To remedy this problem, Walton and Schlesinger (1979) recommend that supervisory evaluation systems include an assessment of group development, group appraisals of the supervisor, supervisor peer appraisals, and managerial appraisals.

Because the supervisor's job in participative work environments often involves delegating traditional functions as much as possible, good supervisors can actually work themselves out of a job. Thus, organizations need to provide for the supervisor's future (Walton, 1982; Walton & Schlesinger, 1979). Unless a legitimate plan exists for handling supervisory career development issues, supervisor resistance is likely to hinder organizational development.

Lack of organizational support can be another organizational concern with respect to supervisors. A common complaint is that when things go wrong, supervisors get the blame; when things go well, workers get the attention and rewards (Walton & Schlesinger, 1979). Another typical complaint among supervisors is that there is no vehicle for supervisors to voice concerns. As a result, supervisors start to believe that only the quality of work life of the workers is important; that the quality of work life for supervisors is of little concern to management. It is not surprising, then, that in a study of 12 innovative organizations, Walton and Schlesinger (1979) found generally lower satisfaction or higher dissatisfaction at the supervisory level than any other level.

Managers of pay-for-knowledge plants also often find themselves in a completely alien environment where traditional values and management techniques are no longer applicable. In some cases, pay-for-knowledge has failed simply because management was not prepared to manage in a participative system (Kochan et al., 1984).

Very common are problems with authoritarian managers who fear losing their power as it is transferred to employees (Herrick & Maccoby, 1975; Weisbord, 1985; World of Work Report, 1984b). Weisbord (1985) points out that many managers are prone to value control more than the bottom line (Weisbord, 1985). He suggests that this is one reason it is so difficult to "retrofit" multiskilled teams into existing organizations. At the opposite end of the continuum are managers who are "too participative." These managers are unable to tread the fine line which exists between permissiveness and participation as an approach to management (Lawler, 1978, 1980).

Managers may also find that they are unhappy with the system because it means more work for them. Managers have to put forth extra effort, develop new skills, cope with higher levels of ambiguity, and experience extreme discomfort in order to manage organizational change effectively (Walton, 1985). One effort to deal with this situation has been the creation of plant manager networks. For example, GM managers of new plants started a network to discuss concepts and problems, give each other support, and increase contact (Cherry, 1982). This network was successful enough that it was later formalized.

Similar to the experiences of supervisors, managers also sometimes fear that they are working themselves out of a job by developing subordinates' skills. This concern was expressed at the Topeka plant (Business Week, 1977; Walton, 1977b, 1982). From 1973 to 1976, three of four managers responsible for the Topeka system left the corporation, while the fourth moved to a new canned dog food plant within the corporation (Walton, 1977b, 1982). One former manager at the Topeka plant noted that by being involved in the system at Topeka, he lost his career at the corporation (Business Week, 1977). Likewise, labor relations administrators whose central job is to manage grievances may feel their jobs are threatened by pay-for-knowledge and participative management (Kochan et al., 1984).

In some cases, pay-for-knowledge systems have suffered due to turnover of key individuals (Walton, 1975; Mohrman, 1983). For example, managers who are especially supportive of the system may leave the organization to take advantage of promotion opportunities or new challenges. Likewise, key corporate personnel supporting the system may turn over. A Chief Executive Officer who believes in worker participation may retire, leaving control in the hands of individuals who do not understand the system. Also, supervisors who are experienced with the system may be transferred to other plants to aid diffusion, taking a great deal of "hands on" experience with them.

Individuals performing staff functions may also feel threatened by pay-for-knowledge systems, especially when pay-for-knowledge is used in a participative work environment (Business Week, 1977; Ketchum, 1975). Common fears of staff personnel include: their functions will not be performed well in the new system, they will lose self-importance, and restructured work will cause a reduction in staff (Ketchum, 1975; Walton, 1974). Hence, the well developed theme of threatened job security runs through both line and staff functions.

In short, pay-for-knowledge plans can pose problems at many organizational echelons. These problems, however, are by no means insurmountable. On the contrary, proper care and attention is likely to defuse most difficulties at the outset.

Plant-Corporate Interface. The plant manager usually has the critical task of boundary management between the corporate and plant levels (Poza & Markus, 1980). Loss of support from corporate management can quickly erode the system (Walton, 1975). In some cases, the relationship between a plant and corporate headquarters is strained by the use of work and pay innovations. The Topeka plant is an excellent example of this phenomenon, with its history of plant-corporate friction in its early years of development (Ketchum, 1975; Walton, 1982).

Lawler (1980) argued that plant-corporate interface can be improved significantly by decentralizing control, while at the same time improving plant-corporate communication. He suggested that seminars, task forces, and frequent plant visits by corporate management and staff may provide the much needed link between plant and corporate levels. Likewise, Walton (1977a) attributed TRW's success largely to the use of people in compensation, finance, manufacturing, communication, and personnel as internal "consultants"; this broadened feelings of ownership and commitment among corporate personnel.

Other Potential Problems. Some other potential difficulties with pay-for-knowledge plans also deserve mention. One concerns the likelihood that pay-for-knowledge plans create wage inequities in the local market. Pay-for-knowledge plans normally pay lower starting rates, but as employees progress through the system, their wages tend to be higher than those in the local market for comparable jobs (Jenkins & Gupta, 1985; Lawler, 1982; Lawler & Ledford, 1984). Not only does this disrupt the market, it may also imply that pay-for-knowledge plants continue to retain unproductive employees who do not turn over simply because they cannot be paid the same elsewhere.

Pay-for-knowledge may also increase record-keeping costs since the personnel department must keep track of each worker's skill level, rotation schedule, and career history to take advantage of work force flexibility (Jenkins & Gupta, 1985; Schweizer, 1986). These higher labor and overhead costs may, however, be counterbalanced by the gains of pay-for-knowledge: reduction in work force size may offset the higher wages. Even if total labor costs are higher, there is some evidence to suggest that these costs may be outweighed by gains in flexibility, productivity, and the quality of output (Apcar, 1985; Bernstein, 1983; Business Week, 1983; English, 1985; Jenkins & Gupta, 1985; Kochan et al., 1984; Pasmore et al., 1981; Poza & Markus, 1980; Schweizer, 1986; Walton, 1982; World of Work Report, 1980, 1983, 1984a, 1984b).

The question of what happens when individuals are being paid for a skill that becomes obsolete must also be addressed (Lawler & Ledford, 1984; Schweizer, 1986). Is the worker's pay reduced? Is the worker allowed to replace the skill with another? This issue is likely to arise with increasing frequency, and must be resolved quickly if pay-for-knowledge plans are to function as intended.

A somewhat different problem is that of regression during a crisis (Cherry, 1982; Lawler, 1978, 1980; Walton, 1975, 1978a, 1982). Managers sometimes revert to traditional management techniques in difficult times, thereby endangering the pay-for-knowledge system. For example, a push for maximum production may occur due to market and/or corporate demands (Walton, 1978a). Such a crisis may cause management to slow down skill development or team transfers in order to maximize production. Situations such as these can damage employee perception of management commitment to the system (Lawler, 1980; Walton, 1978a).

Some companies have handled crisis situations consistent with participative principles. Cherry (1982) discussed a potential layoff crisis at a GM plant, when product demand fell in 1982. In this case, management let the work teams decide how to handle the situation. The result was that the work teams decided to cut back all workers' hours rather than lay off workers based on seniority.

The negative effects of publicity on work and pay innovation projects can also cause problems (Lawler, 1978; Poza & Markus, 1980). The Topeka plant, which is one of the more heavily publicized, has both benefited from and been damaged by publicity. Some companies, such as Procter & Gamble, may have closed the doors of their new design plants to outsiders because of fears of publicity (Lawler, 1978; Walton, 1979).

Unrealistic expectations can erode the effectiveness of pay-for-knowledge as well. Shell Canada, for instance, found self-regulation to be more difficult to achieve than expected (World of Work Report, 1983). Unrealistic expectations can lead to employee disappointment. Pre-employment counseling is sometimes advocated as a possible solution (Lawler, 1978).

Summary

The potential advantages of and problems with pay-for-knowledge systems are numerous. Pay-for-knowledge has the ability to offer great gains for workers, organizations, and labor-management relationships. Its very innovativeness, however, may cause the plan to backfire if implemented without due care and forethought. If the multitude of possible problems outlined above can be anticipated and avoided, pay-for-knowledge may provide major strides for productivity increments and quality of work life improvements.

II.4: Implications of Pay-for-Knowledge Systems

If pay-for-knowledge plans are to succeed and proliferate, they must be acceptable to the various constituencies they affect (management, labor, employees, etc.). This section discusses some of the dynamics of and barriers to the wider use of pay-for-knowledge systems. It also focuses specifically on the implications of pay-for-knowledge plans for labor-management relationships.

Barriers to the Diffusion of Pay-for-Knowledge and Other Work Innovations

Successful diffusion of work and pay innovations is generally considered desirable, if not necessary, for their healthy maintenance (Walton, 1974, 1975, 1977, 1982; Work in America Institute, 1982; World of Work Report, 1983). Walton (1975, 1977a), for example, argued that intra-firm diffusion is necessary to avoid isolation and eventual failure of work innovations. Lawler (1981) also pointed out that work innovations in new design plants have a "high potential for diffusion to other settings" (p. 180).

Despite policies favoring the diffusion of work and pay innovations, however, work innovations have generally not seen much intra- or inter-firm diffusion. Thus, Walton (1975) considered successful diffusion to be the exception rather than the rule. There are several reasons why novel pay and work designs have not seen wider use.

Secrecy of Successful Projects. Successful pay innovations are often reported in the literature with company names disguised. This prevents other organizations interested in exploring similar efforts from contacting them. In some cases, firms fear that too much publicity may have negative effects on other units of the company not attempting the innovation (Walton, 1975). For example, the more successful the pilot, the less favorable are the career payoffs for success (and the greater the risks for failure) for those who adopt the innovations later (Walton, 1977a, 1975). In other cases, successful companies simply do not publicize their successes for fear of losing their competitive edge.

Failures of Pilot Efforts. Setbacks in a pilot project using work innovations tend to be magnified, creating numerous doubts about the true outcomes of the system (Walton, 1975). Furthermore, negative information about the pilot project is often given disproportionately greater weight in assessing overall success.

Uniqueness of Pilot Site. Some pilot sites are poor models for other sites, either because they lack visibility, or because they are so unlike other sites (Walton, 1975, 1977). Even if sites are not markedly different, perceptions of uniqueness may cause diffusion problems (Ketchum, 1975). Thus, Walton (1982) argued the total effect on the corporation from the Topeka plant's work and pay innovations was zero, neither increasing nor decreasing the likelihood of other corporate innovations.

Confusion Over What to Diffuse. There are frequent misperceptions about the elements of an innovative system that should be applied to another site (Walton, 1975). For diffusion to be successful, it is essential that the specific mechanics of pay-for-knowledge (and other work innovations) be adapted to the peculiarities of the plant under consideration. This is overlooked too frequently, leading to failure.

Resistance to Diffusion. A large number of organizational dynamics make change extremely difficult in established organizations. "Star envy" can occur if subsequent sites for diffusion resent the attention given to the original site (Walton, 1975, 1977a). Walton (1974) cautions against evangelism as well, which is likely to be self-defeating (Walton, 1974). Vested interests may provide further motivation to resist change (Walton, 1975). The presence of a corporate diffusion agent may be interpreted by managers as "we need help" or "we have problems," interpretations that managers frequently resist (Ketchum, 1975). Thus, change agents often encounter managerial attitudes such as "we are already doing it" or "it only applies when problems exist, and we have no problems" (Ketchum, 1975).

Lack of Top Management Commitment. Continuing support of top management is essential for successful diffusion, especially when things are not going well (Walton, 1974, 1975). A reason cited for the lack of diffusion of the Topeka system was that some company executives labeled it a "problem" for the corporation (Walton, 1982).

Union Opposition. Union opposition may occur as a result of proposed work rule changes (Walton, 1975). Also, in cases where there is a historical relationship of mistrust between labor and management, innovations are likely to be viewed with skepticism.

Lack of Strategic Planning. Firms often fail to develop strategies for diffusion, thinking that it "just happens," or that success means diffusion will occur inevitably (Hackman, 1977; Walton, 1982). Even when diffusion strategies are agreed upon, there may be no follow-through and little understanding of the implementation process (Walton, 1975).

Strategic Diffusion

Choosing the proper diffusion strategy is situational. Therefore, those involved in the diffusion process must understand the organization, its patterns, products, technologies, culture, philosophy, etc. (Walton, 1977a). Strategic diffusion involves tapping a number of resources already available to organizations. Among the strategies used successfully in the past for successful diffusion are the following:

- Transferring key personnel who have training and experience with the pay-for-knowledge system (Walton, 1974, 1975).
- Encouraging plant visits by interested groups (Walton, 1974).
- Creating or tapping into networks of plant managers and personnel managers promoting innovation (Walton, 1975).
- Introducing more than one pilot project at the same time (Walton, 1975).
- Avoiding overexposure of the change efforts (Walton, 1975).
- Having the innovative program identified with top management at the initial project stage (Walton, 1975).
- In existing plants, installing innovations in pieces and allowing sufficient time for the results to show, since some integral parts of the system will still be missing (Lawler, 1980).
- Sharing information with other firms and becoming involved in organizational networks with companies who are willing to share and exchange experiences (Walton, 1979).
- Avoiding promotion of the diffusion of a technique; instead, promoting diffusion of the innovative planning process (Walton, 1977a, 1979).
- Avoiding promotion of unrealistic concepts or practices (Walton, 1977a).
- Avoiding "missionary zeal" when advocating concepts (Walton, 1977a).
- Avoiding publicity to emphasize the fact that it is a business move, not a social experiment (Walton, 1977a).
- Recognizing that diffusion should be pragmatic and goal directed (Walton, 1977a).
- Using outside consultants or change agents (Walton, 1974).
- Using a long lead time with start-up to allow enough time for training and acculturation.

Although the diffusion record of work and pay innovations in general is poor, several firms have been exceptionally adept at applying diffusion strategies successfully. For example, Wallace (1981) notes that Shell Canada was so successful at its Sarnia plant that it built three similar plants and has seven more on the drawing board. Volvo has also been quite successful at the diffusion process (Walton, 1977a).

In the United States, TRW is one of the leaders in the diffusion of pay-for-knowledge and work innovations (Walton, 1977a). TRW is credited with using a very pragmatic approach to diffusion (Walton, 1977a). Its strategy included feasibility studies conducted at eighteen locations in 1977 (Walton, 1977a). The organization also recognized differences across locations, and therefore emphasized the general approach to innovation, with specific elements tailored to fit individual locations. TRW also allowed sufficient time for the implementation of its innovations in view of the fact that a self-management culture cannot be created overnight (Walton, 1977a).

The literature contains examples of other "mystery" companies with pseudonyms that have been successful in their diffusion efforts (Walton 1977, 1979). One such company, a leading manufacturer of nondurable goods, was so successful that it diffused pay-for-knowledge to six new plants as well as to other existing unionized plants (Walton, 1979). The strategy reportedly included the transfer of managers from new plants to existing plants (Walton, 1979). Walton (1979) suggested that the acceptance of change at existing plants was partly fueled by a need to remain competitive with the newer plants.

Another "mystery" firm (which may possibly be the same firm) was successful in diffusing work innovations to union plants (Walton, 1977a). The strategy in this case included the use of the position of first line supervisor for entry into managerial echelons. Thus, college graduates were hired as first line supervisors (Walton, 1977a). The company also transferred management personnel to new plants to aid diffusion. A growth strategy of building new plants every 18 months was also adopted (Walton, 1977a).

Conditions for Successful Diffusion of Pay-for-Knowledge

A number of considerations must be addressed in deciding where it is appropriate to use pay-for-knowledge and other innovative systems. There is some agreement in the literature about conditions favoring success.

Size. It is commonly believed that pay-for-knowledge and other innovations can be successfully implemented only in small plants (Lawler, 1981; Poza & Markus, 1980; Schrank, 1978; Walton, 1974, 1982). Schrank (1974, 1978) argued that plant size at Topeka (30 to 40 workers per shift), rather than the team concept or worker participation, had a major impact on the success of the system.

Technology. It is argued that technology dictates where pay-for-knowledge can be successfully implemented (Lawler & Ledford, 1984; Lawler & Olsen, 1977; Walton, 1977a, 1978b, 1982, 1985). If capital and raw materials costs are high relative to labor costs, it is economically more feasible to pay the higher-than-average rates associated with pay-for-knowledge (Walton, 1977a, 1978b, 1985). Process and mass production technologies are cited as good environments for pay-for-knowledge (Lawler, 1977; Walton, 1985). Highly interdependent

technologies as well as technologies requiring work teams are also likely to provide a good fit with pay-for-knowledge (Hackman, 1977; Lawler, 1981; Lawler & Ledford, 1984; Lawler & Olsen, 1977; Schweizer, 1986).

Nonunion Status. Another argument is that pay-for-knowledge can work only in nonunionized environments (Poza & Markus, 1980; Walton, 1974, 1978b, 1982). This argument holds that pay-for-knowledge violates many principles close to the hearts of organized labor. Job assignments, jurisdictional boundaries, salary levels, seniority rights, and other such issues that have traditionally formed the core of collective bargaining agreements, are threatened by the use of pay-for-knowledge. Thus, it is often argued that organized labor would not be supportive of the use of pay-for-knowledge, although success has been reported in several unionized settings.

New Plants. The new plant argument is based on the idea that "...creation is easier than resurrection" (Lawler, 1981, p. 19). New plants are believed to be better sites for pay-for-knowledge since there is no tradition or plant history to overcome (Apcar, 1985; English, 1985, Jenkins & Gupta, 1985; Lawler & Ledford, 1984; Lawler & Olsen, 1977; Poza & Markus, 1980; Walton, 1974, 1982). New plants or "greenfield" situations, as they are sometimes termed, offer an opportunity to establish a reward system correctly from the start (Lawler & Olsen, 1977). Work rule innovations are easier at new plants because the workers do not have the same job security fears as workers in old plants (English, 1985).

Work force Characteristics. Many have argued that successful pay-for-knowledge implementations are largely attributable to the special and unique characteristics of the work force (Hackman, 1977, 1978; Jenkins & Gupta, 1985; Lawler & Ledford, 1984; Walton, 1977, 1982; Weisbord, 1985). At the Topeka plant, for instance, over 600 people were screened in selecting 70 employees (Walton, 1974). It has also been argued that many people do not want opportunities to learn new skills or be challenged at work (Hackman, 1977, 1978). Jenkins and Lawler (1981) discuss a plant in which the pay-for-knowledge plan was rejected by employees because they preferred to learn how to do their jobs better, not learn other jobs.

Plant Location. It is sometimes suggested that small towns provide a good atmosphere for implementing pay-for-knowledge (Poza & Markus, 1980; Walton, 1974, 1982). Cultural factors and the community's environment can affect how well pay-for-knowledge is accepted in a plant (Jenkins & Gupta, 1985).

Geographic Separation. This hypothesis suggests that work innovations will be successful only if they are housed in locations geographically separated from other operating units of the firm (Walton, 1974). The idea is that these systems are so different that they need more autonomy and freedom from interference.

Many of the above beliefs have been challenged over time. For example, Walton (1977a) argued that Volvo's success in diffusing work and pay innovations to plants with 8,000 and 5,000 workers negates the size hypothesis (Walton, 1977a). Likewise, GM and Procter and Gamble have been successful in sites with several thousand workers (Walton, 1982). Walton (1979, 1982) also refutes the unique work force, small town, and new plant hypotheses, noting that effective work innovation sites have existed in nearly all types of locations. The nonunion hypothesis is challenged by reports of successful implementation of

pay-for-knowledge in unionized environments (Cherry, 1982; Jenkins & Gupta, 1985; Lentz, 1985). The technology hypothesis has also been challenged by Walton (1978b, 1982), since the Topeka plant's principles have been applied in continuous, batch, assembly, and warehousing technologies. Furthermore, Hackman and Oldham (1980) argue that the use of teams is not always technologically or motivationally appropriate. Lawler (1980) also argued that, since a large number of workers are interested in working in high involvement organizations, it is unlikely that innovations appeal to only small segments of the work force.

Despite these challenges, many of the original hypotheses are still widely accepted (Engel, 1985; Poza & Markus, 1980).

Implications for Industrial Relations

Work and pay innovations have significant implications for labor-management relationships. Pay-for-knowledge plans occur in a variety of unionized settings, with workers covered by the United Steel Workers, United Automobile Workers, and United Rubber Workers (Apcar, 1985; Business Week, 1983). Mead, GM, and Shell Canada are examples of unionized pay-for-knowledge settings. The impact so far appears to be both positive and negative (Kochan et al., 1984; Walton, 1982). This part discusses some of these dynamics.

Changing Attitudes. Recent changes in the business environment have put pressure on U.S. firms and labor unions to compete more effectively (Edid, 1985; Kochan & Katz, 1983). Unions are also subject to internal pressures from workers who want changes in their day-to-day work experiences (Kochan et al., 1985). Workers also see some advantages in fewer jurisdictional lines and flexibility of job assignments (Engel, 1985).

Operationalizing Pay-for-Knowledge in Unionized Settings. Because of recognition of the need for change, there has been a shift in labor attitudes. Union leaders now admit that some job rules are outdated. The March 1982 GM/UAW contract commits union leaders to the idea that past "inefficient" work practices must be altered (Business Week, 1982a). Pay-for-knowledge is one way to introduce a different aspect to labor-management relationships (Flax, 1984). Following is a brief description of the use of pay-for-knowledge in two unionized organizations, GM and Shell Canada.

GM and the UAW negotiate national wage levels, but local wage agreements determine how much employees are paid for particular jobs (Espo, 1985). Thus, it is up to the local site to design its work and pay structure. For example, the union's role in team-based plants is worked out by each plant in its own way (Cherry, 1982). Often the local union is involved heavily in planning committees that shape the design and implementation of each team system (Kochan et al., 1984).

The 1985 Buick City/UAW agreement specifies a pay-for-knowledge system that requires each worker to learn at least two jobs, and allows workers to learn up to eight jobs (Espo, 1985). The system has led to a massive reduction in job classifications. Jobs at the plant are organized into clusters, with each cluster containing between ten to fifteen workers (Espo, 1985). The new agreement has reportedly produced positive outcomes for the union and its members. Workers have increased both wages and input into decisions. Seniority and shift preferences were also improved by the new agreement (Espo, 1985). In exchange for these benefits, Buick gets a more flexible work force.

Another GM pay-for-knowledge plant, located in Fitzgerald, Georgia, was originally not unionized. The move toward pay-for-knowledge was still considered a major innovation. "Apart from the proposal to design, start up, and manage a complete manufacturing operation using self-managing teams, the proposal to use a pay-for-knowledge scheme for plant operating teams was, perhaps, the most radical departure from traditional operations within General Motors (Cherry, 1982, p. 136). The plant was later unionized and a 1979 agreement between GM and the UAW assures that employees in all new plants started by GM will be represented by labor unions (Cherry, 1982). The Fitzgerald plant, which manufactures batteries, combines a pay-for-knowledge system, self-supervision, and other innovative design techniques (Walton, 1979). To date, the plant's performance is reported to be "very favorable" (Walton, 1979).

Pay-for-knowledge at GM's Orion Assembly plant has run into some labor problems (Apcar, 1985). Union leaders accused the company of favoritism within the system. Assembly line workers did not like being moved from job to job whenever "the boss" said so. Thus, modifications in the pay-for-knowledge plan became the major bargaining priority for the UAW (Apcar, 1985). Workers now have the right to opt out of the pay-for-knowledge program (Apcar, 1985). Pay-for-knowledge also encountered labor problems at GM's Wentzville, Missouri, plant largely due to the fact that the system was unilaterally imposed by management (Apcar, 1985), the result of which was a strike by 3,300 UAW workers in January 1985 (The Wall Street Journal, 1985). White (1977) warns that labor/management clashes are inevitable in cases where work innovations are not installed bilaterally.

Shell Canada, which has been quite effective in using pay-for-knowledge, credits much of its success to working closely with organized labor. Shell used a joint labor-management team to design its first pay-for-knowledge facility (World of Work Report, 1983). In addition, once a system is installed, a group of executives and senior management personnel meets monthly to review the progress of the plant's operations (World of Work Report, 1983). As a result, both union and management report being quite pleased with Shell's pay-for-knowledge plan at the Sarnia plant. "There are some minor changes we'd like to see, but the Sarnia plant gives a greater recognition to the fact that workers are human than any other plant in the country" (Wallace, 1981, p. 11).

Concerns of Organized Labor. Generalizing about "union response" to the innovations in work and pay design is dangerous since unions have responded in different ways in different situations (White, 1977). In some cases, unions work cooperatively for change (Wallace, 1981). In other cases, national unions may be skeptical of work innovation plans, but do not prevent locals from taking part (Work in America Institute, 1982).

One labor concern about work innovations is that the union will lose its power, resulting in a loss of "due process" for workers. But Schrank (1974) argues that most people fail to see that union involvement is a form of worker participation. The fear of losing power or control is grounded in several beliefs. As the number of grievances and discipline problems falls (as it often does with work innovations), union stewards and grievance committee representatives see a threat to their political power (Kochan et al., 1984). A study by Kochan et al. (1985) found, however, that in four out of five cases, participants in quality of work life programs did not rate the power of their

union as lower than nonparticipants. Therefore, these fears may be at least partially unfounded. Another reason for fearing a loss of power is that multiskill work systems can blur jurisdictional distinctions, weaken seniority rights, and threaten the job security of the skilled trades (English, 1985; Kochan & Katz, 1983; Kochan et al., 1984; Business Week, 1982b). Also, unions often fear that work rule changes in one plant will lead to work rule changes in other plants (Business Week, 1984).

New Roles for Labor and Management. Kochan and Katz (1983) argue that the changes of the 1980s are symbolic of labor and management's search for an alternative industrial relations system. It has been suggested that a proactive form of labor/management relationship based on joint research and analysis, planning, and consultation is needed (Kochan et al., 1985). Walton concluded that, "I do not see any insurmountable problem in integrating the institution of collective bargaining and the principles of work restructuring which were developed earlier in nonunion plants" (1978b, p. 40). Examples of changes in industrial relations are discussed below.

New roles must necessarily evolve for both management and labor as changes take place in the work environment (Schweizer, 1986). Cooperative problem-solving can coexist with hard labor-management bargaining (Kochan et al., 1985). Collective bargaining strategies must be adjusted to support the expansion of innovative work design (Kochan & Katz, 1983; Kochan et al., 1984). The traditional principle of "management acts and workers grieve" must be replaced with joint planning and consultation (Kochan et al., 1985; White, 1977). Local unions must abandon the historic strategy for maximizing job control (Kochan et al., 1985).

High levels of trust must be developed between business and organized labor (Kochan et al., 1984). If labor is expected to give up work rules and traditional bases of power and security, management must be prepared to involve the union in decision-making, as well as to provide more information for decision-making (Business Week, 1983; Kochan et al., 1985). Furthermore, plant level bargaining is essential to gain maximum flexibility in the design of each system (Business Week, 1982b; Kochan & Katz, 1983).

Management's approach to "union avoidance" may significantly hinder the diffusion of work innovations. Businesses must adopt an industrial relations strategy consistent with labor-management cooperation (Kochan et al., 1984). Management must make efforts to ensure that changes will not result in layoffs (Walton, 1979). Management must also have a deep commitment to the change process in order to maintain union support (Kochan et al., 1985).

By the same token, Thurow pointed out that "American unions will disappear like dinosaurs if they do not adjust to the new competitive environment and realize the need for a flexible labor force" (1984, p. 36). The issue of whether companies with both union and nonunion plants should be forced to choose between keeping this arrangement or getting work rule changes must also be resolved (Walton, 1985).

It has been suggested that unions might benefit substantially from taking the initiative in work restructuring, just as unions in Europe have done (Hackman, 1977). National unions must provide clear policy and guidance, or programs will develop without their guidance (Kochan et al., 1985).

Provisions of the National Labor Relations Act dealing with the definition of "worker" and "supervisor" may also need to be altered as a result of pay-for-knowledge and other work innovations. Likewise, the definition of mandatory and voluntary collective bargaining issues may change as traditional definitions become blurred or irrelevant (Kochan et al., 1985).

In short, many changes in attitudes and policies, on the part of both management and labor, are necessary if American business is to prosper and regain its competitive advantage in the international marketplace.

Summary

Work innovations have increased in recent years, partly in attempts to humanize the workplace, and partly to achieve productivity improvements. These innovations face many barriers to their successful implementation and diffusion, barriers that reside in corporate strategies, managerial philosophies, and employee attitudes. Removing these barriers necessitates changes in attitudes and actions. It also requires a fresh perspective on industrial relations. Union-management cooperation is essential to the successful use and proliferation of pay-for-knowledge and other work innovations.

II.5: Conclusions

The literature suggests that the question is no longer "can we build pay-for-knowledge systems?" but rather "how do we build pay-for-knowledge systems and sustain them?" In many organizations, pay-for-knowledge and other work innovations are no longer considered "experimental," they are policy (Walton, 1979, 1985; Work in America Institute, 1982). The environment of the 1970s was characterized by plant managers sponsoring these systems. The environment of the 1980s is characterized by company presidents supporting these systems (Walton, 1979, 1985).

Necessary Adjustments in Thinking

Changing the pay system of an organization is no panacea (Jenkins & Gupta, 1985; Lawler & Bullock, 1978); other adjustments are required in the thinking of U.S. business, organized labor, and the general work force. Companies have no choice if they want to continue to compete effectively in the international marketplace; they must increase quality of output without increasing costs (Work in America Institute, 1982). People who believe that work innovations are a passing phase fail to understand that the economic environment has changed permanently (Schweizer, 1986; Work in America Institute, 1982).

U.S. firms must develop a long-term perspective of the business organization in order to survive. Workers who move from job to job have no incentive for promoting the ultimate interests of a company (Thurow, 1984). U.S. firms must develop commitment among the work force, not obedience (Walton, 1985), and expand their time horizons for payback periods on R&D projects. Thurow (1984) noted that one of the United States' largest corporations has only a 2.8 year payback period.

U.S. firms are grossly overstaffed at the middle management level, a problem that could become even more pronounced with work innovations emphasizing self-management (Miles & Rosenberg, 1982). "The key to productivity

improvements lies not on the factory floor, but in the office" (Thurow, 1984, p. 16). Japanese firms are operating both abroad and in the U.S. with far lower white collar staffing. A case in point is Mashushita, which fired 25% of its white collar workers when it took over Quasar (Thurow, 1984).

Traditional financial theory sets the owners of the firm against the employees. What is needed instead is a partnership in which labor, management, and employees are all members (Thurow, 1984). The partnership approach concentrates on maximizing value added. The aim, therefore, becomes not to minimize wages but to maximize them, subject to the constraint that wages reflect productivity and the long-run future of the company (Thurow, 1984).

Future Directions for Research

Obviously, the lack of hard data on pay-for-knowledge systems suggests that systematic research must be done to identify when, where, and how pay-for-knowledge can be implemented effectively. Efforts must be made to identify the true generalizability of work innovations. Management must realize that pilot projects are not total "failures" if we learn from them (Poza & Markus, 1980). Greater awareness of both successful and unsuccessful efforts is needed.

The lack of hard data on pay-for-knowledge systems suggests that more attention must be directed toward monitoring the performance of these systems over time. Systematic evaluation is essential, especially in light of biases due to the pressure on management and consultants to make their programs appear successful (Hackman, 1977). Poza and Markus (1980) suggest that three criteria be used to determine whether or not a project has been successful. First, the firm should have above average short-term success. Second, the firm should have continuation of the innovation and of favorable results over the medium term. Finally, there should be evidence of intra-company diffusion. By these criteria, they suggest that very few successes do in fact exist in the literature (Poza & Markus, 1980).

A measurement problem is that both human and economic benefits will vary with industry, location, technology, etc. (Walton, 1979). Thus, standards used to measure productivity at one plant may be meaningless at another plant. Desired economic gains may take quite different forms for different organizations. While one firm might be interested in speeding up service, another organization might benefit from reducing waste and scrap (Walton, 1979). Hackman (1978) suggested that we will soon have the technology to monitor each individual's work and compare it with what the individual is supposed to do. This monitoring technology could make the pay-for-performance link a reality, increasing the usefulness of pay as a motivator (Hackman, 1978).

More research is also needed on the use of pay-for-knowledge with office and clerical jobs (Lawler, 1980; Lawler & Ledford, 1984; Walters, 1982; Walton, 1985). Furthermore, as service industries continue to grow, developing pay-for-knowledge plans for service jobs will become an important priority. Banking and insurance firms seem likely candidates for pay-for-knowledge systems.

Organizational researchers must also solve the problems of the present and future. As Pasmore et al. (1981, p. 31) put it, "The challenge for the social scientist lies in helping create the technologies of the future, not in correcting the problems created by the already outdated technologies in use in most organizations" (p. 31, emphasis added). Social and technical systems must

be designed in conjunction with each other, realizing at the same time that these systems are not static and will require continual change.

Yorks and Whitsett (1985) suggest that there is a need for more independent research on more plant sites so that comparisons of plants with similar technologies, but more traditional start-up histories and job design than the Topeka plant, can be made. Time series data must also be developed in future studies and implementations (Cummings, Molloy & Glen, 1977).

There is a dearth of information on failures in the literature. Because usually only "success stories" are reported, it is impossible to isolate the causes and effects (Cummings et al., 1977; Hackman & Lee, 1979; Pasmore et al., 1981). Thus, there need to be more published reports on system failures. Even in successful projects, researchers must report the features that did not work so that these issues can also be addressed (Pasmore et al., 1981).

The Future of Pay-for-Knowledge

The future of pay-for-knowledge is unknown. It seems likely that pay-for-knowledge will receive greater attention due to several factors. First, interdependent work is increasingly common. Work team environments are proving to be productive ways of organizing work. Because it promotes skill development within the team, pay-for-knowledge fits well with these systems. Second, pay-for-knowledge fits well with knowledge-based work such as technical ladders (Lawler & Ledford, 1984). This can be very useful in an age where R&D and high-technology personnel value continual knowledge acquisition as a top priority. Third, participative environments are becoming increasingly popular, and pay-for-knowledge fits well in these systems. Fourth, there is increased awareness by top management of the possible benefits of work innovations. Fifth, pay-for-knowledge legitimizes the idea that a good job move can be horizontal, not just vertical (Lawler & Ledford, 1984). This may prove useful as an increasingly large number of individuals become ready to occupy traditionally managerial positions. Fewer and fewer white collar jobs will be available for these individuals, and therefore, pay-for-knowledge might be a way of providing alternative learning and growth opportunities (Lawler & Ledford, 1984).

As more firms continue to realize that increased pay and interesting work are not zero-sum trade-offs, pay-for-knowledge should become a more attractive form of compensation that accompanies quality of work life movements. As pay-for-knowledge becomes more normative, it may be that less support will be required to make the system work (Walton, 1982).

Summary

Although work innovations are an increasing business necessity, their future rests on the development of appropriate managerial and worker attitudes, on the continued generation of a knowledge base about their successes and failures, and on the adaptability of businesses to an ever-changing economic reality.

Chapter III

RESEARCH DESIGN AND METHODOLOGY

The overall research design entailed the development of three empirical data sources:

- A corporate data source, where information on pay-for-knowledge plans and related issues was obtained from respondents in a sample of corporations throughout the U.S.;
- A plant data source, where information on pay-for-knowledge plans was obtained from a sample of respondents in plants using pay-for-knowledge plans; and
- An individual data source, where information on attitudes and behaviors was obtained from employees in three plants using pay-for-knowledge plans.

The development and characteristics of each of these data sources is described in this chapter. The three data sources in tandem provide a multi-faceted perspective on pay-for-knowledge plans, something that would be impossible with the use of a single data source.

III.1: Corporate Data Source

This data source was designed to provide information about the prevalence of pay-for-knowledge systems, the industries in which they are used, their dynamics and effectiveness, labor-management and legal issues, and corporate perceptions and strategies with respect to compensation systems in general and pay-for-knowledge systems in particular.

Sample

A major purpose of this data source was to generate information about the frequency with which pay-for-knowledge plans are used. Ideally, the sample to meet such an objective would be drawn from the population of work organizations in the U.S. There are at least two problems with this approach, however. One, an exhaustive list of American work organizations has not been (and probably cannot be) developed. Two, pay-for-knowledge plans still tend to be the exception rather than the rule. An exceedingly large sample size would thus be necessary to locate sufficient numbers of these systems for meaningful analysis.

A more realistic approach was to develop a sampling frame that included organizations known to be using pay-for-knowledge systems. Anecdotal evidence and our personal experiences suggested that such systems were most likely to be found in subsidiaries and branches of large corporations. Therefore, the preferred strategy for defining the sampling frame was to use some list of the largest corporations in America. The data base chosen as the sampling frame was the Compustat data base (Industrial Compustat Handbook, 1984). This data base includes all corporations listed on the New York and American stock exchanges, which represented a listing of 2,388 corporations for 1983. The data base also contains other information on each corporation (e.g., dollar sales

volume, industry type, number of employees) that were considered useful in drawing the sample for the present study. Given the larger number of corporations included within the Compustat data base (over 2,000 as compared to 500 in the Fortune and Forbes data bases, for example), and given the kinds of information about each corporation in the Compustat data base, this data base was selected as being the most appropriate definition of the sampling frame.

Of the 2,388 corporations listed in the Compustat data base, 15 were duplicate entries stemming primarily from the divestiture of American Telephone and Telegraphs. The deletion of these duplicate entries left a population of 2,373 corporations from which a 10% stratified probability sample of 237 was drawn. The stratification variables used were:

- Number of employees in 1983;
- Dollar sales volume in 1983;
- 1983 return on investments (ratio of income to assets); and
- Industry classification.

Twelve corporations of the 237 in the sample were either ineligible (e.g., they were not in the U.S.), no longer in business, or had become privately held since the time the Compustat data base was generated. These corporations were replaced in the sample with those that either immediately preceded or followed them in the stratified data base. The decision on whether to replace with a corporation immediately preceding or immediately following was based on a flip of a coin, thus ensuring that the replacing organization was similar to the one being replaced.

Table III.1 contains descriptive statistics on the population of organizations in the Compustat data base and on the final sample of 237 corporations.

Identification of Respondents

For each corporation in the sample, appropriate respondents were identified by the following process. Each corporation was then contacted by telephone to ascertain the name of the Chief Compensation Officer/Vice President for Human Resources. In several instances, the titles of potential respondents were somewhat different. In each case, however, an attempt was made to identify the highest company official who was in charge of compensation/personnel issues. This was done to ensure that a corporate perspective on pay-for-knowledge and other compensation matters would be obtained.

Data Collection

Data were collected from each participating organization in two ways: through semi-structured interviews, and through worksheets. The development of the interview guide and worksheets, as well as the training process for interviewers, are described in later sections. This section describes the process of contacting respondents and scheduling interviews.

Table III.1

Descriptive Statistics on Corporate Population and Sample

	Population (N = 2373)		Sample (N = 237)	
Variable	Mean	Standard Deviation	Mean	Standard Deviation
Number of Employees	12224	32884	9696	20336
Dollar Sales Volume	1376	4435	1362	6126
Income	63	249	71	349
Assets	2097	6868	1927	6261
Return on Investment	0.04	0.16	0.04	0.07
Industry Type	Frequency	Percent	Frequency	Percent
Agriculture, Forestry & Fishing	8	.34	0	0
Mining	141	5.94	9	3.80
Construction	27	1.14	3	1.27
Manufacturing	1156	48.71	118	49.79
Transportation, Communication, Electric, Gas & Sanitary Services	317	13.36	29	12.24
Wholesale Trade	87	3.67	14	5.91
Retail Trade	153	6.45	13	5.49
Finance, Insurance and Real Estate	351	14.79	35	14.77
Services	133	5.61	16	6.75

Each potential respondent was mailed two pieces of information. The first was a letter introducing the project and the research team, soliciting cooperation in the study, and providing assurances of confidentiality. The second was a brief description of the purposes and objectives of the study which included the names of the entire project staff, as well as the two external compensation consultants.

Next, telephone contacts were attempted with each potential respondent to schedule interviews. In some instances, interviews were scheduled. In other instances, the contacted individual suggested another, more appropriate respondent from the company. After ensuring that the preliminary materials (the introductory letter and the description of the study) had reached the second contact in the corporation, an attempt was made to schedule an interview with this individual. For a few corporations, several iterations of this procedure were necessary before the "right" respondent could be identified and reached.

Generally, interviews were scheduled at least one week in advance for two reasons: to ensure interviewer availability and to ensure that respondents received confirmation letters and worksheets prior to their interviews. The letters simply confirmed the date and time of interview; the worksheets requested some general information about the corporation and its pay-for-knowledge plants (if any).

By and large, interviews were conducted when they were scheduled; in some instances, interviews had to be rescheduled because of unanticipated demands upon respondents. At the conclusion of each interview, respondents were reminded to complete and return the worksheets.

Development of the Interview Guide

To develop the semi-structured interview guide, an initial list of issues of interest was generated. This list included the following items:

- Descriptive information about the corporation;
- Local labels for pay-for-knowledge systems;
- The number of units the corporation operates, and the number of units having pay-for-knowledge systems;
- Industries and geographic areas in which pay-for-knowledge plants were located;
- Characteristics of each plant using a pay-for-knowledge system: technology, work force composition, unionization, other innovations, etc.;
- Goals in adopting pay-for-knowledge systems;
- Impetus for the use of pay-for-knowledge systems;
- Considerations relevant in deciding whether or not to use a pay-for-knowledge system;

- Philosophy behind the use of the system;
- Relative successes and failures of the systems, and the reasons for them;
- Whether any pay-for-knowledge system had been terminated, and why;
- The perceived outcomes of the system for the plant, the corporation, the employees, and worker-management relationships;
- In non-unionized plants, whether there were union organization attempts, and the reactions to and results of such attempts;
- In unionized plants, the attitudes and reactions of union leadership and membership to, and their involvement in the design and implementation of, the pay-for-knowledge system;
- The occurrence of legal challenges to the ramifications of the pay-for-knowledge system (EEOC charges, wage and hour violations, etc.); and
- Overall current attitudes about pay-for-knowledge systems, whether or not respondents would advocate their wider use, and why.

It was anticipated that the use of pay-for-knowledge would be relatively rare among the sample of corporations. Most questions in the interview guide, however, proceeded on the assumption that the corporations actually used pay-for-knowledge. In light of this difficulty, a decision was made to divide the questions into four groups:

i. Those that could be answered by all corporations (e.g., industry, work force size, presence of labor unions, etc.);

ii. Those that could be answered only by corporations using pay-for-knowledge (e.g., unanticipated problems with the use of pay-for-knowledge, labor reactions, etc.);

iii. Those that could be answered by corporations that knew about pay-for-knowledge compensation systems, but did not use these systems themselves (e.g., whether they would consider using these plans, etc.); and

iv. Those that could be answered by corporations completely unfamiliar with pay-for-knowledge systems (e.g., the compensation systems they used, criteria for judging the effectiveness of a compensation system, etc.).

These parts of the interview guide were labeled Introduction, Question Set A, Question Set B, and Question Set C respectively. The Introduction questions were to be asked of all respondents. In addition, respondents were to be asked only one of the Question Sets, depending on how they responded to some preliminary screening questions.

The four-part draft underwent two revisions by the project staff. It was then reviewed by the external consultants who suggested additional changes and

revisions. A new draft was developed and pretested for understandability and ease of administration, and modified as necessary. Feedback from interviewers after the completion of the first few interviews resulted in further minor changes.

Interviewer Selection and Training

Potential interviewers were identified from among students of the University of Arkansas. The project Co-Principal Investigators and other faculty members of the College of Business Administration screened their students along several criteria:

- Availability during interviewer training and interviewing;
- Familiarity with personnel, compensation, and labor issues;
- Ability to interact effectively orally, either in person or over the telephone; and
- Ability to "think on one's feet."

The last criterion was considered important due to the semi-structured nature of the interview, and because critical decisions about questions to ask had to be made during the interview itself.

Nine potential interviewers were identified based on these criteria and participated in the interviewer training program. All were undergraduate students in the College of Business Administration. Each was paid $50 for undergoing the training process.

A two-day weekend training session was conducted by Ms. Ann Williams of Market Analysis and Research Corporation, Dallas, Texas. Ms. Williams is an expert in telephone interviewing and interviewer training. Ms. Williams worked closely with the Co-Principal Investigators in designing and implementing the training program.

The training session covered several issues, including the following:

- Brief overview of the purpose and design of the project;
- Description of pay-for-knowledge plans, and how to differentiate these plans from other kinds of compensation systems;
- Procedures for interviewing in general, and telephone interviewing in particular;
- Detailed analysis of the interview guide, including how to classify respondents, how to handle various contingencies, and explanations that were appropriate and inappropriate to give respondents;
- Group practice sessions where project Co-Principal Investigators served as respondents; and
- Individual practice sessions with each interviewer.

A half-day refresher practice session was held with potential interviewers three days later. On the basis of performance during these practice sessions, a slate of six interviewers was selected.

Before each interviewer conducted an actual interview, he/she did two "mock" interviews with a graduate student research assistant serving as the respondents and a Co-Principal Investigator monitoring the process. These mock interviews were useful in ironing out remaining difficulties and concerns regarding the interview process.

Interview Process

The original research design called for a stenographer to record the interview, so that interviewers could concentrate on what the respondent was saying, and on which probes or questions to ask next. Because of severe logistical problems, however, it was considered advisable to tape record the interviews whenever possible. The procedures were thus modified as follows. If the respondent was amenable to being tape-recorded, then that was the preferred option. If the respondent was unwilling or hesitant, stenographers recorded the interview in shorthand. The majority of respondents agreed to be tape-recorded, with assurances of confidentiality.

Interviewers were placed in private rooms with no disturbances during the interview. As noted above, interviews could be classified into three groups: A (corporations using pay-for-knowledge plans), B (corporations not using pay-for-knowledge plans, but familiar with them), and C (corporations unfamiliar with pay-for-knowledge plans). In general, interviews with respondents in the A group lasted from 20-80 minutes, interviews with respondents in the B group lasted from 10-40 minutes, and interviews with respondents in the C group lasted from 10-30 minutes.

Response Rates

Respondents from all 237 corporations in the original sample were contacted by mail, and an attempt was made to recontact all by telephone. In the case of 18 firms, the appropriate respondent could either never be reached, or refused to return numerous calls.

Of the 219 corporations that were contacted by telephone, 49 did not agree to participate in the interviews, (19 of these did agree to complete the worksheets). An additional five corporations scheduled interviews but failed to keep the appointment, and were unable or unwilling to reschedule. Eleven other corporations did not participate for various logistical reasons. The remaining 165 corporations were interviewed and comprise the final sample for the corporate data source. This provides a response rate of 65% for the sample as drawn, and a response rate of 70.3% when only corporations that could be reached by telephone are considered. Of these 165 corporations, 154 provided usable data.

Of the 154 completed interviews, 12 corporations (7.8%) fell in the A group (using pay-for-knowledge plans), 71 corporations (46.1%) fell in the B group (familiar with pay-for-knowledge, but not using), and 71 corporations (46.1%) fell in the C group (unfamiliar with pay-for-knowledge).

Data Transcription and Coding

All interviews were transcribed. If the interview was tape-recorded, a transcriber produced a typed verbatim transcript of the interview. A member of the project staff then checked the transcript against the tape-recording for accuracy, and corrections were made as necessary. If, however, the interview was recorded in shorthand, the stenographer typed the notes. These transcripts could not be checked for accuracy. Since the majority of interviews were tape-recorded, only a few transcripts were not submitted to accuracy checking.

The coding scheme was developed by a Co-Principal Investigator and a graduate student research assistant, and reviewed by the entire project staff and consultants. The emphasis in developing the coding scheme was on completeness. Thus, an attempt was made to develop an exhaustive list of response options for each open-ended question, while at the same time maintaining meaningful response categories. This tentative coding scheme was revised and updated during the coding process.

The actual coding was done by one graduate student research assistant and one trained undergraduate coder. The following steps were undertaken to ensure consistency and accuracy of codes:

- The entire coding scheme was explained to the coders;
- Several interviews were coded by both coders together working as a team;
- Three meetings were held to preserve consistency of coding across coders; and
- Six interviews were coded by both coders working independently, and the consistency between the two sets of codes was checked.

In addition to coding the data, the coders also went through each transcript to identify statements made by respondents that were particularly illuminating or interesting with respect to issues of relevance. This was done to retain the richness of data obtained through the open-ended, semi-structured format.

Data Management and Analysis

The coded data were computerized for analysis. In view of the exploratory nature of this phase of the research, the analysis options were limited primarily to descriptive statistics.

Supplementary or "Grapevine" Sample

As mentioned above, only 12 corporations or 7.8% of the sample reported using pay-for-knowledge plans. Given this small number, an additional list of corporations was developed. This list included corporations which were known to have a pay-for-knowledge plan in at least one plant. It was developed on the basis of the personal knowledge of project staff and consultants, as well as other scientists and researchers in the area. There were 31 corporations in this supplementary or "grapevine" sample. An attempt was made to obtain data from corporations on this list using the same procedures developed for the original "Compustat" sample.

Of the 31 corporations in this sample, 19 could be contacted within a reasonable time frame, and 14 participated in the study. Only six of the 14 reported using a pay-for-knowledge plan; five reported some familiarity with pay-for-knowledge, and three reported never having heard of pay-for-knowledge.

Data from the six pay-for-knowledge corporations in the "grapevine" sample were not included in any analyses designed to provide results that could be generalized to the population. They were used, however, to augment data on corporations that use pay-for-knowledge, and data on the strategic and effectiveness issues involved in their use.

For clarity, in the remainder of this report, the term "Compustat sample" is used to refer to the original sample and the term "grapevine sample" is used to refer to the supplementary sample. When data from both are used together, the term "combined sample" is used.

Summary

Semi-structured interview data were obtained from 154 corporations in the Compustat sample and 14 corporations in the grapevine sample. These data were analyzed both quantitatively and qualitatively to obtain statistical estimates while simultaneously retaining the richness of the information.

III.2: Plant Data Source

This data source is designed to provide in-depth information about the dynamics, effectiveness, and constraints of pay-for-knowledge systems at the plant level. Issues of interest here include the characteristics of workers, management, the plant, and the local culture in sites actually using pay-for-knowledge systems, reasons for their use, design and implementation issues, successes and failures, and the intended and unintended consequences of their use.

Sample

This dataset was intended to solicit information from as many pay-for-knowledge plants as could be identified, up to a maximum of about 150 plants. Potential respondents for this phase of the study were the compensation or personnel managers of pay-for-knowledge plants.

Several sources were used to identify possible pay-for-knowledge plants, including the following:

- Information obtained from the corporate data source, including both the Compustat and the grapevine samples;
- Information obtained from the literature review; and
- Personal knowledge of such plants by the project staff and consultants.

These sources resulted in the identification of 63 pay-for-knowledge plants across the U.S.

The original sampling design called for "snowball sampling" (Goodman, 1961; Kish, 1965), a procedure that uses identified members of a given population to locate other members of the same population. It was considered likely that personnel managers in pay-for-knowledge plants in our original sample would know of other pay-for-knowledge plants that were not in the sample.

Each personnel manager in the original sample was asked to identify other plants he/she knew of that also used pay-for-knowledge plans. In all cases, however, this procedure resulted in the identification of plants that were already in the original sample. Thus, no additional pay-for-knowledge plants could be identified through the snowball sampling procedure, suggesting that the original sample may have been sufficiently complete.

Identification of Respondents

In some instances, the names of plant personnel managers were known to project staff. In most cases, however, this information was obtained by contacting the plants, and requesting the name of the personnel/compensation manager, and his/her complete mailing address. Some plants did not have a personnel/compensation manager per se. For these plants, the plant manager was considered the alternative respondent. The original study design called for a modified version of the questionnaire that would be completed by union representatives in unionized pay-for-knowledge plants. Because of the small number of such plants in the dataset, however, this aspect of the study was abandoned as cost-ineffective. Thus, information from the plant data source is restricted to the attitudes, perceptions, and reports of managerial employees only.

Data Collection

Each respondent was contacted by mail through an introductory letter describing the study, emphasizing confidentiality, soliciting cooperation, and highlighting some benefits of cooperation to respondents. The brief description of the study developed for the corporate data source was also enclosed.

About a week later, the questionnaire and a cover letter were mailed to each respondent, along with a stamped, self-addressed return envelope. The development of the questionnaire is described in the next section.

Soon after the questionnaires were mailed to respondents, each respondent was contacted by telephone to ascertain that there were no problems, and to solicit cooperation. Several respondents indicated willingness to participate, some indicated that they needed corporate clearance in order to participate, a few said they did not use pay-for-knowledge, and a few refused to participate.

Questionnaires were mailed back to the University of Arkansas after completion.

Follow-up letters were mailed to non-responding plants two weeks after the questionnaire was mailed. Ten days later, non-responding plants were contacted by telephone to solicit cooperation once more. Telephone contacts were made with all non-responding plants again about two weeks later.

Telephone calls during this phase of the study were made primarily by the graduate student research assistants.

Development of the Questionnaire

An initial list of issues to be covered in the questionnaire was first developed. This list included the following items.

- Characteristics of the plant (size, age, geographic location, union status, organizational structure, technology, work force size, number of employees under pay-for-knowledge systems, demographic characteristics of the work force and of the work force under a pay-for-knowledge plan, collar color of the work force under the pay-for-knowledge system, industry type, etc.);
- Extent to which the pay-for-knowledge plan was part of a large organizational development effort.
- Characteristics of the overall compensation system;
- Characteristics of the pay-for-knowledge plan (local name, installation date, employee subgroups with which it is used, components of the plan, revisions of the plan, overall dollar costs, and estimated dollar savings/loses);
- Nature of other work innovations at the plant (if any);
- Rationale for the use and dynamics of the plan, and the considerations in selecting the particular system in use;
- Development of the plan (including the extent of employee and union involvement, external consultation, etc.);
- Nature of the performance appraisal process used in conjunction with the plan;
- Successes of the plan and the reasons for the successes;
- Failures of the plan and the reasons for the failures;
- Unanticipated functional and dysfunctional consequences of the plan;
- Intangible costs and benefits of the plan;
- Ongoing participation of employees in the implementation of the plan;
- Legal ramifications of the plan, and the frequency of employee complaints and grievances;
- Differences between the local plan and those used by other corporate subsidiaries (if relevant), and the effects of these differences; and
- Overall impressions of the plan (degree of satisfaction, degree of success, attitudes about continued use in same and other plants).

For each of these major issues, a list of sub-issues was generated. The complete list of major issues and sub-issues to be covered in the questionnaire

was reviewed by the project staff and consultants. Modifications, additions, and deletions were made as necessary.

Questions were developed to measure each sub-issue of interest. To minimize coding time, an attempt was made to design as many fixed-response questions as possible. This still left several issues that could be best covered only through an open-ended format. The initial list of questions went through several iterations of review and modifications. When this list was considered reasonably final, the questions were formatted, and the questionnaire structured into clusters of questions that would invoke a similar "mind-set" in the respondent.

The formatted questionnaire was reviewed by project staff and consultants and changes made as appropriate. It was also pretested to check for understandability, ease of completion, and other potential problems. This procedure also produced some changes. The final draft of the questionnaire was typeset, printed, and saddle-stitched. It contained questions on the various issues of interest, solicited names and locations of other pay-for-knowledge plants, requested a copy of the plant's formal compensation system, and allowed space for any comments respondents might have.

Response Rates

Of the 63 pay-for-knowledge plants originally identified, 12 belonged to one corporation that refused to participate in the study. A second corporation with 14 pay-for-knowledge plants also did not agree to cooperate despite various efforts of the project staff. This left a sample size of 37 pay-for-knowledge plants. Of these, 19 returned usable questionnaires within the required time frame. This provided a response rate of 51.4% relative to the potential respondents, and a response rate of 30.2% relative to the sample as originally drawn.

Data Coding

The procedures used for coding responses to open-ended questions were similar to those described earlier for coding answers from the corporate data source.

Data Management and Analysis

The data were computerized for analysis. Analysis strategies generally entailed the use of descriptive statistics.

Summary

Questionnaire data were obtained through mail-back surveys of personnel/compensation managers of 19 pay-for-knowledge plants. These data provided information on the specifics of pay-for-knowledge plants, and the local characteristics, perceptions, and attitudes relevant to pay-for-knowledge plans at the plant level.

III.3: Individual Data Source

This data source was designed to provide information about the variations and fluctuations in individual perceptions of, and reactions to, pay-for-

knowledge systems. This data source explored the attitudinal and behavioral dynamics surrounding such plans, and focused on rank-and-file employees in pay-for-knowledge plants.

Secondary analyses of data obtained from three pay-for-knowledge plants provided the information of interest in this phase of the study. The three plant datasets are described in this section.

Plant A

Plant A is a pet food manufacturing company located in the rural Midwest, and employing about 140 people. The technology is mostly continuous and organized around semi-autonomous work groups. It has a relatively flat hierarchical structure (only one level separates line workers from top plant management) and most important decisions, including hiring, termination, and performance appraisals, are handled participatively.

Data from Plant A were obtained in two ways. One, information about employee behaviors (absenteeism, turnover, performance, accidents, etc.) was collected from organizational personnel records for a period of 20 months from January 1, 1974, to August 31, 1975. Two, information about employee attitudes was obtained once during this period (month six), with a plant-wide attitude survey. The attitude survey was a modified version of the Michigan Organizational Assessment Questionnaire (MOAQ) (Cammann, Fichman, Jenkins & Klesh, 1983). The survey included questions on individual demographics and background, job facet importance, job characteristics, job facet satisfaction, general attitudes, performance-reward contingencies, work group characteristics, supervision, decision-making, organizational structure, and personality traits. In addition to these standard MOAQ questions, the survey also included many items measuring employee responses to the pay-for-knowledge plan used in the plant. These questions addressed the perceived fairness of the system, overall satisfaction with pay, the extent to which the system was motivating and met employee needs, characteristics of and reactions to the participative management approach, etc. Both the attitudinal and behavioral data from Plant A were collected by the Survey Research Center of the University of Michigan.

Although Plant A employed an average of about 140 people, there were several changes in personnel over the 20 months of data collection. At the time of initial data collection, 83% of the respondents were hourly employees, 85% were male, 78% were married, 49% had graduated from high school, and an additional 38% had some college.

The pay-for-knowledge plan. The pay-for-knowledge plan in Plant A was installed in 1970 when the facility first began operation. Under this plan, which covers the hourly production employees, an individual can learn up to a maximum of 11 different skill units. Typically, employees learn about 10 skill units, although an average employee can stay competent in about five. Peer evaluations form the basis of the determination on whether or not an employee has successfully mastered a skill unit. Components of an evaluation include job operation, maintenance, quality, safety, team contribution, and participation. There is no degree component to the performance appraisal; the work team simply evaluates whether an employee has mastered a skill block. Skill retention is ensured by continued rotation of employees through previously learned skill blocks. In general, beginning wages are comparable to the local market, but wages for employees who have mastered skills are higher than wages for similar

jobs in the area.

Noteworthy aspects of this plan are the exclusive use of peer evaluations in the determination of skill mastery, and the focus on whether or not a skill has been mastered without regard to how well it is mastered.

Plant B

This plant manufactures high-grade wire and cable for submersible oil pumps. It employs about 100 people, and is also located in the Midwest. Plant B largely uses a process technology, with employees tending large machines. Since many of the products are customized, however, few runs are exactly the same. This plant, like Plant A, is highly participative in its managerial style.

Data from Plant B were obtained cross-sectionally through the MOAQ (with minor variations) in 1980. The survey covered many of the same areas as those described for Plant A. Plant-specific questions generally concerned the attitudes of employees toward the implementation of a gainsharing plan. These data were gathered by the Center for Effective Organizations of the University of Southern California. In all, data from Plant B enabled a cross-sectional determination of the demographic and attitudinal characteristics of employees particularly receptive to a pay-for-knowledge plan.

Of the 101 employees in Plant B, 86% were hourly employees, 77% were male, 63% were currently married, 35% had completed high school, and an additional 62% had some college.

The pay-for-knowledge plan. The pay-for-knowledge plan in Plant B had also been in use since the plant start-up. This plan was very similar in format to that used in Plant A.

This pay-for-knowledge plan has nine skill levels. Employees can increase skill levels either horizontally or vertically. Performance appraisals are conducted by teams, and there are no restrictions on the maximum number of skill levels. Unlike Plant A, Plant B includes all non-supervisory employees in its pay-for-knowledge plan. Thus, clerical and skilled trades employees are covered by pay-for-knowledge in Plant B.

Noteworthy aspects of the pay-for-knowledge plan in Plant B, therefore, include the use of both vertical and horizontal pay-for-knowledge, and the coverage of employee types other than production employees.

Plant C

Plant C is a subsidiary of a large pharmaceutical company and is located in the Southwest. It employs about 120 people, of whom about 100 are production workers covered by a pay-for-knowledge plan. The technology and other characteristics of Plant C (continuous process technology, flat organizational structure, participative decision-making, etc.) are similar to those in Plants A and B.

Data from Plant C were obtained in three ways. One, attitudinal data were gathered annually for three years (1980-1982) through the MOAQ (with minor variations), and short forms of the MOAQ were used to collect data periodically

between the annual surveys. In all, nine waves of attitudinal data were gathered starting when the plant had been in operation about six months. Questions in the attitude surveys in Plant C covered areas similar to those described for Plant A. Two, behavioral data on tardiness, absenteeism, and turnover were obtained on a monthly basis from the organization's personnel records. These records also provided information on each employee's progression through the pay-for-knowledge system. Three, in-depth, qualitative interviews were conducted with most managerial/supervisory employees of Plant C to obtain information on, among other issues, perceptions of, and reactions to, the implementation, operation, and effectiveness of the pay-for-knowledge system. Data from Plant C were gathered by the University of Texas at Austin.

The demographic make-up of Plant C's work force did not change significantly during the course of data collection. In general, of those surveyed, 87% were hourly employees, about 51% were women, 64% of the employees were currently married, 70% were white, and almost all (99%) had completed at least a high school education.

The pay-for-knowledge plan. The pay-for-knowledge plan in Plant C was installed in 1979 when the facility first opened. Under the plan, which covers the production and skilled trades employees, employees can learn up to nine skill blocks, although employees typically learn about four or five. Evaluations to determine whether an employee has mastered a skill block are conducted by the supervisor or team leader with input from other team members. Several aspects of learning are evaluated, including quality, quantity, housekeeping, absenteeism, etc. Performance appraisals focus on how well each employee has mastered the various dimensions of the job. Skill retention is ensured by a two-week refresher training program annually for each skill block learned. Generally, the starting rate is a little lower than the local market, but becomes higher after employees have mastered one or two skill blocks. Several modifications were made in Plant C's pay-for-knowledge plan during the course of the data collection. These included the development of a "hold-up" rate (employees received a few cents per hour increase when they were ready to move to a new skill block but there was no opening for them to move into), the creation of the position of "phase operate" to introduce stability in work teams (the position entailed an employee's becoming more and more skilled in one skill block and remaining there in a sort of assistant team leader role), and the development of a specialized pay-for-knowledge plan to address the special needs and concerns of skilled trades employees.

Noteworthy aspects of Plant C's pay-for-knowledge plan are the inclusion of performance as an integral element of skill mastery, the exclusive use of supervisors as performance appraisers, and the continued modifications in the plan as issues arose.

Data Analysis

Since similar attitudinal data were obtained in all three plants, it was possible to address similar questions in all three datasets. Because the pay-for-knowledge plans and the plants were substantially different, however, data from the three plants were not combined for analysis. Instead, each plant dataset was examined separately to glean the attitudes and behaviors associated with characteristics of the pay-for-knowledge plan.

In general, the analysis strategy focused on eliciting the plant and employee characteristics that predicted relevant employee attitudes and behaviors. Thus, correlational analysis techniques were considered most appropriate for this phase of the study.

Summary

Attitudinal and behavioral data were obtained longitudinally and cross-sectionally from three small manufacturing plants using pay-for-knowledge compensation systems. These data were analyzed to ascertain the attitudes, behaviors, and perceptions prevalent among employees covered by pay-for-knowledge plans.

III.4: Recapitulation

Data were obtained from three sources: a national sample of personnel in corporations listed in the American and New York stock exchanges; a snowball sample of personnel managers in plants using pay-for-knowledge plans; and employees of three plants with pay-for-knowledge plans. These data sources in conjunction provided a multifaceted perspective on perceptions, attitudes, reactions, and dynamics related to pay-for-knowledge systems.

CHAPTER IV

CORPORATE DATA SOURCE

This chapter describes the results obtained from interviews with corporate personnel. The data are used to answer several major research questions including the following:

- What are the descriptive characteristics of corporations in the sample?
- How prevalent are pay-for-knowledge systems and where do they exist?
- What is the nature of pay-for-knowledge systems, and what other work innovations tend to accompany them?
- What are the benefits and problems with these systems?
- What are the successes and failures of pay-for-knowledge systems, and the reasons for these successes and failures?
- What labor relations issues do pay-for-knowledge plans raise?
- What are the attitudes of non-users toward pay-for-knowledge plans?

The reader should remember that this chapter (and the next two chapters) focus on a description of the results of the study. Integration of these results and a discussion of their implications are reserved for Chapter VII.

IV.1: Descriptive Characteristics of the Sample

As reported in Chapter III, twelve corporations in the sample fell in the A group (using pay-for-knowledge plans), 71 corporations fell in the B group (familiar with pay-for-knowledge but not using), and 71 corporations fell in the C group (unfamiliar with pay-for-knowledge). Descriptive background information on the three groups of corporations, using the Compustat sample as the data base, is contained in Table IV.1. This table is based on information available in the Compustat dataset. The table shows that, in general, Group A companies were higher in median income, median sales, and median number of employees than were companies in Groups B and C. Median assets were the largest for Group C companies, and median return on investment was the highest for Group B companies.

The largest proportion of companies in all three groups were in the manufacturing industries. Group A companies included a larger proportion of corporations in Wholesale and Retail Trade than did Group B and C companies. No companies fell into the Agriculture, Forestry, and Fishing classification, and Contract Construction and Services were also rarely observed in the sample.

Descriptive information on the companies was also obtained through several questions in the corporate interviews (shown in Table IV.2). The table shows again that Group A companies tend to be larger in size than Group B or Group C companies. They have more employees, more subsidiaries, more separate facilities, and more international operations. Along all these dimensions, Group B companies are the smallest.

Table IV.1

Descriptive Statistics on Corporate Respondents (Compustat Data)

Characteristics	Median Value		
	Group A	Group B	Group C
Median Income-1983 ($ MM)	21.60	19.5	8.1
Median Return on Investment	4.5%	4.7%	3.9%
Median Sales-1983 ($ MM)	395.7	388.1	322.7
Median Assets-1983 ($ MM)	300.3	351.9	412.8
Median Number of Employees	5550	2858	3218

Industry Type	Percent of Respondents		
	Group A*	Group B	Group C*
Agriculture, Forestry, Fishing	0	0	0
Mining	0	6	4
Contract Construction	0	1	1
Manufacturing	45	51	50
Transportation, Communications Electric, Gas, and Sanitary Services	9	8	17
Wholesale and Retail Trade	27	8	13
Finance, Insurance, Real Estate	9	18	10
Services	9	7	4
N	11	71	70

* Information on one corporation could not be obtained in the Compustat data base.

Table IV.2

Descriptive Statistics on Respondents
(Interview Data from Compustat Sample)

Characteristic	Group A	Group B	Group C
Mean Number of Employees	14,607	8,062	9,637
Mean Number of Subsidiaries	39	8	19
Mean Number of Separate Facilities	147	57	80
Mean Number of International Operations	16	10	13
Percent of Companies with Collective Bargaining Agreements	75%	62%	[illegible]%
Mean Percent of Employees Covered by Collective Bargaining Agreements	16%	26%	37%
Types of Employees Covered by Collective Bargaining Agreements			
Clerical	33%	28%	37%
Production	78%	71%	63%
Skilled Trades	22%	33%	36%
Supervisors	0%	0%	5%
Professional	0%	0%	7%
Managerial	0%	3%	5%

Respondents were also asked several questions about the status of unionization in their corporations (shown in Table IV.2). Surprisingly, a large proportion of the corporations in the sample were unionized -- three-quarters of Group A companies, and almost two-thirds of Group B and Group C companies reported having collective bargaining agreements in at least one of their facilities. These agreements did not, however, cover a large proportion of their employees. Group C companies had the largest proportion (37%) of unionized employees. Production employees were the most likely to be covered by collective bargaining agreements. As expected, only a small proportion of supervisory, professional, and managerial employees was unionized. Group A companies reported no unionized employees in any of these categories, whereas Group C companies had a small proportion (5%-7%) in each category.

Overall, the data show that Group A companies are larger than Group B or Group C companies along several dimensions. The sample represented many corporations that had unionized employees in at least one facility, although generally less than a third of the employees were unionized. Typically, production employees were most likely, and supervisory, professional, and managerial employees were least likely, to be covered by collective bargaining agreements.

IV.2: Prevalence of Pay-for-Knowledge

The second research question of interest was the prevalence of pay-for-knowledge systems in the sample, and the characteristics of companies using pay-for-knowledge systems. Some answers to this question have already been reported. Companies in Group A represented about 8% of the Compustat sample. In other words, the data suggest that 8% of American corporations (as represented in the Compustat data base) are currently using some form of pay-for-knowledge system in at least one of their facilities.

Descriptively, Tables IV.1 and IV.2 show that pay-for-knowledge companies tend to have more operations and more employees than others in the sample. Pay-for-knowledge plans occur for the most part in corporations with at least some unionized employees, with production employees most likely to be covered by collective bargaining agreements. Among the unions represented in Group A companies are the following: International Brotherhood of Teamsters, Utility Workers Union of America, Retail Corporations Union, International Brotherhood of Electrical Workers, United Rubber Workers, United Papermakers and Paperworkers, International Association of Machinists, Lumber and Plywood Workers of America, United Garment Workers of America, and United Automobile Workers.

IV.3: Nature of Pay-for-Knowledge Systems

Respondents in Group A corporations were asked several questions about their pay-for-knowledge systems. These questions provided information on the characteristics of pay-for-knowledge systems, the kinds of employees covered by these systems, etc. Responses to these questions from the Combined sample are reported below.

Descriptions of their pay-for-knowledge systems (kinds of employees covered, whether a performance component was included, progression through the pay ladder, number of different jobs, etc.) were sought from respondents. Responses to these questions are shown in Table IV.3 Forty-one percent of the

Table IV.3

Features of the Pay-for-Knowledge Plan (Combined Sample)

	Percent of Respondents	Number of Respondents
Unionized Employees Covered	6	1
Performance Component	24	4
Pay Based on Skills	41	7
Retention of Skills	6	1
Competency Testing	24	4
Types of Employees Covered		
Clerical	12	2
Skilled Trades	12	2
Production	41	7
N	17	

respondents mentioned that pay was based on the skills employees had learned, and 24% mentioned having a performance component in their pay-for-knowledge plans. Only 6% of the respondents mentioned that pay was partly based on the retention of previously learned skills.

In terms of the kinds of employees included under pay-for-knowledge plans, production employees were the most frequently mentioned (41%), although a few respondents also mentioned clerical and skilled trades employees being included under their pay-for-knowledge plans. Only one corporation mentioned that unionized employees were covered by its pay-for-knowledge plan.

Interview transcripts were also scanned for descriptions of "typical" pay-for-knowledge plans. Some of these descriptions are reported below.

"The majority of plants which use the pay-for-knowledge system of pay are organizationally structured around the team concept whereby the production employees are assigned to a specific work group or work team and the pay-for-knowledge system is set up to relate to that work team. Typically our pay-for-knowledge system has seven levels of pay. LEVEL ONE is the level at which the employee is hired. LEVEL TWO is the next level that an employee progresses to once he or she has learned to complete one job in that work team in a satisfactory manner. The person progresses to LEVEL THREE when that person has learned to perform a sufficient number of jobs in that work team to be considered a flexible team member so that the person can move around and share work with other people, replace other people when they're absent and so forth; when the person has achieved that level of flexibility they reach Level Three. LEVEL FOUR is when the person has learned to perform all of the jobs in the team in a satisfactory manner. The person then reaches LEVEL FIVE by transferring to another team and achieving the requirements of Level Three on that new team, and that new team is by design not an identical team, but a team that presents the employee with a different type of work or a different type operation, although it may be related to the team where he or she came from. The person then progresses to LEVEL SIX when they have learned all of the jobs on the second team. The last level, which is LEVEL SEVEN, is a team coordinator or team leader type level. Typically only one employee on the team can be designated as a team coordinator and the team is usually the one that designates which team member can function as a team coordinator and the team, for example, may decide that this position should be rotated on a monthly basis or whatever. That is essentially the most common pay-for-knowledge structure that you find in our plants, and as I said it, is very closely integrated with the team structure with organizing work."

"I would guess (we have) six to eight definite skill blocks in these jobs. Progression and the way it tends to work is (that), every three months or so, you can be evaluated to determine that you are competent in a new skill, and if you are, you would receive some sort of increase, probably a small amount per hour or per month."

"Our goal is to have each employee capable of performing each task along the entire line. But, within each team, the number of tasks would differ."

"They'll have a variety of jobs they have to learn."

"The employees are aware of a schedule of increases that takes them through a three-year period. Each one of those scheduled increases occurs at a six-month interval from the employee's employment date."

"If we were in a point of time where a layoff occurred, not having attained the full gamut of skills would count against (employees) in terms of their retention, as we are reviewing their rosters for layoffs."

Seven respondents reported using pay-for-knowledge in only one of their corporations' facilities, four in 2-3 facilities, two at the corporate level, and the remainder in 12-48 facilities. The average number of facilities using pay-for-knowledge was 7.5. The pay-for-knowledge plans across the different facilities were reported by respondents as being quite similar in their general characteristics.

A question of interest was the other innovations that tended to accompany the use of pay-for-knowledge systems. Innovations mentioned in this context included job-sharing, employee participation, and the use of the team concept.

"We have the team concept in which, in a traditional plant (on a) potato chip line, you would have employees who were strictly trimmers and peelers, and you would have an employee who was strictly a potato chip cook and strictly quality control. Now, at that facility, that is a team and it's the team that is responsible for performing these different functions, and the team itself makes a lot of decisions as to how they will in fact get the job done. Now within that team, therefore, we have no supervisory employee. They have a supervisor who can serve as a resource, but we are expecting that team to make considerably more decisions than an hourly employee would attempt classically in the past. In addition, they play a much greater role in decision-making for things that affect them personally. The profile of the employees we hired, beyond seeing that the employees have good previous work references, we've looked for those with social skills, people we feel can operate in an environment where they are given more responsibility, where they are expected to provide feedback to each other."

"...a history of high involvement programs. They utilize the all-salary concept, where everybody is paid the same salary and is on the same benefits program. They have in place a very good communications program. The employees are involved in all phases of the operation including such things as what benefits levels should be offered."

In general, however, very few corporations mentioned other work innovations used in conjunction with pay-for-knowledge plans.

In summary, the results suggest that corporate officials are not very familiar with the detailed mechanics of pay-for-knowledge systems used at their facilities, or with other work innovations implemented in their pay-for-knowledge facilities. The sketchy information available does indicate that the number of job skills learned is a major pay determinant in pay-for-knowledge companies, and that employee involvement and participation typically accompany the use of pay-for-knowledge plans.

IV.4: Benefits and Problems

The interview contained several questions about the benefits and problems with pay-for-knowledge systems. First, respondents were asked if, overall, using pay-for-knowledge had been beneficial for their corporation. All respondents provided a positive answer to this question. Respondents were subsequently asked in what ways pay-for-knowledge had been beneficial. Answers to this question are shown in Table IV.4. Generally, pay-for-knowledge was seen most often as fostering employee growth and development and work force flexibility. Other responses to this question focused on factors that may explain the success of pay-for-knowledge plans -- factors such as an emphasis on training and the fact that the pay-for-knowledge plan was installed at the time of the facility's start-up.

> "We feel that it has a positive impact on the motivation and quality of work life of employees in that it presents them with an opportunity for them to get involved in a different way than a traditional compensation system normally would allow them to."
>
> "Motivation of the work force. That is intended, but I think we're impressed by the fact that it's greater than we anticipated."
>
> "It's an excellent system to measure performance."
>
> "The key is that some sort of reward system obviously has to be in place, and we like pay for performance, but pay-for-knowledge has worked just as well. They're both reward systems that recognize people as individuals and reward performance."
>
> "The system in some plants has been installed following decertification of a union, and employees through employee opinion surveys gave very positive feedback to it."

As noted above, all respondents indicated that pay-for-knowledge had been beneficial for their corporations. Respondents were also asked, however, whether they had needed to modify their pay-for-knowledge plans anywhere and, if so, the reasons for the need for modifications. Twenty-nine percent of respondents reported modifications in their pay-for-knowledge plans. These modifications were made primarily to fine-tune the pay-for-knowledge system with existing plant technology (e.g., to take account of differences in the physical strength some skills required of workers). In one instance, contract negotiations with labor unions resulted in modifications in the size of work teams, definitions of appropriate performance appraisers, specifications of the progression across skills, etc. None of the respondents mentioned specific mechanics of the pay-for-knowledge system as a reason for the modifications.

Table IV.4

Benefits of Pay-for-Knowledge (Combined Sample)

Benefits	Percent of Respondents	Number of Respondents
Employee Growth and Development	25	3
Work force Flexibility	17	2
Employee Training	8	1
Employee Commitment	8	1
Management Philosophy	25	3
Installed at Start-Up	8	1
N	12	

In response to specific questions about the drawbacks of using pay-for-knowledge respondents did mention other problems they had encountered with pay-for-knowledge.

"I think one of the drawbacks is very simply we don't know what happens over time with pay-for-knowledge systems. You reach a certain point where the employees have for the most part gathered all the knowledge that they are going to get. Is that a drawback? No, it's just a caveat that we need to be aware that there is a point at which there needs to be an evolution in the structure."

"You can arrive at a problem. What do you do now? How do you further motivate people when they are paid at the maximum rate they can?"

"One of the things you have to be very careful about is to set standards objectively and also very concretely, and concretely set the skills that have to be achieved, so that a number of people don't take some educational courses, or maybe some skill training on the side which may not directly relate to what is being referred to in the compensation system."

"The only one is that you probably won't be paying for all the knowledge at all jobs at all times."

"The only drawback I can see is it takes a lot of record-keeping."

"If management does not routinely rotate the work force, the various skills become rusty, if not lost."

"I think one drawback is the situation where someone isn't advanced, or where they are not recognized for having knowledge that they think they have. I think that can have some motivational effects on the down side."

"The major drawback is that they cost more money, and if they're not implemented properly on the plant floor, then they end up leaving people on a assignment full time, and you're not taking advantage of the flexibility and all these other things -- the quality, the camaraderie, and the team building."

"If we discovered that the cost of paying our labor (at a pay-for-knowledge facility) over time grew greater than any other facility without the result of a productivity increase, then, oops, we screwed up."

"I think one thing that does happen is that because pay-for-knowledge is much less structured than your traditional pay designs, managers who don't have a good understanding of the compensation design might look at the system as being much more ambiguous than it really is, and they may have a more difficult time understanding how to apply it and how to administer it. I think that opens up an area of possible abuse or misuse of the system."

In short, respondents saw several potential drawbacks and problems with pay-for-knowledge systems, most dealing with situations where the system was not properly implemented. Despite these potential drawbacks, all Group A

respondents viewed pay-for-knowledge as being beneficial for the corporation, particularly in terms of employee growth and development and in terms of work force flexibility.

IV.5: Successes and Failures

The interview contained several questions about the successes and failures of pay-for-knowledge systems as respondents perceived them, and about possible reasons for these successes and failures. This section summarizes responses to these questions.

Respondents were asked for their global impressions of pay-for-knowledge systems -- whether they favored them or opposed them. All respondents in Group A indicated that they favored pay-for-knowledge overall, although some suggested caution in their use.

> "My personal opinion is that there's definitely a place for them, if such programs are instituted cautiously."

> "I favor them if it fits the situation."

Likewise, all respondents in Group A agreed that pay-for-knowledge plans promoted their compensation system objectives (a discussion of compensation system objectives is provided below), and none indicated that pay-for-knowledge plans impeded their compensation objectives.

To clarify some of these overall positive attitudes, respondents were also asked about the criteria they used to measure the success of pay-for-knowledge as a compensation system. A variety of responses were obtained for this question. These responses are shown in Table IV.5. The table shows that reduced turnover, increased satisfaction, reduced labor costs and improved productivity were criteria commonly used by respondents to evaluate the success of their compensation systems. Improving market competitiveness and reducing unionization possibilities were the next most frequently mentioned. Other criteria mentioned occasionally were improved union-management relationships, meeting budget constraints, being competitive with local wage rates, reduced absences, worker acceptance, union acceptance, enhanced recruitment, and increased motivation. In general, it appeared that more respondents were concerned with satisfaction and turnover issues than with issues of productivity, market advantages, and the quality of labor-management relationships. Examples of some responses are provided below.

> "Are we paying enough to retain the people when it satisfies them, but also, are we paying little enough that we are not bankrupting ourselves. Obviously, you have to temper the amount you pay with the amount you can afford to pay based on sales and other things."

> "Employee opinion surveys give me a comfortable feeling. Potential union activity or lack thereof would give me a signal as to...how effective the program is at a given location."

> "We would use a number of criteria. One would be our ability to retain and attract quality employees. A second would be our ability to maintain our union-free status. Third would be the bottom-line productivity of our work force."

Table IV.5

Criteria for Success of Pay-for-Knowledge Plans (Combined Sample)

	Percent of Respondents	Number of Respondents
Reduced Turnover	57	8
Increased Satisfaction	36	5
Reduced Labor Costs	29	4
Higher Productivity	29	4
Improved Market Position	21	3
Reduced Unionization Possibility	21	3
Union-Management Relationships	14	2
Meet Budget Constraints	7	1
Local Wage Rates	7	1
Reduced Absenteeism	7	1
Worker Acceptance	7	1
Union Acceptance	7	1
Enhanced Recruitment	7	1
Increased Motivation		
N	14	

"Look at the turnover in the organization, morale, have there been any third-party attempts to represent the work force, talk to employees to see what they think about it."

"Probably product quality, efficiency, and the quality of work life for our employees."

"The turnover factor, and our pay level measured against other companies to see if we are in the 75th percentile or not in terms of the total paid. We go back to see if we match other Bay clients."

"Success and failure is usually determined by are we retaining people, are we able to attract people, are we satisfying the needs of the people who are here."

Another set of questions asked respondents about the conditions that would facilitate or prevent the success of pay-for-knowledge systems. Responses to these questions are shown in Tables IV.6 and IV.7. Table IV.6 shows that the most frequently mentioned condition for success was the nature of labor-management relationships, followed by plant start-up, the types of jobs in the plant, the types of employees, and the local culture. According to Table IV.7, the most frequently mentioned conditions preventing the success of pay-for-knowledge plans are employee resistance, lack of local managerial support, and union resistance. Thus, respondents saw a variety of factors as being significant if pay-for-knowledge plans are to succeed.

"Think, first off, that you have got to have a management organization that believes in it, that believes in participation by the work force, believes in high employee involvement. You need physically and structurally a facility and a manufacturing process designed to eliminate a lot of unpleasant tasks, so people are focusing on producing and inspecting and manufacturing a product. You need an organization that is dedicated to training and development, and is willing to put some dollars into providing ongoing training, refresher courses, and things like that."

"I think that you have to look very carefully at the job families that are involved. The jobs have to have the ability to be accurately described."

"Definable, discrete jobs that start with the very simplest of tasks and build on one another into the more complex tasks or jobs or skills or abilities, and a production setting that would actually allow that gamut from a job design/job content standpoint, the nature of the production line being such that it is possible to rotate people so that the mix of skills acquired over time doesn't become totally rusty."

"Preferably that it be a brand new start-up plant, a plant which does not have a union."

"I think the main criterion would be to shift to more employee participation on the plant floor, less autocratic management from the management standpoint. Perhaps a looser and less rigid attitude in regard to traditional assignment and classification on the part of the union leadership, and a recognition that employees prefer more involvement and flexibility in their assignments."

Table IV. 6

Conditions Necessary for Success of Pay-for-Knowledge Plans (Combined Sample)

Response	Percent of Respondents	Number of Respondents
Union Strength	7	1
Plant Size	7	1
Types of Employees	13	2
Types of Jobs	20	3
Market Conditions	7	1
Labor-Management Relationships	27	4
Local Culture	13	2
Plant Start-Up	20	3
N	15	

Table IV.7

Conditions that Would Prevent Pay-for-Knowledge From Succeeding (Combined Sample)

Response	Percent of Respondents	Number of Respondents
Employee Resistance	32	5
Union Resistance	20	3
Nature of Technology	6	1
Lack of Local Support	25	4
Lack of Corporate Support	6	1
Differences in Compensation Systems for Different Employee Subgroups	6	1
Performance Appraisals	12	2
Lack of Coordination among Departments	6	1
Not Selecting the "Right" Employees	6	1
N	16	

"Certainly, start-up would promote the appropriate atmosphere, where in the established plant you might have trouble I think, in addition, that you need to hire employees against a very specific profile, and they need to be employees who have not necessarily spent their lives in a traditional manufacturing environment."

"They have to have acceptance by management and from employees."

Respondents also described the conditions that would prevent pay-for-knowledge from succeeding.

"I think a closed-type system where they don't want their employees to participate would be tough for pay-for-knowledge."

"Some people just don't like step progression types of pay structures, which a pay-for-knowledge system is a form of."

"If you install such a system and your management and employee groups are not committed to it -- either they don't understand it or they don't agree with it -- I think it's inappropriate to install. I would say the level of acceptance initially is pretty critical, and certainly the way you administer it. The perception has to be that the program is administered in a fair and equitable manner."

"The biggest weakness is if the opportunity to use those skills and knowledge was never presented. That would be the biggest detriment to the program. I wouldn't consider it a success even if the people were happy. It really wouldn't be working."

"Management being unwilling to allow employee participation, and the union leadership being rigid and insisting on old-fashioned rules and classifications."

"...the general labor relations environment, employee environment, in a given location could make or break it."

"A situation where management is unaware of human relations."

In short, respondents focused on several factors including employee, management, and labor attitudes, job types, the mechanics of the pay-for-knowledge system itself, and properties of the plant location as being critical to the success or failure of pay-for-knowledge systems.

Respondents were asked what kinds of changes had to be made in <u>other</u> organizational policies and procedures for pay-for-knowledge systems to work as intended. Respondents generally did not have elaborate answers to this question, although two indicated that performance appraisals had to be in line with pay-for-knowledge objectives, and one suggested that the use of participative management was important.

"You need a very different kind of supervisor who is motivated around developing his employees."

"You have got to have participative management in a way. High involvement and a good communications system."

Overall, the data indicate that corporations using pay-for-knowledge plans are generally satisfied with them. Corporate officials focus on factors such as turnover rates, employee satisfaction, reduction in labor costs, and market position when evaluating the success of their pay-for-knowledge plans. Despite their typically positive attitudes toward pay-for-knowledge, respondents also mentioned several cautions against the inappropriate use of pay-for-knowledge. These include ensuring that pay-for-knowledge locations have the right kinds of jobs, attitudes, cultures, and implementation policies. Some respondents also considered the presence of labor unions, and the negative attitudes of labor leaders, to be detrimental to the success of pay for-knowledge. These perceptions were not commonly held, however.

IV.6: Labor Relations Issues

Labor-management relationships were the foci of a set of questions asked of respondents in Group A, i.e., respondents in companies using pay-for-knowledge plans. Responses to these questions are reported below. It should be remembered, however, that the results indicate managerial perceptions, and not labor perceptions, of these labor relations issues. Only five of the Group A respondents indicated that at least some of their pay-for-knowledge employees were covered by collective bargaining agreements. An average of 3.8 facilities of the corporations were included under these agreements, and an average of 7% of the employees were covered by collective bargaining agreements. Production and clerical employees typically were covered by these agreements.

Respondents were asked about the general reactions of the local union leadership to the pay-for-knowledge plan. Three respondents from unionized pay-for-knowledge corporations reported generally positive union attitudes, whereas one indicated the presence of some union opposition. (One respondent did not answer the question.)

"The biggest concern the union had was Are you really serious about the program you're telling us you want to be involved with?' So their attitude initially was 'Well, you may not sound good. We like it. But are you really telling us the truth?' So once the initial suspicion was got around and we proved that, yes, we are really trying to benefit everybody in this case, I think they accepted it very well."

"They realize it helps the members' earnings. If we cut it out, they would be very critical of us."

Respondents from unionized pay-for-knowledge corporations were also asked a parallel question about the feelings of organized labor in general to pay-for-knowledge plans. Only one respondent felt that organized labor was generally positive toward pay-for-knowledge, the remaining four indicating that organized labor reacted negatively to pay-for-knowledge plans.

"They're used to the more traditional wage-and-classification system, and it's hard to reach some of the old-timers."

"I believe they would feel as though a pay-for-knowledge system would reward the people who should be rewarded; however, those who shouldn't be rewarded, they would have a problem explaining to them why they weren't rewarded."

"The negative perhaps is that it does require work, and the more you learn, the more you can be used other places. Sometimes that doesn't fit in with the job controls. For example, most unions will not permit a fork truck driver to paint a building because they are two different job classifications. The fork truck driver who paints is taking a job away from a painter. That's usually what unions feel, that a person who is trained in one area should remain in that area unless they actually trade jobs."

Thus, although local union leaders were seen as generally positive toward pay-for-knowledge, managerial respondents still perceived organized labor in general to be resistant to the idea. The resistance tended to be attributed to the potential of pay-for-knowledge for violating jurisdictional guidelines that were traditionally followed in collective bargaining agreements.

Respondents from both unionized and non-unionized corporations were also asked about their relationship with organized labor. Answers to this question are shown in Table IV.8. The table shows that only one of the corporations viewed itself as having difficulties with organized labor. The vast majority reported a neutral to positive relationship.

"A very progressive model of American industry."

"Generally, pretty good."

"I do feel it's a very positive relationship."

"A cooperative relationship."

"We really have no contact with them."

"Our philosophy is that the goals of the organization and the needs of the employees are not mutually exclusive. They both can be met. They can be met best in a situation where there is not a third-party influence."

"We've had some rough years with some rough unions. Now we're dealing with two independent locals, and our relationship is pretty good."

Another aspect of the labor-management relationship covered in the interview was the occurrence of organizing attempts in the past five years. Three of 16 respondents who answered this question indicated that there had indeed been an organizing attempt. None of these attempts, however, focused on pay-for-knowledge-related issues, and in only one instance did the attempt succeed.

Table IV. 8

Quality of Relationship with Organized Labor (Combined Sample)

	Percent of Respondents	Number of Respondents
Very Good	14	2
Somewhat Good	50	7
Neutral	14	2
Somewhat Bad	7	1
Very Bad	0	0
No Relationship or No Union	14	2
N	14	

"There was one. It didn't have anything to do with pay-for-knowledge concepts. We were using an autonomous work system. We were trying to introduce work groups, and the employees wanted stronger supervision than they were receiving...they didn't [illegible] how to change things, so they sought some counsel from a thi[illegible]"

Overall, the data suggest that pay-[illegible]nowledge corporations with unionized employees have reasonably positive relationships with the local union leaderships, and that the local leadership tends to work cooperatively with management to facilitate the implementation of pay-for-knowledge. Still, most respondents feel that organized labor in general is resistant to pay-for-knowledge plans because these plans have the potential for violating many traditional union priorities such as job classifications and jurisdictional boundaries. It should be reiterated that the foregoing discussion reports on managerial perceptions of labor attitudes, rather than on labor attitudes per se, with respect to pay-for-knowledge systems.

IV.7. Other Issues

The interview also contained certain other questions of relevance. These questions are discussed below.

Respondents were asked if their corporation had considered adopting pay-for-knowledge anywhere else, but decided against it. Twenty-five percent of the respondents answered positively. Of these, one-third reported supporting the decision not to adopt, whereas the remaining two-thirds were indifferent. Reasons for not adopting included bad fit with the local culture, limited resources, and a tight external economy. None of the respondents reported that pay-for-knowledge plans had to be discontinued in any of their locations.

Twenty-nine percent of respondents reported some modifications to their pay-for-knowledge plans after their original installation. Modifications were made primarily because of inherent inequities, union resistance, or to fit better with technological constraints.

Respondents were also asked if they would consider using a pay-for-knowledge plan again. Answers to this question are shown in Table IV.9. Only one respondent showed a definite disinclination for the use of pay-for-knowledge; the remainder were either unequivocally positive about the future use of pay-for-knowledge, or wanted it used only in some cases.

Another set of questions in the interview focused on the original installation of the pay-for-knowledge plan. Respondents were asked whose idea it was originally to consider the use of pay-for-knowledge. Sixty-nine percent of the respondents indicated that the original idea was corporate management's, and 31% indicated that it was local management's. Arguments used in favor of pay-for-knowledge included the fact that it fostered employee growth and development, that it provided training for employees, and that it was congruent with the overall management philosophy in the organization. No significant arguments against the use of pay-for-knowledge were mentioned.

Table IV. 9

Future Use of Pay-for-Knowledge Plans (Combined Sample)

	Percent of Respondents	Number of Respondents
Would (your corporation) consider using Pay-for-Knowledge Systems again?		
Would Never Use Again	8	1
Would Use Under the Right Circumstances	8	1
Might Use	38	5
Would Definitely Use	46	6
N	13	

Respondents who had heard of other companies using pay-for-knowledge were asked how their experiences compared with theirs. Only two answers were obtained here, one reporting mixed experiences, and one reporting better experiences.

Respondents were also asked if they had faced any legal challenges because of their pay-for-knowledge systems. All respondents in the sample answered this question in the negative.

Overall, then, the corporations using pay-for-knowledge plans reported few problems with them -- few major modifications and no terminations. Most respondents reported willingness at least to consider using pay-for-knowledge again.

IV.8: Attitudes of Non-Users Toward Pay-for-Knowledge

Respondents in Groups B and C were also asked several questions about pay-for-knowledge plans. Questions asked of Group B respondents (familiar with pay-for-knowledge) were necessarily more detailed than questions asked of Group C respondents (unfamiliar with pay-for-knowledge). This section summarizes responses to some of these questions.

Only one of Group B respondents reported having had to stop using pay-for-knowledge in any of their locations. The reason reported for this termination of a pay-for-knowledge plan was that too few people were included under the system, and that, therefore, it wasn't feasible to continue using it.

Seven percent of Group B respondents indicated that their corporations had at some time considered using a pay-for-knowledge plan in some location, but had decided against it. Reasons for this decision included union opposition, a desire to pay the job and not the person, and a decision to adopt a pay-for-performance instead of a pay-for-knowledge plan. All respondents indicated that they were not against the decision to adopt an alternative compensation system.

Group B respondents were also asked about the circumstances in which they might consider using a pay-for-knowledge plan. Answers to this question included: when flexibility is important (4%), when the location has jobs suitable for pay-for-knowledge (9%), if the current compensation system was not working (2%), and when having multi-skilled employees was important. Just under half the respondents (40%) said, however, that they would never consider using a pay-for-knowledge plan.

Respondents in both Groups B and C were asked whether a pay-for-knowledge plan would promote and/or impede the objectives around which their corporations' compensation systems were designed. Answers to these questions are shown in Table IV.10. The table shows that the majority of respondents in both groups did not see pay-for-knowledge as promoting their compensation system objectives. Respondents in each group were divided about half and half, however, about whether pay-for-knowledge would actually impede these objectives.

Table IV. 10

Pay-for-Knowledge Promotes/Impedes Compensation System Objectives (Compustat Sample)

	Percent of Respondents	
	Group B	Group C
Pay-for-Knowledge Promotes Objectives		
Yes	40	36
No	60	64
N	47	42
Pay-for-Knowledge Impedes Objectives		
Yes	46	51
No	54	49
N	50	47

"To me, if you have a person who knows five or six or eight jobs within the (company), and that person is performing only one job at a particular point in time, that is the output that person is providing to you. I am not going to pay a person more money simply because they know another job unless it ends up in that person's performance."

"The individual that we hire is compensated relative to what their worth in the marketplace dictates."

"It would work in terms of retention of quality people."

"It would give people a greater satisfaction and gratification."

Both groups of respondents were also asked about the criteria they would use to evaluate the success of pay-for-knowledge plans as compensation systems. Responses to these questions are shown in Table IV.11. For comparison purposes, the answers of Group A respondents to a parallel question are also shown in Table IV.11. The percentages for Group A vary from those shown in Table IV.5, because Table IV.5 is based on the Combined sample, whereas Table IV.11 is based on the Compustat sample only. Table IV.11 shows that reduced turnover is an important criterion for the success of pay-for-knowledge plans among all groups of respondents, followed by increased satisfaction and improved market condition. Interestingly, employee acceptance was mentioned by 13% of respondents in Groups B and C, but by none of the respondents in Group A. Overall, Table IV.11 shows a rather similar pattern of criteria across the three groups of respondents.

Group B respondents also reported on the conditions they thought were necessary for promoting or preventing the success of pay-for-knowledge plans. These answers are shown in Table IV.12. In general, a small plant and plant start-up were seen as being critical for promoting success most often, whereas inadequate training of employees was seen as being responsible for preventing success most often by these respondents.

Respondents in this group were also asked about changes in other organizational policies and procedures necessary for pay-for-knowledge systems to work as intended. Answers to this question included changes in the selection system (4%), performance appraisal system (9%), the use of participative management (9%), and job security/layoff policies (2%).

Finally, respondents in all three groups were asked about their overall attitudes toward pay-for-knowledge systems. Answers to these questions are shown in Table IV.13. The table shows that, overall, Group A respondents are the most positive about pay-for-knowledge systems (100% favoring or strongly favoring), Group C respondents are the least positive (36% favoring), and Group B respondents fall in between (46% favoring or strongly favoring). These data suggest that familiarity with pay-for-knowledge systems is likely to bring about favorable attitudes toward these systems.

Taken together, these results indicate that corporations familiar with pay-for-knowledge systems tend to hold generally positive attitudes about them, although not as positive as those of pay-for-knowledge users. Many of the concerns and benefits mentioned by non-users also parallel the opinions of users.

Table IV. 11

Criteria for Measuring the Success of Pay-for-Knowledge Plans (Compustat Sample)

	Percent of Respondents Mentioning Criterion		
	Group A	Group B	Group C
Meet Budget Constraints	10	0	0
Improved Market Position	30	15	22
Kinds of Employees	0	2	0
Kinds of Technology	0	2	0
Reduced Unionization Possibility	20	2	4
Local Wage Rates	10	2	4
Higher Productivity	30	32	25
Higher Profits	0	6	11
Reduced Absences	10	3	0
Reduced Turnover	60	40	36
Union-Management Relations	0	0	2
Worker Acceptance	0	13	13
Enhanced Recruitment	0	16	13
Reduced Labor Costs	40	10	9
Increased Satisfaction/Morale	40	31	27
Increased Equity	0	10	18
Increased Motivation	0	5	7
Consistent Management Systems	0	2	4
N	10	62	55

Table IV. 12

Conditions Necessary to Promote/Prevent the Success of Pay-for-Knowledge Plans
(Compustat Sample)

	(Group B Respondents)
Conditions Promoting Success	Percent of Respondents
Union Strength	2
Plant Size	32
Type of Employee	14
Type of Job	9
Market Conditions	4
Labor-Management Relationships	9
Local Culture	5
Plant Start-Up	23
N	56
Conditions Preventing Success	
Conflicts with Government Regulations	2
Not Selecting Right Employees	2
Inadequate Training	10
N	58

Table IV. 13

Overall Attitudes Toward Pay-for-Knowledge Plans (Compustat Sample)

	Percent of Respondents		
	Group A	Group B	Group C
Strongly Favor	8	9	0
Favor	92	37	36
Indifferent	0	20	20
Oppose	0	31	44
Strongly Oppose	0	2	0
N	11	54	55

IV.9 Summary

The data show that pay-for-knowledge plans are used by about 8% of American corporations. These corporations are found primarily in the Manufacturing and Wholesale and Retail Trades industries. Production workers are most likely to be covered by pay-for-knowledge plans. Participative management or the team concept is a work innovation with high probability of use in conjunction with pay-for-knowledge plans. Growth and development, and work force flexibility, are enumerated among the benefits of pay-for-knowledge plans, and careful implementation is emphasized as critical to the success of pay-for-knowledge. Reduced turnover and increased satisfaction are criteria for the success of pay-for-knowledge plans mentioned most often, good labor-management relationships are seen as important for success, and employee resistance considered a major factor in preventing success.

About a third of the pay-for-knowledge plans in the sample exist in a unionized setting, with an average of 7% of the employees being covered by collective bargaining agreements. Most corporate respondents indicate that the local union leadership has favorable attitudes toward pay-for-knowledge, but reports about the attitudes of organized labor in general are more mixed.

Non-pay-for-knowledge-users indicate that pay-for-knowledge would not necessarily promote their compensation objectives, and might in fact impede these objectives. The criteria used to measure the success of pay-for-knowledge plans are reasonably similar across users and non-users.

Overall attitudes toward pay-for-knowledge are most positive among users, least positive among unfamiliar non-users, with familiar non-users being in between.

CHAPTER V

PLANT DATA SOURCE

This chapter reports the results from Data Source II, i.e., mail surveys of plants using pay-for-knowledge compensation systems. An extensive questionnaire was mailed to personnel directors of 63 facilities known to be using a pay-for-knowledge compensation system. (The sample selection and survey design are discussed in detail in Chapter II.) The questionnaire was designed to gather detailed information on existing pay-for-knowledge systems from individuals having day-to-day responsibility for their operation. This data source, therefore, provides managerial perceptions, attitudes, and reports on several issues of interest, including the following:

- What are the characteristics of plants that use pay-for-knowledge systems?
- What are the characteristics of the pay-for-knowledge systems used in these plants?
- Why do organizations adopt pay-for-knowledge systems?
- What other innovations generally accompany pay-for-knowledge systems?
- What are the outcomes of using pay-for-knowledge systems?
- What conditions contribute to the success or failure of pay-for-knowledge systems?
- What are the legal ramifications of using pay-for-knowledge systems?
- What labor issues are relevant in unionized plants using pay-for-knowledge systems?
- What are the opinions of personnel directors about the current and future use of pay-for-knowledge systems?

Answers to these questions from the plant data source are discussed in the remainder of this chapter. As noted in Chapter III, this chapter reports on data provided by 19 pay-for-knowledge facilities. Once more, the reader should recall that this chapter reports on managerial responses. Plant managers or personnel directors of pay-for-knowledge facilities constituted the respondents for this data source. Their responses may or may not parallel those that employees, supervisors, labor officials, or others would have provided.

V.1: Characteristics of Plants Using Pay-for-Knowledge Systems

Table V.1 summarizes characteristics of facilities using pay-for-knowledge compensation plans. The median number of employees at these facilities was 265 (mean=501.2; N=19). The total number of employees varied widely across the plants, ranging from a minimum of 60 to a maximum of 3,300 employees. The proportion of females in the work force ranged from 10 to 78 percent (mean=34.9%).

Table V.1

Characteristics of Plants with Pay-for-Knowledge Systems

	Mean	Median	Number Responding
Number of employees	501.2	26[illegible]	19
Percent female	34.9	30.5	18
Percent covered by pay-for-knowledge plan	69.8	71.1	15

Highest level of Education Completed	PFK Employees	Non-PFK Employees
No high school diploma	7.3%	4.2%
Completed high school or GED	67.6%	25.[illegible]%
Some college or technical school beyond high school	19.2%	19.5%
College degree	7.6%	54.6%

Average years of service for Employee Types	PFK Employees	Non-PFK Employees
Production	4.8	3.3
First line supervisors	8.8	6.5
Clerical	4.9	5.0
Skilled trades	5.2	5.0
Professional/technical	3.8	5.6
Managerial	11.3	8.6

Eighteen of the sites were manufacturing facilities; most of these (13) described their predominant production process as "continuous process production," in which the product is transformed from raw material to a finished good using a series of process transformations (for example, chemicals and oil refining). Three were engaged in "mass production," where the product is manufactured in an assembly line fashion with repetitious, routine, and predictable operations; and two classified their production process as "unit or small batch production," in which the product is custom-made to an individual customer's specifications and in which operations on each unit are typically nonrepetitive. The remaining plant was a service facility. Half of these facilities began operations after 1976, but starting years ranged from 1929 to 1984. Only one of the 19 respondents had any employees covered by a collective bargaining contract.

The number of employees covered by pay-for-knowledge plans also varied widely across plants, ranging from 31 to 1,600 employees. The average proportion of employees covered by pay-for-knowledge was 69.8% (median=71.1%). Production workers were covered by pay-for-knowledge systems more often than other types of workers, followed by clerical and skilled trades employees. Managerial and professional/technical employees, and first line supervisors were far less likely to be covered by a pay-for-knowledge plan than other groups. Three plants indicated that some employees in the professional/technical category were under a pay-for-knowledge plan, and two plants had employees in the first line supervisor and managerial categories covered by pay-for-knowledge plans. The proportion of these pay-for-knowledge employees in these categories was low in all cases, ranging from 1% to 15%.

Non-pay-for-knowledge employees were reported to have more education than pay-for-knowledge employees, although this is largely due to the fact that professional/technical and managerial employees were less apt to be covered by the pay-for-knowledge plan. The average length of service for production, first line supervisors, skilled trades, and managerial pay-for-knowledge employees was higher than for their non-pay-for-knowledge counterparts. The opposite relationship existed for clerical and professional/technical employees.

V.2: Characteristics of Pay-for-Knowledge Systems

All the pay-for-knowledge compensation systems in the sample were installed since 1969, with half of them having begun after 1980. Most of the facilities (73.7%) were the first ones in their corporations to use a pay-for-knowledge plan. The first suggestion to use pay-for-knowledge most often came from management; from corporate management in six companies (31.6%), and from local management in seven others (36.8%). The suggestion was made by external consultants to three firms (15.8%), and came from miscellaneous other sources in the others.

It has often been argued that pay-for-knowledge plans require a start-up or "greenfield" situation, so that they don't have to overcome problems of history, culture, and tradition. Of the 19 plants in the sample, 75% initiated the pay-for-knowledge plan at plant start-up. The remainder installed the systems in facilities ranging from three to 48 years old.

The personnel directors were asked to indicate, on a seven-point scale, the level of involvement various groups of employees had in the development and installation of the pay-for-knowledge plan (1=not at all involved; 4=somewhat

involved; 7=heavily involved). Responses indicated that the group most heavily involved was local management. Sixteen of the 19 companies indicated that local management was "very heavily involved" (mean=6.5). Employees and external consultants ranked next in the degree to which they were involved in the development and installation of pay-for-knowledge plans (means=4.9 and 4.1, respectively).

Common to almost all pay-for-knowledge plans is the notion of some unit of skill, knowledge, or training that forms the basis of determining an employee's pay. Descriptive information on the pay-for-knowledge plans in use among the sample plants is contained in Table V.2. The average pay-for-knowledge plan had 19.8 of these "skill units," with the number of units ranging from 4 to 90 (median=9.5; N=18). Quite often, employees were not allowed to learn all the skill units, presumably because it was unrealistic to expect employees to master and retain more than a few skills. On average, the maximum number an employee was allowed to learn was 14.9 (median=7; N=15). The minimum that the typical employee had to learn was 2.7 (median=1; N=17). The average number of skill units that employees in fact learned was 5.3 (median=4; N=15). Respondents felt that the typical employee could stay competent in an average of 4.8 skill units (median= 3.5, N=12).

The average number of weeks required to learn a skill unit was 32.1 (median=26; N=16). The minimum required was 23.6 weeks and the maximum required was 42.2 weeks. The time required for the average employee to learn the maximum number of skill units was 213 weeks. All plants in the sample conducted training for skill units during the employee's regular work hours, and employees were paid for this training time.

Some plants in the sample had restrictions on the minimum time an employee had to perform a skill after training, and also on when an employee had to begin learning a new skill unit. For plants with these restrictions, the average length of time that a skill had to be performed after training was 32.8 weeks (N=6). The maximum time that an employee could remain in a skill unit after training was slightly over a year, i.e., 55.5 weeks (N=8).

Descriptive information along these dimensions on each pay-for-knowledge plan in the sample is contained in Table V.3. This table allows the reader to grasp how specific mechanics of pay-for-knowledge plans are operationalized in different locations.

In an open-ended question, the personnel directors were asked, "How do you determine when an employee has learned a skill unit?" Responses indicated that 13 of the 19 plants used some form of formal testing or evaluation; nine also involved the employee's peers in this process. The other firms used more subjective evaluations of the employee's and/or production team's performance. Respondents were also asked to rate, on a seven-point scale, how much "say" different groups had in determining if an employee had completed a skill unit (1=no say at all; 7=makes final decision). They indicated that the first line supervisor had a lot of say (mean=5.7), followed by coworkers (mean=4.6) and higher management (mean=4.5).

Since pay-for-knowledge plans represent a radical departure from traditional compensation practices, plants using pay for-knowledge must make decisions on a number of issues related to employee pay levels. For example, decisions must be made on the connection between skill units and wage rates. Some pay-for-

Table V.2

Characteristics of Pay-for-Knowledge Plans

Question	Mean	Median	Number Responding
How many skill units does your PFK plan include?	19.8	9.5	18
What is the maximum number of skill units an employee is allowed to learn?	14.9	7	15
What is the minimum number of skill units an employee must learn?	2.7	1	17
How many skill units do employees typically learn?	5.3	4	15
How many skill units can employees typically stay competent in?	.8	3.5	12
What is the average number of weeks required to learn a skill unit?	32.1	26	16
a. What is the minimum of weeks?	23.6	26	15
b. What is the maximum number of weeks?	42.2	52	13
How long does it take the average employee to learn the maximum number of skill units?	213.1	90	16
After employees have completed one skill unit, how many weeks must they perform that skill unit before being eligible to begin learning a new skill unit?	..8	26	6
Not including learning time, how many weeks may employees perform one skill unit before they must move on to another skill unit?	55.5	60	8

Table V.3
Description of Pay-for-Knowledge Plans at the Plants

	# of skill units	maximum # of skill units	minimum # of skill units	typical # of skill units	# of skill units employee can stay competent in	# of weeks to learn skill unit	minimum # of weeks	maximum # of weeks	# of weeks to learn maximum # of skill units	# of weeks before learning new skill unit	# of weeks to perform one skill before moving on to another skill unit
Plant 1	8	8	1	6	8	26-52	26	52	260	26	na
2	12	6	0	?	?	52	na	na	400	0	na
3	4	4	1	1	1	52	52	52	208	until promoted	only if promoted
4	6	6	1	2	?	2	na	2	?	allow 2 advancements per year	allow 2 advancements per year
5	11	11	1	10	5	16	6	na	200	0	8
6	7	7	4	5	4	26	8	na	364	26	na
7	40	40	1	too early to tell	all they are proficient in	2 wks to 1 year	2	52	260	1-2	1-2 weeks
8	7	unlimited	7	7	varies	5	4	7	35	varies	varies
9	varies for different groups	varies	1	5	all	varies	varies	varies	12-16	varies	na
10	9	9	2	min. 2	3	78-104	78	104	330	78	78
11	11	3	1	3	3	-	26	52	260	13-39	no requirements
12	100+	unlimited	2	10	?	26	13	39	open	26	forever
13	4	no max.	1	3	3-4	52	26	no max.	depends on skill level	no limit	no limit
14	18	all jobs in work unit	6	6	if they rotate, all jobs	2 will vary	1	some jobs take 6 months	6-9	varies	varies
15	10	10	2	4	3	26	26	26	260	0	26
16	70	15	15	15	15	9	2	15	140	0	no minimum
17	20	7	3	3	5	8	4	12	78	0	na
18	9	3	0	3	3	52	30	150	200	0 but usually 12-24	unlimited
19	5	5	3	don't know yet	3	52	39	60	364	0	60

knowledge plans award points to an employee upon completion of training in a skill, with accumulated points leading to wage increases. Other pay-for-knowledge plans tie completion of a skill unit directly to wage increases. Most of the plants in the sample used the latter method (13 of 18, i.e., 72.2%). A majority (11 of 18, i.e., 61.1%) indicated that all skill units were worth the same amount in the overall pay-for-knowledge system, while the other seven respondents reported that their pay-for-knowledge plan had skill units of differing value.

Pay-for-knowledge plants must also decide on absolute and relative wage levels. Responden were asked the wage rate for newly hired employees, for employees learning their first skill unit, and for employees who had completed the maximum number of skill units allowed. In each case, respondents indicated how they thought this wage rate compared to what the employee could earn elsewhere in a comparable job. The average wage rate of newly hired employees in these companies was $7.14 per hour (median=$7.75; N=17). Nine plants considered their wage rate to be higher than elsewhere, six thought it was about the same, and three thought it was lower. Employees learning their first skill unit earned slightly more on average, $7.36 per hour (median=$7.75; N=17). Once again, most plants (10 of 17) considered this to be higher than what the employee could earn elsewhere; five thought it was about the same and two thought it was lower. For employees who had completed the maximum number of skill units allowed, the average wage rate was $11.41 per hour (median=$12.10; N=17). All but one of the firms responding (N=16) thought that this was higher than could be earned elsewhere on a comparable job. In this context, it should be mentioned that these dollar figures were not compared to published data (e.g., from the Bureau of National Affairs) because it was impossible to compare multiskilled employees with the more traditional job classifications reported in these data.

Another issue relevant to pay-for-knowledge plans is the extent to which an employee's pay is affected by (a) the number of skills learned, (b) how well each skill is performed, and (c) how well each skill is retained. When asked to indicate, on a seven-point scale, the importance of each of these factors in determining employees' pay, respondents gave the highest ratings to the number of skills learned (mean=6.2), followed by the quality of performance (mean=4.5) and skill retention (mean=4.4).

Respondents also answered questions about some of the other mechanics of their pay-for-knowledge plans. For example, there must be procedures to coordinate the movements of employees across skill units. One question concerned the issue of when an employee is ready to move to a new skill unit, but no vacancy exists. In most plants (12 of 18), the employee simply had to wait for a vacancy to occur; one plant gave the person temporary compensatory pay; and other plants developed a variety of other mechanisms to deal with this situation. For example, respondents from several plants reported that training in a new skill could be provided even though a vacancy to perform that job did not exist currently.

Another question focused on the situation where more than one person is ready to learn a skill unit, and only one vacancy is available. A variety of criteria or procedures for handling the situation were mentioned in response to this question. Some form of production team decision was the procedure mentioned in seven of 17 responses. Past performance was mentioned in five

responses, and seniority in four. Several respondents indicated that they took into account factors such as the length of time employees had been waiting and which employee had been out of training the longest. Only one plant indicated that the supervisor made the decision alone. Another plant indicated that they had a master training plan which eliminated this problem.

Respondents were asked how an employee's pay would be affected if a technological change eliminated a skill unit. Fourteen of 17 respondents said that there would be no change in the hourly wage rate, and three said that the wage rate would be frozen until an alternative skill unit had been completed. None of the respondents indicated that the hourly wage rate would be reduced. When asked what other adjustments to their pay-for-knowledge plan a technological change would necessitate, six respondents mentioned some change in the structure of the pay-for-knowledge plan such as the inclusion of new skill units. Two respondents said that the change would require retraining in existing skill units.

Only three of 18 respondents indicated that their pay-for-knowledge plan required that skill units be learned in a specific order. Eight provided refresher training for skills already mastered, but only three required refresher examinations for these skills. Six respondents indicated that they had a formalized procedure for ensuring that employees retained proficiency in previously mastered skills. The predominant procedure for ensuring retention of skills was some form of rotation through previously mastered skills.

In short, pay-for-knowledge plans in the sample were generally installed at the direction of local or corporate management and tended to include about nine skill units. Over six months were needed to learn each skill unit, and the employee could move through the pay-for-knowledge plan in about four years. Supervisory evaluations represented the most common form of performance appraisals. Generally, wage increases were tied directly to mastery of skill units, and number of skill units learned was the primary determinant of wage rates. Skill retention was given some emphasis in most pay-for-knowledge plans studied. Pay-for-knowledge plants typically reported paying their employees higher than prevalent wages.

V.3: Reasons for Adopting Pay-for-Knowledge Compensation Systems

Organizations decide to adopt pay-for-knowledge plans for many reasons, and attach different degrees of importance to these reasons. Respondents were given a list of 25 possible reasons for adopting a pay-for-knowledge compensation plan and were asked to indicate, on a seven-point scale, the extent to which each reason affected the decision to use pay-for-knowledge in their facility (1=not at all, 3=to some extent, 5=to a large extent, 7=to a very great extent). Respondents could provide reasons other than the 25 mentioned, if appropriate.

In Table V.4, the reasons are ranked in descending order of the average scores indicating the extent to which each affected the decision to use pay-for-knowledge. The possibility of achieving higher employee commitment was the most important reason for adopting pay-for-knowledge, followed by increased productivity, improved employee motivation, greater employee satisfaction, employee growth and development, better quality of work life, improved employee performance, and flexibility in placing employees. At the opposite extreme, a desire to reduce the external marketability of the work force, pressure from organized labor, and corporate policies/directives on pay-for-knowledge and

Table V.4

Reasons for Using Pay-for-Knowledge Plans*

	Mean	Number Responding
Higher employee commitment	6.1	18
Increased productivity	5.9	18
Improved employee motivation	5.9	18
Greater employee satisfaction	5.9	18
Employee growth and development	5.8	18
Better quality of work life	5.7	18
Improved employee performance	5.6	18
Flexibility in placing employees	5.5	18
A desire to keep company non-unionized	4.8	18
A desire to pay employees competitive wages	4.7	18
Smaller work force size	4.5	18
Reduced voluntary turnover	4.1	18
Better labor-management relationships	4.1	18
Lower absenteeism	3.9	18
Fewer layoffs	3.9	18
Dollar savings	3.7	18
Lower tardiness	3.6	18
A desire to increase the pay rates for employees	3.6	18
A desire to reduce union influence	3.2	17
To be consistent with other management systems	3.1	18
Corporate policies about the use of innovative management techniques	2.8	18
Corporate policies about using PFK	2.1	18
Corporate directive to use PFK	2.1	17

Table V.4 (cont.)

Reasons for Using Pay-for-Knowledge Plans*

	Mean	Number Responding
Pressure from organized labor	1.8	17
A desire to reduce the external marketability of the work force	1.8	17

* Items were measured on a seven-point scale

innovative management techniques seemed to affect the decision to use pay-for-knowledge the least.

Thus, issues of employee growth and satisfaction, and work force flexibility appeared to be more important in stimulating the use of pay-for-knowledge plans than did organized labor or corporate demands.

V.4: Other Innovations

Because pay-for-knowledge plans rarely occur in isolation from other innovations, the instrument was designed to determine what other innovations were occurring most frequently in conjunction with pay-for-knowledge. It should be remembered that some of these "innovations" (e.g., open door policies) have been used by some organizations for a long time. Their inclusion as innovation simply reflects the infrequency with which they tend to occur. Responses indicate that innovations commonly accompanying pay-for-knowledge included: open door policies, interpersonal skills training, enriched jobs, team approach to management, human resources planning, and employee stock ownership plans. Features that were not usually included with pay-for-knowledge include: two-tier wage systems, cafeteria-style benefits plans, profit-sharing, permanent part-time employment, and quality circles. Table V.5 lists the frequency with which different innovative features selected by the respondents are represented in their plants.

Respondents were also asked, in an open-ended question, which organizational systems were specifically designed to be consistent with their pay-for-knowledge plan. Responses included the following: the use of work teams or a team-based structure, the use of team leaders rather than first line supervisors, all salaried work force, no time clocks, the organizational structure, the communications plan, the hiring/training/orientation process, the equipment layout, and close relationships in small groups. There was no identifiable pattern of responses that occurred together, i.e., different plants reported different organizational systems that they considered specifically designed to fit with pay-for-knowledge.

In short, interpersonal and team-related innovations were more frequent accompaniments of pay-for-knowledge plans than were various other compensation innovations.

V.5: Outcomes of Using Pay-for-Knowledge Plans

Respondents were asked about a number of positive outcomes associated with the use of pay-for-knowledge plans. The outcomes are summarized in Table V.6. Outcomes identified most often as being promoted successfully by pay-for-knowledge were greater work force flexibility, improved employee satisfaction, more employee commitment, and better employee-management relationships. For example, 89.5% of the firms said that pay-for-knowledge promoted greater work force flexibility to a large extent or even greater. Likewise, 63.2% of the firms reported that pay-for-knowledge promoted improved employee satisfaction at least to a large extent. There was less agreement on some of the other outcomes.

For example, only 47.4% saw pay-for-knowledge as reducing labor costs and layoffs at least to a large extent, 36.9% saw pay-for-knowledge as producing lower absenteeism, 31.6% saw reduced voluntary turnover as a significant outcome

Table V.5

Frequency of Other Innovations Accompanying Pay-for-Knowledge
(N=19)

Other Innovations	Number of Organizations Reporting the Feature	Percentage of Organizations
Open door policies	19	100.0
Enriched jobs	17	89.5
Interpersonal skills training	17	89.5
Team approach to management	16	84.2
Employee stock ownership plan	16	84.2
Human resources planning	14*	77.8
Employee participation in major personnel decisions (hiring, terminations, performance appraisals, etc.)	14	73.7
An assessment center-type of approach for selection	13	68.4
Autonomous work groups	13	68.4
Open architectural design	12	63.3
Matrix organizational design	11*	61.1
Employee participation in major organizational decisions (excluding collective bargaining issues)	11*	61.1
Life and career planning programs	11	57.9
All salary work force	11	57.9
Management by objectives	10*	55.6
Formal suggestion systems	10	52.6
Alternative work schedules (flexitime)	10	52.6
Organization-wide bonus systems	8	42.1
Lump sum salary increases	7*	38.9

Table V.5 (cont.)

Frequency of Other Innovations Accompanying Pay-for-Knowledge

Permanent part-time employment	6	31.6
Quality circles	6	31.6
Profit sharing	5*	27.8
Cafeteria-style benefit plan	4*	22.2
Job sharing	4	21.1
Two-tier wage systems	2*	11.1

*N=18

Table V.6

Extent to Which Different Outcomes Are Promoted by the Use of Pay-for-Knowledge

	Percent of Respondents							
	Not at all (1)	(2)	To some extent (3)	(4)	To a large extent (5)	(6)	To a very great extent (7)	Mean
Outcomes Promoted by PFK								
Improved employee satisfaction (N=19)	0.0	0.0	10.5	26.3	47.4	5.3	10.5	4.8
Greater work force flexibility (N=19)	0.0	5.3	0.0	5.3	21.1	26.3	42.1	5.9
Labor cost reductions (N=19)	10.5	15.8	26.3	0.0	26.3	5.3	15.8	3.9
Increased output per hour worked (N=19)	0.0	15.8	10.5	15.8	36.8	10.5	10.5	4.5
Enhanced employee motivation (N=19)	0.0	15.8	15.8	10.5	36.8	5.3	15.8	4.5
More employee commitment (N=19)	0.0	10.5	15.8	15.8	36.8	0.0	21.1	4.6
Lower absenteeism (N=19)	21.1	15.8	15.8	10.5	21.1	0.0	15.8	3.6
Fewer layoffs (N=19)	31.6	5.3	5.3	5.3	31.6	0.0	15.8	3.9
Reduced voluntary turnover (N=19)	26.3	10.5	15.8	15.8	15.8	15.8	10.5	3.4
Better labor-management relationships (N=17)	23.5	5.9	11.8	5.9	23.5	23.5	23.5	3.9
Better employee-management relationships (N=19)	10.5	5.3	10.5	21.1	10.5	21.1	21.1	4.6

of pay-for-knowledge, and 52.9% saw pay-for-knowledge as promoting better labor-management relationship to a large extent or greater.

When asked to compare what it would be like if they didn't have a pay-for-knowledge plan, however, 78.9% of the sample reported that pay-for-knowledge employees were less likely to be laid off in an economic downturn, 15.8% reported that they were just as likely, and 5.3% that they were more likely to be laid off, than if the plants did not have a pay-for-knowledge plan. This provides some support for the argument that pay-for-knowledge may reduce the probability of layoffs.

Respondents were also asked to compare their pay-for-knowledge and non-pay-for-knowledge employees along several outcomes. Responses are shown in Table V.7. On average, pay-for-knowledge employees were found to be more likely to receive promotions than non-pay-for-knowledge employees. Over half of the firms reported that pay-for-knowledge employees were more likely to be promoted than non-pay-for-knowledge employees, while only 7.7% reported that they were less likely to be promoted. Likewise, intra-departmental and inter-departmental transfers occurred somewhat more often among pay-for-knowledge employees. The plants reported no major differences in layoff rates between pay-for-knowledge and non-pay-for-knowledge employees. The rates of voluntary terminations and absenteeism were, surprisingly, reported to be higher among pay-for-knowledge employees more often, although tardiness rates were viewed as higher among non-pay-for-knowledge employees in more organizations.

Another outcome associated with the use of pay-for-knowledge is leaner staffing. Table V.8 shows the responses with respect to this issue. For example, 63.2% of the firms reported that if they were not using a pay-for-knowledge plan, they would need more production employees, more skilled trades employees, and more first line supervisors. The need for extra clerical, administrative, managerial, and professional/technical employees was not reported as often.

These results were substantiated by answers to another question. Respondents assessed whether employment levels were higher or lower at the facility than they would have been without pay-for-knowledge. Responses are shown in Table V.9. The results indicate that total employment levels, the number of supervisory employees, and the number of non-managerial employees were slightly lower because of the use of pay-for-knowledge. It is often argued also that administrative costs are higher in plants with pay-for-knowledge systems. This argument was not upheld by the data. Only one firm reported that administrative costs would be lower without a pay-for-knowledge plan.

Overall, the data suggest that the employee types whose numbers are least affected by the use of a pay-for-knowledge plan are managerial, professional/technical, clerical, and administrative employees; larger numbers of production, supervisory, and skilled trades employees may be needed by companies not using a pay-for-knowledge plan.

Respondents were also asked to compare their experiences with the experiences of non-pay-for-knowledge facilities that were otherwise similar to theirs. Responses are shown in Table V.10. The pay-for-knowledge plants in the sample, on average, consistently reported better employee-management relationships, employee motivation, employee performance, and quality of product or service. Responses regarding all other outcomes of interest also fell above

Table V.7

Comparison of Pay-for-Knowledge and Non-Pay-for-Knowledge Employees on Selected Outcomes
(N=13)

Question: Please think about non-managerial employees at your facility. Indicate whether the rates of the following are higher for pay-for-knowledge employees or non-pay-for-knowledge employees.

	Percent of Respondents					
Outcomes	PFK Employees Much Higher	PFK Employees Higher	About the Same	Non-PFK Employees Higher	Non-PFK Employees Much Higher	Mean
Intra-departmental transfers	23.1	23.1	23.1	23.1	7.7	2.7
Inter-departmental transfers	23.1	30.8	15.4	15.4	15.4	2.7
Promotions	7.7	46.2	38.5	0.0	7.7	2.5
Voluntary terminations	7.7	23.1	46.2	23.1	0.0	2.8
Layoffs*	0.0	0.0	100.0	0.0	0.0	3.0
Other voluntary terminations	0.0	23.1	61.5	15.4	0.0	2.9
Absenteeism	7.7	23.1	46.2	15.4	7.7	2.9
Tardiness	7.7	7.7	53.8	23.1	7.7	3.2

* N=11

Table V.8

Work Force Needs Without a Pay-for-Knowledge Plan
(N=19)

Question: If you didn't have a pay-for-knowledge plan, would you need more employees of the following types, fewer employees, or about the same number in your total work force?

Employee Type	Percent of Respondents					Mean
	Considerably fewer (1)	Fewer (2)	About the same (3)	More (4)	Considerably More (5)	
Production	0.0	0.0	36.8	57.9	5.3	3.7
First line supervisors	0.0	0.0	36.8	57.9	5.3	3.7
Clerical	0.0	0.0	68.4	31.6	0.0	3.3
Skilled Trades	0.0	0.0	36.8	47.4	15.8	3.8
Administrative	0.0	5.3	68.4	26.3	0.0	3.2
Professional/Technical	0.0	0.0	83.3	16.7	0.0	3.2
Managerial	0.0	0.0	68.4	31.6	0.0	3.3

Table V.9

Employment Rates Without a Pay-for-Knowledge Plan

Question: Do you think these measures are lower or higher at your facility than they would have been without a pay-for-knowledge plan?

Percent of Respondents

Employment Rates	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Mean*
Total Employment (N=17)	5.9	35.3	35.3	17.6	5.9	0.0	0.0	2.8
Number of Supervisory Employees (N=19)	10.5	42.1	10.5	36.8	0.0	0.0	0.0	2.7
Number of Non-Managerial Employees (N=19)	10.5	31.6	26.3	26.3	5.3	0.0	0.0	2.8
Administrative Costs (N=18)	5.6	11.1	5.6	33.3	38.9	5.6	0.0	4.1

* Response Options:

1 = much lower
2 = somewhat lower
3 = slightly lower
4 = about the same
5 = slightly higher
6 = somewhat higher
7 = much higher

Table V.10

Respondents' Comparisons of Their Experiences with Those of Non-Pay-for-Knowledge Facilities*

Comparison Areas	Mean Score**
Employee-management relationships (N=17)	4.4
Employee performance (N=19)	4.3
Quality of product or service (N=19)	4.3
Supervisor-employee relationships (N=17)	4.2
Employee motivation (N=19)	4.2
Layoff rates (N=18)	4.2
Absence rates (N=19)	4.1
Grievance rates (N=19)	4.1
Productivity (N=19)	4.1
Tardiness rates (N=19)	3.9
Quit rates (N=19)	3.7
OSHA injury rates (N=19)	3.7

* Question: Compared to non-pay-for-knowledge facilities similar to yours, have your experiences in the following areas been better, worse, or about the same?

** Response options:

1 = ours are much worse
2 = ours are somewhat worse
3 = about the same
4 = ours are somewhat better
5 = ours are much better

the mean. Overall, the results indicate that respondents in the sample believed their plants' experiences to be generally better than the experiences of plants that were similar, but did not use pay-for-knowledge.

Similarly, respondents also compared various measures of organizational functioning with what they would be without a pay-for-knowledge system. The data are shown in Table V.11. Many measures were consistently reported to be higher than they would have been without pay-for-knowledge. For example, 72.2% of the firms felt that output per hour worked was higher, and that unit production costs and labor costs per unit of production were lower, than they would be without pay-for-knowledge. Training costs for non-managerial employees were perceived to be higher than they would be if a pay-for-knowledge system was not being used. Administrative costs were not seen as being much higher than they would otherwise be.

Respondents were also asked, in an open-ended format, which administrative costs were higher or lower due to pay-for-knowledge. Increases in benefits payment was mentioned as an increased cost, since the lower turnover rates in pay-for-knowledge facilities result in higher levels of seniority among employees. Other increased costs included the costs of pay administration, training costs, the cost of training time, meeting time, performance appraisal administration, hidden costs of peer review time, additional paperwork, personnel support, job postings, trial periods, and personnel support time to interface with management and team advisors. At the same time, some administrative costs were reported to be lower. Reduced turnover, reduced absenteeism, fewer shifts, better hiring practices, reduction in transaction costs from bumping and bidding, interviewing time, and reduced clerical/support personnel were all cited as pay-for-knowledge-related outcomes which helped to reduce administrative costs.

To summarize, pay-for-knowledge plans were seen by respondents as promoting many outcomes. Work force flexibility, satisfaction, and commitment were predictably reported as being furthered by the use of pay-for-knowledge. Other such outcomes included lower absenteeism, work force stability, and better labor-management relationships. Job-related moves were more common among pay-for-knowledge than non-pay-for-knowledge employees. Absenteeism and voluntary turnover were reported to be higher among the former. Generally, the respondents reported leaner staffing due to pay-for-knowledge, especially among production, supervisory, and skilled trades employees. In addition, the respondents consistently felt that they were better on many measures of organizational functioning than they would have been without a pay-for-knowledge plan.

V.6: Unanticipated Problems and Benefits

Respondents were asked, in an open-ended format, about the unanticipated benefits and unanticipated problems associated with the use of a pay-for-knowledge system. Several respondents reported having experienced both.

One unanticipated problem was that the pay-for-knowledge plan can take on a "sacred cow" status, making it very difficult to implement any needed changes in the plan. Another problem respondents mentioned was that it may become difficult to "promote" upper level pay-for-knowledge employees to "higher" level (non-pay-for-knowledge) administrative or technical jobs. This occurred because the pay-for-knowledge employees were being paid too much to be "promoted."

Table V.11

Respondents' Comparisons of Measures of Organizational Functioning Between Pay-for-Knowledge and Non-Pay-for-Knowledge Facilities*

	Percent of Respondents							
Employee Rates	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Mean**
Output Per Hour Worked (N=18)	0.0	5.6	0.0	22.2	33.3	22.2	16.7	5.2
Unit Production Costs (N=18)	16.7	16.7	38.9	16.7	5.6	5.6	0.0	2.9
Labor Costs Per Unit of Production (N=18)	16.7	22.2	27.8	22.2	11.1	0.0	0.0	2.9
The Percentage of Defects in Products or Errors in Services (N=18)	33.3	27.8	16.7	22.2	0.0	0.0	0.0	2.3
Quit Rate (N=19)	21.1	26.3	21.1	26.3	5.3	0.0	0.0	2.7
Layoff Rate (N=17)	41.2	29.4	5.9	17.6	5.9	0.0	0.0	2.2
Involuntary Termination Rate (N=19)	26.3	26.3	15.8	26.3	5.3	0.0	0.0	2.7
Absenteeism Rate (N=19)	42.1	10.5	21.1	26.3	0.0	0.0	0.0	2.3
Expenditures for Training of Non-Managerial Employees (N=17)	0.0	11.8	5.9	5.9	23.5	29.5	23.5	5.2
Administrative Costs (N=18)	5.6	11.1	5.6	33.3	38.9	5.6	0.0	4.1

* Question: Do you think these measures are lower or higher at your facility than they would have been without a pay-for-knowledge plan?

** Response Options:

1 = much lower
2 = somewhat lower
3 = slightly lower
4 = about the same
5 = slightly higher
6 = somewhat higher
7 = much higher

A third problem mentioned by respondents was that some employees did not want to advance beyond one skill. A fourth problem identified was that, after an employee reached the plant rate, performance evaluations may continue but there were no pay increases other than cost-of-living adjustments. Another unforeseen problem was that the leaner staffing structure resulted in fewer opportunities for promotions. Respondents did not describe if, and how, they handled these unanticipated problems.

Other unanticipated problems included the following: the need for more structured training in the technical skills; the fact that not all employees were capable of mastering the required skill levels fully; the complexity of the management processes necessary to implement any changes in the pay-for-knowledge system required by organizational maturity and changing business conditions; and managing the details of the pay-for-knowledge system and of the administrative procedures necessary to run the system.

The list of unanticipated benefits resulting from the use of pay-for-knowledge was also long. Following are some of the unanticipated benefits mentioned by respondents: commitment to product quality, the ability to run the facility when "short-handed" (e.g., when inclement weather forced the plant to operate with a partial work force), overall reduction in the number of employees necessary to operate the facility, the ability to adapt to change, reduction in the number of the indirect labor work force members (e.g., maintenance personnel), greater aspirations for higher pay among the work force, the incentive provided by the chance to master a skill and obtain a performance evaluation that was directly related to a pay increase, pay-for-knowledge becoming the main vehicle for employee involvement, the increased number of promotion opportunities pay-for-knowledge provided, lower total costs, and lower levels of "bickering" about pay issues. Some of these benefits, e.g., reduction in numbers of employees required to operate the plant, are clearly predicted benefits of pay-for-knowledge. It is interesting to note, therefore, that respondents list them as unanticipated benefits.

In short, the unanticipated problems of pay-for-knowledge focused on logistical issues and the need for careful implementation. Unanticipated benefits mostly included flexibility, leaner staffing, improved employee attitudes, and concern for both quality and quantity of output.

V.7: Conditions Contributing to the Success or Failure of Pay-for-Knowledge Systems

Respondents in the sample were asked about key variables responsible for the success of a pay-for-knowledge system. Data on this issue are reported in Table V.12. The table shows that an emphasis on employee growth and development, local managerial commitment, and employee commitment had the highest means. Thus, respondents view commitment levels in the organization to be instrumental in determining the success or failure of their pay-for-knowledge system. Likewise, the overall management philosophy, i.e., the general managerial approach, was identified as a key determinant of pay-for-knowledge success. Work force flexibility, or the ability to move employees across jobs as needed, was also seen as contributing to the success of pay-for-knowledge plans. Employee selection procedures, emphasis on employee training, and employee participation in the administration of the plan were also generally considered contributors to the success of the system.

Table V.12

Factors Contributing to the Success of Pay-for-Knowledge Plans*

	Mean**	Number Responding
Emphasis on employee growth and development	5.6	19
Local managerial commitment to the plan	5.6	19
Employee commitment	5.5	19
The overall management philosophy of the organization	5.3	19
Ability to move employees from one job to another as needed	5.3	19
Emphasis on employee training	5.2	19
Employee selection procedures	5.2	19
Employee participation in the administration of the plan	5.1	18

* Question: To what extent do the elements listed account for any successes you have had using your pay-for-knowledge plan?

** Response Options:

1 = not at all
3 = to some extent
5 = to a large extent
7 = to a very great extent

In response to an open-ended question, respondents indicated that an atmosphere of trust and communication, producing shared goals between management and employees, was an important contributor to success. The effective operation of the facility per se was also identified as important in this context, suggesting that pressures on a pay-for-knowledge system may be a function of how well the facility performs. Another respondent emphasized the importance of "fit" between the philosophy and objectives of the organization on the one hand and the pay-for-knowledge plan on the other. Still another respondent argued that pay-for-knowledge provided a challenge for employees to excel and to go beyond the minimum standards; employees' willingness to accept this challenge was considered critical in this regard. Communications, and the internal marketing of the pay-for-knowledge plan, were also cited as key determinants.

In response to another open-ended question, several other organizational features and environmental conditions were identified as necessary for pay-for-knowledge systems to work effectively. These included characteristics of the organization and the employees. Structural characteristics of the organization included: routine or non-specialized jobs; a manufacturing process compatible with pay-for-knowledge; few levels in the organizational hierarchy; and clear team boundaries. Attitudinal characteristics of organizations that were mentioned included: open door policies and open communication; an atmosphere of trust and cooperation; corporate level support; management support; willingness to adapt and change; a commitment to quality; organizational patience; and organizational risk-taking.

Organizational practices considered important were: employment selection procedures that allow for selection of suitable employees; highly structured training programs with well defined tasks that must be demonstrated over time; opportunities for advancement through skill acquisition; understanding at all levels of the organization; team design; good evaluation tests; and stable employment. Team characteristics of relevance were: small, "family"-type teams; an accurate view of the supervisor's role; and small units of people. Other features mentioned were: total commitment and involvement of all employees; help from consultants; socio-technical design; the ease with which pay-for-knowledge could be understood and administered; and the "fit" between pay-for-knowledge and organizational objectives.

Respondents were also asked, in an open-ended format, what kinds of employees are most suited to a pay-for-knowledge system. Answers to this question focused on skills, attitudes, and positions. Among the skills considered important were education and intelligence, interpersonal communications, planning and problem-solving, leadership, and tolerance for stress. The attitudes respondents viewed as important among pay-for-knowledge employees were interest in learning and self-development, desire to improve expertise and income, open-mindedness and ambition, motivation, and flexibility. Some respondents also indicated that employees just entering the work force, and mature employees were necessary under pay-for-knowledge. One respondent considered non-exempt employees to be particularly suited to pay-for-knowledge, whereas another thought that pay-for-knowledge would work with any kind of employee.

Clearly, the absence of factors contributing to the success of pay-for-knowledge plans can lead to failure, and vice versa. In other words, the determinants of the success or failures of pay-for-knowledge systems may essentially be the same. This idea is supported by Table V.13. This table

Table V.13

Factors Creating Difficulties With Pay-for-Knowledge Plans*

	Mean**	Number Responding
"Kinks" in the actual working of the plan	3.8	19
Insufficient training of supervisors	3.4	18
Performance appraisals	3.2	18
Inadequate training of employees	3.1	19

* Question: To what extent have the following factors been responsible for any difficulties you have experienced with your pay-for-knowledge plan?

** Response Options:

1 = not at all
3 = to some extent
5 = to a large extent
7 = to a very great extent

identifies several of the common factors reported by respondents to have created difficulties for pay-for-knowledge systems. In every case, these factors were also identified as critical to the success of the pay-for-knowledge plan.

In short, conditions contributing to the success of pay-for-knowledge plans included managerial commitment, careful implementation of the plan, and "fit" between the plan and other organizational dynamics. Employee characteristics considered important in this regard generally focused on appropriate attitudes and perspectives.

V.8: Legal Ramifications

Almost 37% of the respondents reported having at least one discrimination charge filed at the facility in the past year. In none of the cases, however, was the discrimination charge related to the pay-for-knowledge plan. Furthermore, only one respondent reported having any wage-and-hour violations filed at the facility in the past year. Again, the violation was not related to the pay-for-knowledge plan. Finally, only one respondent reported having other legal challenges related to the pay-for-knowledge plan. In this case, a breach of contract was alleged for not hiring an individual upon completion of pre-employment training.

Thus, the data suggest that the use of pay-for-knowledge plans is not likely to lead to legal problems very often.

V.9: Labor Issues

As noted, only one of the 19 organizations was unionized. In addition, responses from a second unionized organization were received relatively late. Data from the second organization are not included in the bulk of this chapter. This section, however, summarizes answers to labor-related issues provided by these two unionized plants.

Both organizations were manufacturing facilities with predominantly male work forces. In one plant, the pay-for-knowledge plan covered all production employees; in the other plant, first line supervisory, clerical, skilled trades, professional/technical, and managerial employees were included under the pay-for-knowledge plan, although the largest proportion of pay-for-knowledge employees were in the skilled trades category. Pay-for-knowledge employees in the production category in the first plant, and pay-for-knowledge employees in the clerical and skilled trades categories in the second plant, were covered by collective bargaining agreements.

Respondents were asked about the concerns of organized labor during the development of the pay-for-knowledge plan. Both plants reported the following concerns among the unions: length of time to learn a skill, who decides when a skill unit has been learned, how one decides when a skill unit has been learned, how much say the union would have in the job assignment process, and the pay increment associated with each skill unit. In addition, at least one of the two plants also reported the following concerns: how much say the union would have in who learned which skill unit, potential conflicts between pay for seniority and pay-for-knowledge, implications of pay-for-knowledge for layoff policies, how much say the union would have in who gets to work overtime, and the implications of pay-for-knowledge for the size of the work force.

Jurisdictional disputes were the only issues that neither respondent reported as being a concern among unions during the development of the pay-for-knowledge plan.

A second question focused on union concerns during the operation of the pay-for-knowledge plan. Both respondents included length of time to learn a skill unit, and how one decides when a skill unit has been learned as current union concerns. One respondent reported two other concerns: who decides when a skill unit has been learned, and how much say the union would have in who gets to work overtime.

Several questions were asked about the extent of union involvement in the pay-for-knowledge plan. The broad objectives and the details of the pay-for-knowledge plan were jointly developed by union and management in one case, and with the active involvement of the union in the other. Respondents had met with union representatives 3-6 times in the past year regarding the pay-for-knowledge plan, although these meetings did not affect the plan much. Union rank-and-file, shop stewards, local and national union leadership, and local and corporate management were all reported as having moderate to a great deal of "say" in contract negotiations about the pay-for-knowledge plan.

No grievances or unfair labor practice charges relating to pay-for-knowledge plans were reported by either respondent. Seniority rights regarding layoffs, overtime, job assignments, and eligibility for training were not considered different from what they would be without a pay-for-knowledge plan. Movements of employees across skill units were specified in the collective bargaining contract in one of the two plants.

Respondents were asked if union influence at their facilities had changed because of the pay-for-knowledge plan. One respondent thought it had stayed about the same, the other thought it had decreased somewhat.

Both respondents agreed that unions were supportive of their pay-for-knowledge plans, both strongly disagreed with the statement that unions were always threatening to file grievances about the pay-for-knowledge plan and both disagreed with the statement that the pay-for-knowledge plan had complicated the collective bargaining process. Respondents rated the overall union-management relationships at their facilities as being moderately to very cooperative.

In summary, the presence of unions in pay-for-knowledge facilities was not seen as problematic by respondents. Overall, respondents had fairly positive relationships with their unions and had actively involved the unions in the development and management of the pay-for-knowledge plan.

V.10: Current and Future Use of Pay-for-Knowledge

Several questions focused on respondents' perceptions of the pay-for-knowledge plan as it was implemented in their facilities. These questions concerned employee attitudes, the mechanics of the pay-for-knowledge plan, supervisory and labor attitudes, etc. This section contains responses to these and similar questions.

One set of questions concerned the relationships among employees of these pay-for-knowledge facilities. Data on these questions are summarized in Table V.14. The table shows that employees in pay-for-knowledge plants generally

Table V.14

Relationships Among Employees in Pay-for-Knowledge Plants

Question	Mean*	Number Reporting
Our employees tell each other the way they are feeling	5.5	19
Our employees feel free to discuss their mistakes with management	5.5	19
Our employees stick together	5.5	18
Our employees always help each other out when they have problems	5.1	19
When employees don't like the way things are done, they tell management about it	6.0	19
There is a strong feeling of fellowship among our employees	5.6	19
Our employees seem to have no respect for each other	1.9	19
There is constant bickering among our employees	1.8	19
When employees and management disagree, they feel free to talk to each other about it	5.8	19
Employees look forward to being with one another each day	5.2	19
There are lots of hard feelings among our employees	1.9	19

* Response Options

1 = Strongly disagree
2 = Disagree
3 = Slightly disagree
4 = Neither agree nor disagree
5 = Slightly agree
6 = Agree
7 = Strongly agree

tended to get along well with one another and to respect one another. Furthermore, according to respondents, employees in these facilities had a relatively open relationship with management.

A second set of questions dealt with the extent of employee involvement in the pay-for-knowledge plan. Responses to these questions are shown in Table V.15. These data suggest that employees in pay-for-knowledge facilities participated in matters related to the administration of the pay-for-knowledge plan, but that they tended not to have final say. For instance, on average, respondents disagreed that they would modify the plan simply because of employee complaints. On the other hand, employee approval of prospective changes was sought by some respondents, and employees' opinions were often taken into consideration when these changes were being considered.

Several questions addressed the issue of performance appraisals of pay-for-knowledge employees. The relevant information is summarized in Table V.16. The table shows that performance appraisal systems in many facilities were somewhat tailored for the pay-for-knowledge plan. Training in conducting performance appraisals was sometimes provided. Furthermore, supervisors more often than peers were evaluated on the basis of how well they did performance appraisals of pay-for-knowledge employees.

Problems with first line supervisors have often been reported in pay-for-knowledge facilities. Data on this issue are shown in Table V.17. In general, respondents' reports on this matter did not correspond to previous reports. Reasonable support for the pay-for-knowledge plan was reported among first line supervisors. Also, respondents tended to disagree with statements that the first line supervisors did not like the pay-for-knowledge plan, and that the plan had created tensions among first line supervisors.

Respondents in both unionized and non-unionized facilities were asked their opinions of the interaction of pay-for-knowledge dynamics with labor concerns. These data are shown in Table V.18. In this context, it may be recalled that only one of the 19 facilities was unionized. Respondents tended to agree that pay-for-knowledge plans may cause some difficulties related to labor issues, such as making boundaries between bargaining units fuzzy, and blurring distinctions between labor and management. Respondents were also likely to report that labor unions distrusted and did not support pay-for-knowledge plans. On the other hand, few respondents reported using pay-for-knowledge to minimize the probability of being unionized. Thus, many of the opinions of respondents in non-unionized facilities about labor-related issues offer a marked contrast to the opinions and experiences of respondents in the two unionized facilities (these were reported in the previous section).

A final issue concerned the respondents' overall attitudes about the pay-for-knowledge plan. Information in this regard is shown in Table V.19. Respondents showed moderately positive overall attitudes about the pay-for-knowledge plan. Most thought it would be a mistake to discontinue the plan, and many respondents felt that pay-for-knowledge should be used in all their corporations' facilities. Opinions were not as strong about the cost-benefit balance of pay-for-knowledge plans, or about the discrepancy between anticipated and actual benefits of the pay-for-knowledge plan.

Table V.15

Employee Involvement in the Pay-for-Knowledge Plan
(N=19)

Question	Mean*
Our employees participated in developing the specifics of the pay-for-knowledge plan	4.8
While employees can suggest changes in the pay-for-knowledge plan, they cannot decide whether these changes will be made	4.9
We have a pay-for-knowledge plan because our employees wanted it	3.7
We wouldn't modify the pay-for-knowledge plan just because our employees complained about it	2.8
We only make changes in our pay-for-knowledge plan when the employees approve of them	3.8
All in all, our employees have very little say in how our pay-for-knowledge plan is administered	2.7
We often ask for employees' opinions about how the pay-for-knowledge plan is working	5.5
We take employees' opinions into account when making changes in our pay-for-knowledge plan	5.8

* Response Options

1 = Strongly Disagree
2 = Disagree
3 = Slightly Disagree
4 = Neither Agree nor Disagree
5 = Slightly Agree
6 = Agree
7 Strongly Agree

Table V.16

Performance Appraisals of Pay-for-Knowledge Employees

Question	Mean*	Number Reporting
Pay-for-knowledge employees are evaluated on how well they do performance appraisals of their coworkers	3.1	19
Supervisors are evaluated on how well they do performance evaluations of pay-for-knowledge employees	4.1	16
Our performance appraisal system was specifically tailored for our pay-for-knowledge plan	5.8	17
People doing the performance appraisals of pay-for-knowledge employees receive extensive training in conducting performance appraisals	4.1	17

* Response Options

1 = Strongly Disagree
2 = Disagree
3 = Slightly Disagree
4 = Neither Agree nor Disagree
5 = Slightly Agree
6 = Agree
7 = Strongly Agree

Table V.17

First Line Supervisors in Pay-for-Knowledge Facilities
(N=17)

Question	Mean*
Our first line supervisors are very supportive of the pay-for-knowledge plan	5.5
Using pay-for-knowledge has caused many tensions among our first line supervisors	2.9
Our first line supervisors don't like our pay-for-knowledge plan	2.1

* Response Options

1 = Strongly Disagree
2 = Disagree
3 = Slightly Disagree
4 = Neither Agree nor Disagree
5 = Slightly Agree
6 = Agree
7 = Strongly Agree

Table V.18

Opinions Regarding Labor Issues

Question	Mean*	Number Reporting
We use a pay-for-knowledge plan largely because we don't want organized labor here	3.7	19
Labor unions strongly support pay-for-knowledge plans	2.8	18
Pay-for-knowledge plans make it more difficult for unions to organize a work force	5.2	19
Pay-for-knowledge plans make boundaries between collective bargaining units fuzzy	4.7	18
Pay-for-knowledge plans make contract negotiations with unions very difficult	4.2	19
Organized labor is generally opposed to pay-for-knowledge plans	4.9	18
Pay-for-knowledge plans reduce the chance of employees forming a union	4.4	18
Labor unions distrust pay-for-knowledge plans	5.0	18
Pay-for-knowledge plans blur distinctions between labor and management	4.2	18

* Response Options

1 = Strongly Disagree
2 = Disagree
3 = Slightly Disagree
4 = Neither Agree nor Disagree
5 = Slightly Agree
6 = Agree
7 = Strongly Agree

Table V.19

Overall Attitudes

Questions	Mean*	Number Responding
I think it would be a big mistake to discontinue our pay-for-knowledge plan	6.1	19
Pay-for-knowledge has given up greater flexibility to respond to changes in our product market	5.6	19
If we were to stop using pay-for-knowledge, I would seriously consider quitting	3.3	19
If we had things to do all over again, I would recommend against using a pay-for-knowledge plan	1.5	19
I really wish we didn't use a pay-for-knowledge plan	1.4	19
If I had my way, we would use pay-for-knowledge plans in all our facilities	5.1	19
Overall, our pay-for-knowledge plan has been very successful	5.4	19
If other companies knew of our experiences, they would want to begin using pay-for-knowledge plans immediately	4.6	19
I would try to use pay-for-knowledge in any other organization where I might work	5.2	19
All in all, the costs of pay-for-knowledge plans far outweigh their benefits	3.3	18
Pay-for-knowledge plans don't come anywhere near their touted benefits	2.6	18

* Response Options

1 = Strongly Disagree
2 = Disagree
3 = Slightly Disagree
4 = Neither Agree nor Disagree
5 = Slightly Agree
6 = Agree
7 = Strongly Agree

Two other questions in the survey asked respondents' overall opinions of the success of their pay-for-knowledge plans. For both questions, the average response on a seven-point scale was 5.2 (N=18), indicating that respondents considered the pay-for-knowledge plans in their facilities to have been reasonably successful.

In short, then, pay-for-knowledge facilities tended to have at least moderate levels of employee involvement and first line supervisor attitudes. Performance appraisals were tailored to the pay-for-knowledge plan. Respondents considered union attitudes toward pay-for-knowledge to be somewhat negative. Overall, most respondents thought their pay-for-knowledge plans were reasonably successful, and many would consider using such plans again.

V.11: Summary

Data were obtained from personnel directors of 19 pay-for-knowledge facilities. The information showed that pay-for-knowledge plans were generally found in non-unionized manufacturing facilities, and among production employees. Corporate or local management usually took the initiative in installing pay-for-knowledge plans. Pay-for-knowledge plans in the sample had an average of nine skill units, and about two years were needed for employees to move through the complete plan. Typically, issues of employee growth and development, work force flexibility, and leaner staffing were the reasons for using pay-for-knowledge plans. Pay-for-knowledge facilities tended to use team-based management approaches and emphasized interpersonal skills. Pay-for-knowledge plans were seen as improving employee attitudes and product quality. Managerial commitment and "fit" between the pay-for-knowledge plan and overall managerial philosophies were seen as critical to the success of the pay-for-knowledge plan. Pay-for-knowledge plans were not viewed as posing serious labor or legal problems. Overall, pay-for-knowledge plans were considered to be reasonably successful, and most respondents indicated that they would continue to use pay-for-knowledge in the future.

CHAPTER VI

INDIVIDUAL EMPLOYEE RESULTS

This chapter examines the attitudes and characteristics of individual employees at three plants that use a pay-for-knowledge system. While in most cases identical survey items were used to assess attitudes, the specifics of the pay-for-knowledge system differ from one organization to another. These differences were detailed in Chapter III. In summary form, both Plant A and Plant B have the "purest" pay-for-knowledge system; when employees are judged as having mastered a skill unit, their pay is increased. In contrast to many of the plants discussed in Chapter IV and to Plant C, clerical employees are included in the pay-for-knowledge system. In Plant C, wage rates are determined by the number of skills that have been learned and a performance component, i.e., how well each skill is performed. In addition, all three plants have a few employees who have elected to be in a vertical skill plan, that is, rather than mastering many skills in a number of different areas, the individuals become increasingly skilled in one particular skill area.

Specifically, several issues of interest are addressed in this chapter. These include:

- What are the characteristics of workers in the three pay-for-knowledge plants?
- How do employee attitudes in pay-for-knowledge plants compare to attitudes in non-pay-for-knowledge plants?
- How do employee attitudes compare across the three pay-for-knowledge plants?
- What are the effects of changing from a traditional to a pay-for-knowledge compensation system?
- What are the relationships between attitudes and behaviors among pay-for-knowledge employees?

VI.1: Characteristics of Workers in Plants A, B, and C

Table VI.1 contains the demographic characteristics of employees in the three plants. In addition, the characteristics are also displayed by whether or not the employees were part of the pay-for-knowledge system.

As can be seen from the table, the bulk of employees responding to the survey were covered by the pay-for-knowledge system. The kind of employees covered varies, however, from organization to organization. These characteristics should be kept in mind when considering the results presented in the remainder of this chapter. In Plants A and B, all non-supervisory employees were included in the pay-for-knowledge plan. In Plant C, pay-for-knowledge employees were those involved directly in production, while non-pay-for-knowledge employees were those in clerical ranks. Those employees in supervisory or managerial ranks did not participate in the survey program.

Table VI.1

Demographic Characteristics
of Workers in Plants A, B, and C.

	Plant A (N=140)			Plant B (N=101)			Plant C (N=112)*		
	PFK Employees	Non-PFK Employees	Total Work force	PFK Employees	Non-PFK Employees	Total Work force	PFK Employees	Non-PFK Employees	Total Work force
	83%	17%	100%	82%	18%	100%	88%	12%	100%
Sex:									
Female	16%	8%	15%	22%	33%	23%	45%	100%	51%
Male	84	92	85	78	67	77	55	0	49
Education (highest level)									
Less than high school graduate	3%	0%	2%	4%	0%	3%	1%	0%	1%
High school graduate	57	13	49	40	7	35	50	42	49
Some college/technical	40	29	38	48	40	48	42	50	43
College graduate	1	50	10	2	27	6	5	8	6
Some graduate work	0	8	1	5	13	6	2	0	2
Graduate degree	0	0	0	1	13	3	0	0	0
Ethnicity:									
Black	8%	8%	8%	7%	7%	7%	14%	8%	13%
Oriental	2	0	1	0	0	0	1	0	1
American Indian	1	0	1	1	0	1	1	8	2
Spanish surname	3	0	2	0	7	1	14	17	14
White	87	92	88	90	87	90	70	67	70

Table VI.1 (cont.)

Demographic Characteristics

	Plant A (N=140)			Plant B (N=101)			Plant C (N=112)*		
	PFK Employees	Non-PFK Employees	Total Work force	PFK Employees	Non-PFK Employees	Total Work force	PFK Employees	Non-PFK Employees	Total Work force
Size of Community of Origin·									
Rural	49%	42%	48%	30%	36%	31%	34%	42%	35%
Suburban town	5	8	6	18	29	19	21	25	22
Small city (<100,000)	20	33	22	41	21	38	18	8	17
Large city (>100,000)	26	17	24	11	14	12	27	25	26
Mean Age	28.5	35.8	29.8	29.4	39.9	30.9	28.9	29.5	29.0

* demographics from wave 2 survey,

Note: Failure of columns to total 100% reflects rounding error.

Plants A and B had predominantly male employees while Plant C was more evenly divided between the sexes. The preponderance of men in the non-pay-for-knowledge ranks of Plant A reflects the preponderance of men in the supervisory and managerial ranks. The preponderance of women in the non-pay-for-knowledge ranks of Plant C reflects the exclusion of clericals (mostly women) from the pay-for-knowledge system and the non-participation of supervisory personnel (mostly men) in the survey.

Virtually all employees in the three organizations possessed high school diplomas, and between one-third and one-half had some college or technical study. Thus, the employees whose attitudes were being studied were, on average, better educated than the U.S. work force.

Respondents in Plants A and B were overwhelmingly white, perhaps reflecting the relevant labor force in their locations. Plant C had a greater diversity in its ethnic make-up, and mirrors the relevant labor force for its area. Respondents in the three plants also tended to report having grown up in either small cities or in rural areas.

The average age in all three plants was about the same. The plants had, on average, a relatively youthful work force. This probably is a result of the plants themselves being relatively young at the time of the surveys.

VI.2: Comparison of Attitudes Across Pay-for-Knowledge and Non-Pay-for-Knowledge Plants

In most instances, the survey items relevant for this investigation were included in the surveys administered in all three plants. In addition, we obtained attitudinal responses from employees of two other plants which did not have pay-for-knowledge systems. These plants, referred to here as Plants Y and Z, were similar in size to the three pay-for-knowledge plants that were the focus of this chapter. They also had a similar work force composition. They differed in technology, in pay system, and in the age of the organization (both were older establishments). The data were collected in early 1974 by G. Douglas Jenkins, Jr., and Edward E. Lawler, both then associated with the Institute for Social Research. The survey instrument used was an earlier version of the MOAQ (see Cammann et al., 1983, for details).

Plant Y, a firm which produces ball bearings in rural Connecticut, had been in operation for approximately 11 years. The management style could easily be described as "traditional authoritarian." Its pay system was also traditional. While ostensibly "merit-based," in practice, it was primarily a system based on the job class of the incumbent and the length of service to the firm. Plant Z, a machine shop located near Columbus, Ohio, had been in operation for about 20 years. It had been experimenting with a participative management system for about seven months prior to the survey administration. The bulk of the work force could be described as skilled machinists. Its pay system was performance-based within three broad categories determined by experience, training, and expertise. Some attention was given to the difficulty and importance of the job performed in assigning individual wage rates. The system had been participatively developed by the employees themselves and installed four months earlier. (Details of the development of this plan are found in Jenkins & Lawler, 1981.)

These firms will be used here for comparison purposes, since they vary in types of pay systems used, and one differs in the type of managerial structure and philosophy from the three pay-for-knowledge plants in this study. For both organizations, the responses of supervisory and managerial personnel are included in the data. Thus, in terms of the types of employees covered, Plants Y and Z parallel Plants A and B.

The reader is cautioned that, given the absence of strict matching and pre-post intervention measures, strong attribution of causality with respect to any differences observed in the data cannot be made. The results from surveys of the two comparison non-pay-for-knowledge companies are presented only to provide a benchmark for the attitude responses in the pay-for-knowledge companies.

Table VI.2 contains a number of attitude items for which comparison data were available from the non-pay-for-knowledge companies. Attitude items were measured on a seven-point Likert-type agree-disagree scale. For purposes of presentation, the responses have been collapsed into three categories: agreement (strongly agree and agree), mixed feelings (slightly agree, neither agree nor disagree, and slightly disagree), and disagreement (disagree and strongly disagree). The means presented are the original item means of the seven-point response anchors where (1) is strongly disagree and (7) is strongly agree.

As can be seen from the table, there are marked differences in attitudes among the five plants. In over half the cases, the attitudes of employees in the pay-for-knowledge plants were significantly more favorable than those of employees at Plant Y (see Table VI.2, column F^C). The attitudes of employees in Plant C were generally less favorable than the attitudes of employees at Plant Z, the participative non-pay-for-knowledge firm. While a number of factors may contribute to these observed differences it is intriguing to note that employees of Plant Y had less favorable attitudes than employees in the participative plants (Plants A, B, C, and Z). Moreover, in two of the three, the pay-for-knowledge plants generally had more favorable attitudes than did a similarly participative plant without a pay-for-knowledge system. It should be noted in this context that the pay-for-knowledge system in Plant C was markedly different from the ones in Plants A and B and that non-supervisory personnel (clerical employees) who are <u>not</u> covered by the pay-for-knowledge system are included in the responses for Plant C.

VI.3: Comparison of the Three Pay-for-Knowledge Plants

To increase the reliability of the attitude measures and to reduce the data to more manageable proportions, attitude items were averaged to form scales, each ranging from one to seven. High values indicate a large amount of the scale name and low values indicate small amounts or the absence of the attitude named in the scale. The constitutent items used to form each scale can be found in Cammann et al. (1983).

Determinants of Pay

As noted earlier, Plants A and B had virtually identical plans: pay increases followed the learning of a new skill. In these plants, a skill was judged to have been learned when an employee's co-workers evaluated him/her as having mastered the skill. Each new skill learned was worth the same amount. The pay-for-knowledge plan in Plant C was somewhat different: different skills

Table VI.2

Selected Survey Item Responses Across

Pay-for-Knowledge and Non-Pay-for-Knowledge Plants

Item		Plant A (N=140)[a]	Plant B (N=101)	Plant C (N=112)	Plant Y (N=136)	Plant Z (N=93)	F	F_c[b]
General Satisfaction								
All in all, I am very satisfied with my job.	Percent Disagree	0.7	4.1	9.1	14.8	8.5		
	Percent Agree	68.8	64.9	68.2	42.2	50.0		
	Mean	5.70	5.51	5.32	4.66	5.06	9.85**	28.06**
In general, I like working here.	Percent Disagree	1.4	1.0	2.7	2.4			
	Percent Agree	89.7	85.2	77.5	66.1	N/A[c]		
	Mean	6.13	5.99	5.80	5.50		9.06**	20.34**
Organizational Involvement								
What happens to this company is really important to me.	Percent Disagree	.7	2.0	4.5	5.5	2.4		
	Percent Agree	86.2	76.5	70.5	64.1	84.5		
	Mean	6.12	5.86	5.63	5.41	6.08	8.26**	1.27
I don't care what happens to this company as long as I get my pay check.	Percent Disagree	87.6	82.2	70.5	68.3	87.9		
	Percent Agree	1.5	4.0	6.3	6.4	1.2		
	Mean	1.71	2.02	2.41	2.28	1.66	7.75**	0.45
Intent to Turn Over								
I often think about quitting.	Percent Disagree	66.2	74.0	59.8	42.9	62.7		
	Percent Agree	3.6	8.0	17.9	23.8	12.0		
	Mean	2.45	2.46	2.95	3.63	2.84	9.96**	15.89**
I will probably look for a new job within the next year.	Percent Disagree	73.0	66.4	59.8	53.7	57.2		
	Percent Agree	5.8	8.0	14.2	18.7	14.2		
	Mean	2.31	2.58	2.95	3.15	2.92	5.33**	9.41*

Table VI.2 (cont.)

Selected Survey Item Responses Across

Pay-for-Knowledge and Non-Pay-for-Knowledge Plants

Item		Plant A	Plant B	Plant C	Plant Y	Plant Z	F	F_c
Pay Satisfaction								
Considering my skills and effort I put into my work, I am very satisfied with my pay.	Percent Disagree	27.4	24.0	36.4	60.9	34.9		
	Percent Agree	63.7	12.0	16.3	28.2	48.1		
	Mean	4.80	3.71	3.37	3.24	4.24	15.91**	1.19
I am very satisfied with my pay.	Percent Disagree	13.9	12.3		49.2	22.6		
	Percent Agree	43.0	37.8	N/A	9.6	21.5		
	Mean	4.74	4.59		2.92	3.87	29.44**	60.89**
Pay Fairness								
My pay is fair compared to the pay of others in this company.	Percent Disagree	8.7	7.0	26.1	44.6	20.2		
	Percent Agree	48.6	27.7	19.8	18.7	29.8		
	Mean	4.88	4.40	3.80	3.25	4.12	18.03**	19.26**
My pay is fair considering what other places in this area pay.	Percent Disagree	7.2	7.0	31.5	22.0	16.8		
	Percent Agree	58.3	28.0	17.1	35.4	39.7		
	Mean	5.19	4.54	3.64	4.31	4.51	10.18**	0.00
Pay Administration Satisfaction								
All in all, pay is administered very well in this organization.	Percent Disagree	6.1	8.0	41.4	24.6	16.4		
	Percent Agree	64.6	29.7	18.0	26.6	58.3		
	Mean	5.11	4.45	3.31	4.03	4.72	11.51**	7.80*
I am very content with the way management haldles pay.	Percent Disagree	7.4	13.9	44.1	46.9	17.0		
	Percent Agree	38.7	31.6	14.4	16.4	30.5		
	Mean	4.69	4.19	3.06	3.09	4.37	25.16**	3.83
I feel the pay system should be kept as it is.	Percent Disagree	37.0	24.0	52.2	75.2	23.4		
	Percent Agree	48.9	21.0	7.3	12.8	61.0		
	Mean	4.15	3.76	2.73	2.68	4.53	30.41**	0.12

* $p < .05$

** $p < .01$

Notes: [a] N's vary slightly from item to item due to missing data. All probability levels for F were calculated using 120 df in the denominator.

[b] F_c is the F statistic of a post/hoc comparison between Plants A, B & C and Plants Y & Z using the conservative critical F of $(g-1) \times F_{(g-1,120)}$. [See Scheffe' (1959)].

[c] Question was not asked.

were worth different numbers of points; the number of points was later translated into an hourly wage. In addition, each employee in Plant C was evaluated by a supervisor on how well the employee performed the new skill, thus incorporating a performance component into the award of pay increases.

It was expected that respondents in the three plants should perceive different factors as important in the determination of individual wages. Pay-for-knowledge employees in Plants A and C were asked to rate the importance of ten factors in determining pay. These ten factors were collapsed into four categories: characteristics of the employee and the job (education, responsibility, training, job pressure, etc.), individual job performance (quality, productivity, and effort), work group performance, and overall plant performance. The perceptions of the importance of these pay determinants for pay-for-knowledge employees in the two plants are contained in Table VI.3. As can be seen from the table, the employees in the two plants had somewhat different views on what determines pay both with respect to rank order and absolute importance of factors. In Plant A, individual performance was seen as the most important determinant, followed by group performance, organizational performance, and employee and job characteristics. Respondents in Plant C saw organizational performance as the most important determinant, followed by group performance, individual performance, and, finally, employee and job characteristics. Given the explicit design of the system in Plant C, it would appear that either the system is not functioning as designed (for example, perhaps earned increases were withheld or delayed because of organizational-level productivity problems), or that there is a serious misperception on the part of employees as to the factors that in fact determine pay levels. The ordering of pay determinants among Plant C employees was especially surprising since these employees saw a stronger pay-performance contingency (mean=4.56) than did employees in Plant A (mean=4.12, see Table VI.4).

Employee Attitudes

Table VI.4 compares the attitudes of employees in the three pay-for-knowledge plants. The particular scales shown in the table were selected to reflect attitudes that should be particularly influenced by the differences in pay system characteristics. Pay-for-knowledge employees in Plants A and B reported significantly higher levels of job satisfaction than did pay-for-knowledge employees in Plant C. The same was true with respect to feelings of organizational involvement. In terms of internal work motivation (the feeling of self-worth and accomplishment from performing a job well) and self-report of effort, Plant C employees were somewhat higher than employees in Plant A, with Plant B employees in between. A similar pattern was observed for self-reports of employee effort.

Employees in Plant C reported significantly stronger feelings of internal pay inequity than did employees in Plants A and B. This may arise from the subjective performance component that the pay-for-knowledge system in Plant C includes. It may also result from bottlenecks to training for new jobs that frequently occur in very young pay-for-knowledge plans (the plan had been in effect less than 18 months compared to five years and six years for Plants A and B respectively). The lower levels of external pay equity experienced in Plant C could also be attributed to the plant's youth. It was noted in Chapter II that pay-for-knowledge systems are often designed to start employees at below market wages. The plan in Plant C may not be mature enough to have achieved equity with wages paid for similar skill levels by other companies in the area.

Table VI.3

Perceived Determinants of Pay in Plants A and C

Pay Determinants		Plant A (N=140)	Plant C (N=112)	t
Employee and job characteristics	Mean	4.92	4.11	
	SD	1.45	1.76	3.99*
Individual Performance	Mean	5.77	4.71	
	SD	1.18	1.52	6.21**
Group Performance	Mean	5.22	5.17	
	SD	1.50	1.89	0.23
Organizational Performance	Mean	5.17	5.30	
	SD	1.97	1.79	-0.69

*p<.01
**p<.001

Scale: (1) Very unimportant to (7) Very important

Table VI.4

Employee Attitudes in Three Pay-for-Knowledge Plants

		Plant A	Plant B	Plant C[a]	F[b]
Job Satisfaction	Mean	5.90	5.88	5.55	
	SD	0.85	0.81	1.24	3.81*
	N	112	83	95	
Organizational Involvement	Mean	6.14	5.93	5.63	
	SD	0.92	0.93	1.36	5.65**
	N	113	83	95	
Internal Work Motivation	Mean	6.02	6.18	6.25	
	SD	0.62	0.74	0.72	3.08*
	N	116	82	95	
Self-reported Effort	Mean	5.96	6.20	6.32	
	SD	0.88	0.62	0.75	5.87**
	N	114	82	95	
Internal Pay Equity	Mean	4.23	4.42	3.83	
	SD	0.96	1.27	1.59	4.95**
	N	111	83	95	
External Pay Equity	Mean	5.17	4.38	4.20	
	SD	1.58	1.10	0.71	18.75**
	N	115	83	95	
Personal Pay Equity	Mean	3.46	3.91	3.54	
	SD	0.87	1.20	1.56	3.44*
	N	112	83	95	
Pay Satisfaction	Mean	4.97	4.63	3.71	
	SD	1.41	0.95	1.58	23.06**
	N	116	83	95	
Pay Administration Satisfaction	Mean	4.06	4.13	3.02	
	SD	1.52	1.13	1.56	17.66**
	N	112	3	95	
Pay-Performance Contingency	Mean	4.12	4.47	4.56	
	SD	1.78	1.08	1.55	2.35
	N	110	83	95	
Understanding of the Pay System	Mean	5.15	5.28	5.31	
	SD	1.38	1.41	1.20	0.42
	N	110	83	95	

Table VI.4 (cont.)

Employee Attitudes in the Three Pay-for-Knowledge Plants

		Plant A	Plant B	Plant C	F
Strength of Existence Needs	Mean	5.47	6.06	6.09	
	SD	1.33	0.98	1.02	9.75**
	N	115	83	95	
Strength of Social Needs	Mean	5.45	5.78	5.99	
	SD	1.35	1.41	1.31	4.23*
	N	116	83	95	
Strength of Growth Needs	Mean	5.73	6.02	5.71	
	SD	1.09	1.00	1.15	2.25
	N	116	83	95	

*p<.05
**p<.01

a Data are from the wave 2 attitude survey.
b Critical values of F are based on df = 2,120.

With respect to pay satisfaction and satisfaction with the way in which pay is administered, Plant C was markedly lower than plants A and B. This result may not necessarily be a function of differences in the pay-for-knowledge plans at the plants; rather, it could be a function of the employee's perceived lower wage levels relative to market that results from a short time in the system and differences in the importance of extrinsic (pay) needs among respondents. The average tenure of employees in Plant C was less than ten months, compared to about three and a quarter years in Plant A. At the same time that relative wage levels were lower in Plant C than in Plant A, employees in Plant C reported much stronger existence needs (mean=6.09) than did employees in Plant A (mean=5.47, $t=3.71$, $p<.01$).

Finally, there was no identifiable pattern across the plants with respect to the strength of social and growth needs. Social needs were strongest in Plant C and weakest in Plant A; growth needs of Plant B employees were stronger than the growth needs of employees in Plants A and C.

In summary, the differences in employee attitudes at the three pay-for-knowledge plants seem not so much a function of differences in the pay-for-knowledge plans in use as of the interaction between the stage of development of the plan, the perceptions employees hold about the plan, and the particular configuration of needs among employees.

It would be interesting to explore this hypothesis in Plant C when its plan is at the same level of maturity as those in Plants A and B. This exploration could determine if job satisfaction, pay equity, pay satisfaction, and satisfaction with pay administration increase in Plant C as the pay-for-knowledge plan matures, while effort, internal work motivation, and pay-performance contingencies retain their relatively high levels. If the hypothesis were supported, it would suggest that pay-for-knowledge plans with a performance component may be more effective than those without it.

Table VI.5 sheds some light on this notion. Plant C was the only facility for which longitudinal attitude data were available. Surveys were conducted approximately 8 months, 20 months, and 32 months after plant start-up. Table VI.5 reports employee attitudes in these surveys. As can be seen there are few significant trends over the three waves of data, although some changes are noteworthy. Pay satisfaction and satisfaction with the way pay is administered improved over time. There were no changes in feelings of internal and external pay equity, but there was a slight (though nonsignificant) increase in feelings of personal equity. Over the same period, there were marginally significant decreases in job satisfaction, organizational involvement, self-reported effort, and internal work motivation.

These longitudinal results show tentatively that as a pay-for-knowledge plan matures, satisfaction with pay, satisfaction with the way that pay is administered, and feelings of personal equity may increase. Clearly, the results are not sufficiently strong to address the question of whether the pay-for-knowledge system in Plant C is superior to the systems in Plants A and B. But this is surely one area in which additional research is warranted.

Table VI.5

Employee Attitudes by Survey Admiristration - Plant C*

Attitude	Wave 1	Wave 2	Wave 3	F	df	p
Job Satisfaction	5.64	5.55	5.20	2.61	2,239	.07
Organizational Involvement	5.73	5.63	5.29	2.28	2,238	.10
Internal Work Motivation	6.38	6.25	6.03	4.69	2,238	.01
Self-reported Effort	6.52	6.32	6.20	3.16	2,238	.04
Internal Pay Equity	3.84	3.83	3.80	0.01	2,238	.99
External Pay Equity	4.12	4.20	4.12	0.30	2,237	.74
Personal Pay Equity	3.35	3.54	3.83	1.79	2,237	.17
Pay Satisfaction	3.55	3.71	4.07	2.34	2,238	.09
Pay Administration Satisfaction	3.09	3.02	3.49	2.15	2,238	.10
Pay-Performance Contingency	4.02	4.56	4.08	3.50	2,238	.03

* Scale values range from 1-7, where 7 indicates a high value on the scale.

VI.4: Effect of Changing From a Traditional to a Pay-for-Knowledge Compensation System

Serendipitously, at the time of the first survey, employees in one small area of Plant C, maintenance mechanics, were operating under a traditional compensation system. As noted in Chapter II, it is frequently more difficult to develop a pay-for-knowledge system for the skilled trades than for production workers. The management of Plant C had not completed the development of the mechanics' pay-for-knowledge system until about six months after the administration of the first survey. At the time of the first survey, the job of maintenance mechanic carried a specific hourly rate; anyone hired into that position was paid that rate. Measures of mechanics' attitudes before and after the implementation of a pay-for-knowledge system are presented in Table VI.6.

As can be seen, most attitudes among mechanics, especially those directly addressing pay, became more favorable between the first and second surveys, and many attitudes continued to improve between the second and third surveys. While most of these changes failed to achieve statistical significance, largely due to the small number of mechanics at the plant (N=6), the pattern of the means showed a consistent improvement over time.

Care should be taken in generalizing from these results, given the small sample size and unique characteristics of the job incumbents. To our knowledge, however, this is the only example of pre-post data for the installation of a pay-for-knowledge system, and is therefore suggestive.

VI.5: Relationships Between the Attitudes and Behaviors of Pay-for-Knowledge Employees

Thirty-three months of attendance data were collected on pay-for-knowledge employees in Plant C. The frequency of absence episodes was totaled for each month and then averaged for the period following a survey administration up to, but not including, the month of the next administration. The periods were numbered by the survey wave that preceded them. Frequency measures of absence were chosen because research shows them to be more strongly related to employee attitudes than duration measures.

Table VI.7 shows the average incidence of absence by attendance period for pay-for-knowledge employees (systematic attendance data were not maintained on the non-pay-for-knowledge employees). The employees averaged .53 absence episodes per month during Period 1, .69 absence episodes per month during Period 2, and .58 absence episodes per month during Period 3. It should be noted that these results include those employees who joined the organization after a survey administration, those who terminated during the absence period and those who declined to participate in the survey program. Given the evidence that absences increase prior to turnover (Gupta and Jenkins, 1982), these frequencies while, low, may be inflated.

Table VI.8 contains correlations between employees' attitudes at each survey administration and the average monthly number of absence episodes for pay-for-knowledge employees in the period that followed.

Table VI.6

Attitude Across Time for Mechanics*

Attitude	Wave 1	Wave 2	Wave 3	F	p
Job Satisfaction	5.41	6.05	6.41	1.81	.21
Organizational Involvement	4.88	5.75	6.50	.89	.43
Internal Work Motivation	6.23	6.66	6.31	1.03	.39
Self-reported Effort	6.50	6.33	6.50	.05	.96
Internal Pay Equity	3.66	4.27	5.58	1.43	.28
External Pay Equity	3.38	4.25	4.50	6.15	.02
Personal Pay Equity	2.56	4.29	5.31	2.55	.12
Pay Satisfaction	2.97	5.04	5.31	3.36	.07
Pay Administration Satisfaction	2.15	3.44	5.22	3.96	.05
Pay-Performance Contingency	3.64	4.33	4.88	.45	.65

* Scale values range from 1-7, where 7 indicates a high value on the scale.

Note: df=2,15

Table VI.7

Monthly Absence Episodes by Absence Period

	Period 1	Period 2	Period 3
Mean	0.54	0.69	0.58
Standard Deviation	0.49	0.46	0.32
Skewness	1.19	1.37	0.43

Table VI.8

Correlation Between Employee Attitudes and Monthly Absence Episodes by Period

	Average Monthly Absence		
Variable	Period 1-Wave 1	Period 2-Wave 2	Period 3-Wave 3
Job Satisfaction	-.07	-.04	-.23**
Organization Involvement	.11	-.06	-.20*
Internal Work Motivation	.06	.02	-.13
Self-report Effort	-.04	-.05	-.07
Internal Pay Equity	-.12	-.21**	-.11
External Pay Equity	-.00	-.13	.03
Personal Pay Equity	-.19	-.19*	-.12
Pay Satisfaction	-.24*	-.27***	-.16
Pay Administration Satisfaction	-.23*	-.15	-.02
Pay-Performance Contingency	-.18	-.13	-.21*

* $p<.10$

** $p<.05$

*** $p<.01$

As can be seen from the table, there were few significant correlations between employee attitudes and absence frequency. There were, however, twice the number of significant correlations expected by chance. Absences were related to pay satisfaction during Periods 1 and 2, to pay administration satisfaction in Period 1, to personal pay equity during Period 2, and to job satisfaction, organizational involvement, and pay-performance contingency during Period 3.

The absence of more significant relationships may be accounted for by the relatively few number of absences observed, general unreliability in absence measures, and the departure of the absence data from normality; absences in all three Periods were skewed to the right (see Table VI.7).

If the magnitude of the correlation is disregarded, however, and one looks only at the direction of relationships, a clear pattern emerges: the more favorable the employee attitudes, the lower the average frequency of absence episodes.

VI.6: Summary

Employee attitudes in three pay-for-knowledge plants were compared to employee attitudes in two non-pay-for-knowledge plants. Attitudes that should be directly influenced by a pay-for-knowledge system were generally more favorable in the pay-for-knowledge plants. When attitudes in the three pay-for-knowledge plants are compared, they tend to be somewhat more favorable in the plants that do not include a performance component in the system and that are more mature. Some data in one plant suggest that the pay-for-knowledge-related attitudes may improve as the pay-for-knowledge plan matures. Changing from a traditional to a pay-for-knowledge compensation system may also lead to more positive attitudes. Finally, in one pay-for-knowledge plant, the data show a weak, but consistent relationship between employee attitudes and the frequency of absences by employees.

CHAPTER VII

CONCLUSIONS AND IMPLICATIONS

Several research questions were of interest in this study, and the data provide at least tentative answers to most of these questions. In this section the results of the study are integrated, conclusions from the data discussed, some implications of the findings for policy issues are derived, and a research agenda for the future is developed. It should be emphasized in this context that the findings from this study are tentative, and that the research effort was exploratory in nature. Thus, firm conclusions and strong causal relationships should not be inferred.

VII.1: Integration

Several issues were of interest in this investigation. These can be summarized into a number of major questions, including the following:

- How prevalent are pay-for-knowledge systems, and where do they exist?
- What are the characteristics of pay-for-knowledge systems?
- What are the major costs and benefits of pay-for-knowledge systems?
- What are the conditions under which pay-for-knowledge systems are likely to succeed or fail?
- What labor issues are relevant in using pay-for-knowledge systems?
- What is the future of pay-for-knowledge systems?

Answers to these questions, obtained from the different data sources, are discussed in the remainder of this section.

Prevalence of Pay-for-Knowledge Systems

The first major issue of interest was the frequency with which American corporations were using pay-for-knowledge systems. This issue was addressed in the corporate data. Among the corporations studied, 12 out of 154 reported that they used pay-for-knowledge in at least one of their plants. Since the sample was drawn to be representative of large U.S. corporations, it is safe to say that approximately 7.8% of corporations are using pay-for-knowledge plans in at least one of their facilities. These data suggest that pay-for-knowledge plans are not as uncommon as some of the previous speculation would indicate.

Beyond the prevalence issue, the study sought data concerning the kinds of organizations that used pay-for-knowledge. Using Standard Industrial Classification Codes (SIC), we found that the 12 corporations using pay-for-knowledge were distributed as follows: five in the manufacturing industries, three in the wholesale and retail trade industries, one in the transportation, communications, electric, gas and sanitary services industries, one in the finance, insurance and real estate industries, and one in the service industry. One conglomerate could not be classified. This distribution of corporations across industries challenges a common myth about pay-for-knowledge plans -- that

these compensation systems are found primarily in manufacturing organizations.

Of the 19 plants that provided plant data, almost all were manufacturing facilities. Only one reported being in a service industry. This result might suggest that manufacturing plants using pay-for-knowledge are more likely to share information about themselves, thus gaining greater visibility, and promoting the myth that pay-for-knowledge plans are most commonly found in these kinds of organizations.

With respect to industry type, then, the corporate and plant data suggest that, although pay-for-knowledge plans occur in various industrial settings, most information about these plans is likely to stem from manufacturing environments.

We are also interested in the size and work force characteristics of corporations and plants using pay-for-knowledge. We found that corporations using pay-for-knowledge plans tended to be somewhat larger than those not using pay-for-knowledge. In 1983, the median number of employees in pay-for-knowledge organizations was 5,550; the organizations' median sales were $395.7 million; and their median income was $21.6 million. On average, these corporations had 39 subsidiaries and 16 international operations. An average of about 16% of the employees in these corporations were covered by collective bargaining agreements.

The plant data showed that pay-for-knowledge plants employed an average of about 500 employees, of whom about two-thirds were male. About 70% of the employees in these plants were covered by the pay-for-knowledge plan. In general, pay-for-knowledge employees had at least completed high school; only about 7% did not have high school diplomas. The average length of service among pay-for-knowledge employees ranged from 3.8 years for professional/technical employees to 11.3 years for managerial employees. Production workers were covered by pay-for-knowledge plans more often than other types of workers. They were followed by clerical and skilled trades employees. Three plants also had professional/technical employees in their pay-for-knowledge plan, and two had managerial employees and/or first line supervisors. While the plants ranged in age from less than one to 60 years, none of the pay-for-knowledge plans was older than 15 years: 45% of the plans had been in effect less than five years, 25% between five and 10 years, and the balance (30%) between 10 and 15 years.

In summary, these data show that pay-for-knowledge plans are more prevalent than originally anticipated, that they occur across several industrial categories, that they are more likely to be found in larger corporations, and that they can cover almost all types of employees. These data dispel two myths about the prevalence of pay-for-knowledge -- first, that these plans occur overwhelmingly in manufacturing organizations, and, second, that they typically cover only production employees.

Characteristics of Pay-for-Knowledge Systems

The study addressed several key concerns regarding the general characteristics of pay-for-knowledge plans in use. These included:

- The specifics of the pay-for-knowledge plan;
- Innovations accompanying the use of pay-for-knowledge;

- The extent of employee involvement; and
- The role of the first line supervisor.

Specifics of the Pay-for-Knowledge Plans. Corporations using pay-for-knowledge plans were asked to describe the general characteristics of their plans. Overall, it appeared that most corporate officials were not too familiar with the details of the pay-for-knowledge plans.

In describing their pay-for-knowledge plans, one respondent mentioned that unionized employees were covered by the plan, three mentioned that there was a performance component in the evaluation of skill mastery within their plans, and one mentioned a focus on the continued retention of skills previously mastered.

As noted, however, corporate interviews were generally not of great use in pinning down the specifics of different pay-for-knowledge plans. It appeared that corporate personnel were somewhat unfamiliar with the details of the pay-for-knowledge plans used in their facilities. As a consequence, we relied more heavily on plant data for this information.

All the pay-for-knowledge plans in the plant data source were installed after 1969, with half of them begun since 1980. Most of the plants (73.7%) were the first ones in their corporation to use a pay-for-knowledge plan. In about two-thirds of the cases, local or corporate management had suggested that pay-for-knowledge be used in the facilities. One myth about pay-for-knowledge plans is that they require start-up or "greenfield" situations to avoid the necessity of overcoming problems of history and organizational culture. In our sample of plants, 75% initiated the pay-for-knowledge plans at start-up. The remainder installed the system in facilities ranging from three to forty-eight years in age. These data dispel the "greenfield" myth common in the literature (Jenkins & Gupta, 1985).

The plant data also showed that the pay-for-knowledge systems in use are generally horizontal rather than vertical. They range widely in the number of skill units included, the maximum and minimum number of skill units employees can or must learn, and the length of time required to learn a skill unit or go through the entire pay-for-knowledge system. Companies also vary in the emphasis on performance appraisals and on skill retention. Common to most pay-for-knowledge systems was the use of some form of team-based management system, the use of at least some input from team members in performance appraisals, the existence of some mechanism to ensure skill retention, and the presence of some problems as the logistical mechanics of the pay-for-knowledge system unfolded. Most plants in the sample also indicated that, although starting rates for pay-for-knowledge employees are lower than the local market, employees who have progressed through at least part of the pay-for-knowledge system earned higher than market wages.

Most of the pay-for-knowledge systems identified were relatively young, having been in existence for five years or less. Thus, they were just beginning to experience some anticipated problems of mature pay-for-knowledge systems, such as "topping out" and the alienation of employees not covered by the pay-for-knowledge system. It is interesting to note that, although many plants expect to have problems with respect to "topping out," few have developed creative solutions to these; most plants have reverted to annual cost-of-living adjustments at this juncture.

Overall, the plant data showed that the pay-for-knowledge plans in the sample were generally installed at the direction of local or corporate management and tended to include about nine skill units. About six months were needed to learn each skill unit, and an employee could move through the pay-for-knowledge plan in about five years. Supervisory evaluations represented the most common form of performance appraisals. Generally, wage increases were tied directly to mastery of skill units, and the number of skill units learned was the primary determinant of wage rates. Skill retention was given some emphasis in most pay-for-knowledge plans studied. Pay-for-knowledge plants typically reported paying their employees higher than prevailing wages.

Other Innovations. Because pay-for-knowledge plans are rarely developed in isolation from other innovations, both corporate and plant respondents were questioned about the innovations that accompanied the use of pay-for-knowledge in their organizations. Corporate respondents generally reported the use of a team approach to management and the use of employee participation.

The plant data were more informative. Here, respondents indicated whether or not any of 25 innovations occurred within their facilities. Responses indicated that innovations commonly accompanying pay-for-knowledge include open-door policies, enriched jobs, interpersonal skills training, team approach to management, employee stock ownership plans, and human resources planning. Features that were rarely included with pay-for-knowledge include two-tier wage systems, job-sharing, cafeteria-style benefits plan, profit-sharing, quality circles, and permanent part-time employment.

Plant respondents were also asked, in an open-ended question, which organizational systems were specifically designed to be consistent with their pay-for-knowledge plan. Responses included the use of work teams or a team-based structure; the use of team leaders rather than first line supervisors; an all-salaried work force; the absence of time clocks; the general organizational structure; a communications plan; the process of hiring, training, and orienting employees; the equipment layout; and the development of close relationships among employees through the use of small groups.

These data suggest that pay-for-knowledge plans are concerned with interpersonal issues, and that such innovations as the use of teams, the selection of employees who "fit" into the system, and communications across hierarchical levels are generally designed to maximize the potential benefits of pay-for-knowledge.

Employee Involvement. It is commonly argued that plants using pay-for-knowledge plans are participative, and that employees are heavily involved in the development and implementation of the pay-for-knowledge plan. This issue was addressed by the plant data source. Respondents were asked to indicate how their organizations felt about employee involvement in several areas. The data suggest that employees in pay-for-knowledge facilities participate in matters related to the administration of the pay-for-knowledge plan, but would not modify the pay-for-knowledge plan simply because of employee complaints. On the other hand, employee approval of prospective changes was sought by many respondents, and employees' opinions were often taken into account when these changes were being considered.

These data indicate that pay-for-knowledge plants may indeed be able to strike the delicate balance between participation and permissiveness, an approach to pay-for-knowledge that Lawler (1978) has advocated.

First Line Supervisors. Lack of support from first line supervisors has often been reported in pay-for-knowledge facilities (Jenkins & Gupta, 1985; Lawler, 1978; Poza & Markus, 1980; Walton, 1982; Walton & Schlesinger, 1979). The plant data addressed this issue briefly. In general, our finding did not correspond with previous reports. Reasonable support for the pay-for-knowledge plan was reported among first line supervisors. Also, respondents disagreed with statements that first line supervisors did not like the pay-for-knowledge plan, and that the plan had created tensions among them.

Summary. Overall, these results support some arguments about the nature of pay-for-knowledge systems, and simultaneously dispel some myths. The results show that pay-for-knowledge plans do in fact use skill blocks to reward employees; that many include a performance component, reducing the likelihood of employees becoming "jacks of all trades and masters of none"; and that these plans are present in plants that are participative and emphasize interpersonal issues. On the other hand, the results contradict the myths that pay-for-knowledge plans require start-up or "greenfield" situations for successful implementation, that they neglect the retention of previously learned skills, that plants using pay-for-knowledge are too permissive in their emphasis on participation, and that these plans can lead to serious problems among first line supervisors.

Costs and Benefits

Many costs and benefits of pay-for-knowledge plans have been noted, but do they really occur? Is work force flexibility increased as a result of pay-for-knowledge? Is work force flexibility something organizations value? Answers to these kinds of questions were explored with the different data sources.

Corporate Responses. Corporate respondents reported both on their overall evaluation of pay-for-knowledge, and on several specifics. These respondents were asked if, overall, using pay-for-knowledge had been beneficial for their corporation. All respondents answered affirmatively. Subsequently, when these individuals were asked in what specific ways pay-for-knowledge had been beneficial, 25% of the respondents mentioned employee growth and development and 17% mentioned work force flexibility. Another benefit that was mentioned by one corporation was increased employee commitment.

Generally, corporate responses show that, while corporate officials generally feel positive toward the use of pay-for-knowledge, they are uncertain about exactly what benefits pay-for-knowledge affords to their corporations. Thus, more specific information was sought once more from plant data.

Plant Responses. Eleven separate outcomes were investigated in the plant data, with respondents indicating on a seven-point scale how much pay-for-knowledge promoted each one. Outcomes identified most often as being promoted successfully by pay-for-knowledge were greater work force flexibility, improved employee satisfaction, more employee commitment, enhanced employee motivation, and increased output per hour worked. There was less agreement on some of the other outcomes. For example, only about half the respondents saw pay-for-knowledge as reducing labor costs and layoffs respectively, and only about a

third saw pay-for-knowledge as producing lower absenteeism and voluntary turnover. There was some support for the argument that pay-for-knowledge may reduce the probability of layoffs.

Another outcome commonly associated with the use of pay-for-knowledge is leaner staffing. Close to two-thirds of the plants reported that if they were not using a pay-for-knowledge plan, they would need more production employees, more skilled trades employees, and more first line supervisors. The need for extra clerical, administrative, managerial, and professional/technical employees was not reported as often. Respondents also indicated that total employment levels, the number of supervisory employees, and the number of nonmanagerial employees were lower than they would be without pay-for-knowledge. Overall, the data suggest that the employee types whose numbers are least affected by use of a pay-for-knowledge plan are managerial, professional/technical, clerical, and administrative employees; larger numbers of production, supervisory, and skill trades employees may be needed by companies not using a pay-for-knowledge plan.

It is often argued that administrative costs are higher in plants with pay-for-knowledge systems. This argument was not upheld by the data. Only one plant reported that administrative costs were somewhat higher because it had a pay-for-knowledge plan. Overall, although training costs were considered higher by many respondents, administrative costs in general were seen as about the same. This dispels another myth about pay-for-knowledge--that it increases administrative costs (Jenkins & Gupta, 1985).

The sample pay-for-knowledge firms, on average, consistently reported improved employee-management relationships, higher levels of employee performance and motivation, and better quality of product or service than would exist in a non-pay-for-knowledge facility otherwise similar to theirs. Superiority in other outcomes of relevance was also reported.

Respondents also indicated that many measures of organizational functioning were superior to what they would be without pay-for-knowledge. These included output per hour worked, unit production costs, and labor costs per unit of production.

Finally, two questions asked respondents' overall opinions of the success of their pay-for-knowledge plans. For both questions, the average response on a seven-point scale was 5.2, indicating that plant respondents, like the corporate respondents, considered the pay-for-knowledge plans in their facilities to have been reasonably successful.

Individual Responses. Individual-level responses examined the attitudes and behaviors of employees under pay-for-knowledge plans. These data suggest that attitudes of employees are generally similar to those in comparable participative but non-pay-for-knowledge plants. In pay-for-knowledge plants, attitudes tend to improve as the plan matures. Attitudes also tend to improve as a facility changes over from a traditional to a pay-for-knowledge compensation system. These attitude improvements may be reflected in more desirable behaviors as well, since weak but consistent attitude-behavior linkages were discovered.

Summary. Taken together, the results show that pay-for-knowledge plans are viewed positively by the organizations and individuals using them. Typically, the outcomes enhanced by pay-for-knowledge include employee development, work force flexibility, employee satisfaction, reduced absenteeism and turnover, leaner staffing, and product quality. These benefits were expected. Surprisingly, there were few reports of increases in labor and administrative costs.

Conditions Affecting Success of Pay-for-Knowledge Plans

It is generally acknowledged that pay-for-knowledge plans cannot work in all organizations under all circumstances. Thus, it is important to delineate the conditions that contribute to the success or failure of pay-for-knowledge plans.

Corporate respondents had various opinions on this issue. Among the conditions these respondents enumerated as necessary for success were favorable labor-management relationships, a greenfield site, suitable jobs in the plant, the "right kind" of employees, and the appropriate local culture. Among the conditions seen as preventing success were employee resistance, lack of local managerial support, and union resistance. These responses support many hypotheses about the circumstances in which pay-for-knowledge should be used.

Plant respondents were also asked to rate key variables responsible for the success of a pay-for-knowledge system. Emphasis on employee growth and development, local managerial commitment, and employee commitment levels in the organization were deemed to be instrumental in determining the success or failure of their pay-for-knowledge system. The overall management philosophy was also identified as a key determinant of pay-for-knowledge success. In addition, work force flexibility, or the ability to move employees across jobs as needed, was seen as contributing to the success of pay-for-knowledge plans. Finally, employee selection procedures, emphasis on employee training, and employee participation in the administration of the plan were generally considered to be contributors to the success of the system.

Regarding conditions that may produce difficulties in the use of pay-for-knowledge, plant respondents reported that, to some extent, the following factors could create problems: "kinks" in the actual working of the pay-for-knowledge plan, insufficient training of employees, problems with performance appraisals, and inadequate training or supervisors.

One other issue was of interest, namely, what kinds of employees are best suited to a pay-for-knowledge plan. Plant respondents were asked an open-ended question concerning which types of employees were most suitable. Responses focused on the needs and aspirations of employees (e.g., the desire to grow and improve) and their skills (e.g., education and intelligence, and interpersonal, leadership, communications, and planning skills). Thus, plant respondents validated the argument that social and interpersonal skills, motivation, and a desire for growth and development are critical characteristics for employees covered by pay-for-knowledge plans.

Overall, these data support many of the hypotheses regarding conditions necessary for the success of pay-for-knowledge, such as managerial commitment to the plan, a good "fit" between the kinds of employees covered by pay-for-

knowledge and the nature of the organization, emphasis on training, and so forth.

Labor Issues

The data sources provided tentative answers to several labor relations issues, including the following:

- How prevalent are pay-for-knowledge systems in unionized settings?
- What potential problems do pay-for-knowledge plans pose for labor-management relationships?
- What are the attitudes of organized labor toward pay-for-knowledge plans?
- Can pay-for-knowledge plans succeed in unionized settings?

In interpreting these data, the reader should recall that managerial, and not labor, representatives provided the relevant information. Thus, this section presents managerial perceptions of labor attitudes, rather than labor attitudes per se.

Prevalence. It is generally argued that pay-for-knowledge plans will not be found in unionized settings. One exception to this is the work of Tosi and Tosi (1986). One purpose, then, was to determine the frequency with which pay-for-knowledge plans exist in unionized plans. In the twelve corporations in the corporate sample using pay-for-knowledge plans, about 7% of the pay-for-knowledge employees were also covered by collective bargaining agreements. Of the 19 plants in the plant data source, one had pay-for-knowledge employees who were covered by union contracts. These data show that pay-for-knowledge plans in unionized settings are rare, but they are by no means non-existent.

Problems with Labor-Management Relationships. Several potential problems with labor-management relationships have been identified in the literature. These include resolving the mechanics of compensation patterns, work assignments, jurisdictional disputes, and the clouding of distinctions between labor and management.

Compensation patterns tend to be more difficult to specify through contract negotiations in pay-for-knowledge plants than in plants with "traditional" compensation systems. In the latter case, the structure of wages across jobs is typically determined by the firm, and the rate of increase in wages is negotiated through collective bargaining. In pay-for-knowledge plants, however, the pattern of compensation within the firm is determined by voluntary choices of individuals to learn a skill, and pay increases are associated with these choices. To remain an effective determinant of compensation patterns, the collective bargaining process must therefore focus on pay increments associated with different skills, rather than on the overall level of compensation. This requires considerably more detailed negotiations than is usually present in the collective bargaining process.

Another problem centers on job assignment rules. Skill-based compensation systems are generally associated with a team approach to the production process; workers can perform several tasks within the team. This implies that management

must have reasonable flexibility in making work assignments. Job assignment rules are typically a basic concern in collective bargaining negotiations; the degree of management discretion in work assignments is a continual source of tension in management-labor relationships. Job assignment rules are usually specified in detail in collective bargaining contracts. Since a major potential benefit of a pay-for-knowledge system is greater flexibility to respond to new situations, job assignment rules can be a source of increased conflict where skill-based pay and the collective bargaining process meet.

Beyond the potential for conflict and tensions with respect to management and labor prerogatives, job assignments can create another difficulty in unionized pay-for-knowledge systems. It is quite likely that the array of skills in the production process in pay-for-knowledge plants cuts across the jurisdiction of several unions. For example, an employee with three skills could potentially belong to three different unions, depending on the specific job performed at a particular time. Jurisdictional disputes are therefore possible regarding this aspect of pay-for-knowledge systems.

The potential for conflict is exacerbated by the fact that job assignment procedures are often tied to seniority systems in union contracts. In traditional compensation systems, firms have an incentive to create and maintain seniority systems, since their investment in training can be protected by increasing job security. Economic theory suggests that the higher wages and greater job security enjoyed by more senior workers are part of a system of unwritten "implicit contracts" between firms and workers. The implicit contracts give both parties the incentive to invest in firm-specific human capital (Flanagen, 1984). The formal system of wage increases for new skills that is typical of pay-for-knowledge seem to make the payoffs for acquiring firm-specific skills explicit. Under pay-for-knowledge, the firm is less likely to need a seniority system to encourage workers to invest in firm-specific training. Thus, the interaction of skill-based pay, seniority, and collective bargaining may be a source of conflict.

Another potential labor relations problem stems from the team approach to production that is commonly found in plants with skill-based pay. When the team approach is used, a team member is often appointed to serve as the liaison with management. Team leaders thus take on many functions typically performed by a first line supervisor. From a collective bargaining perspective, this blurs the distinction between management and labor, and could conceivably cause problems in the definition of the bargaining unit.

In short, skill-based pay plans have been hypothesized to pose several unique problems for labor-management relationships. What do our data say about these issues? In general, since the plant data dealt more specifically with pay-for-knowledge issues, they tend to be more illuminating than the corporate or individual data on this matter.

Respondents in both unionized and non-unionized plants were asked about their perceptions of the interaction of pay-for-knowledge and organized labor. Respondents tended to agree that pay-for-knowledge plans may cause some difficulties related to labor issues, such as making boundaries between bargaining units fuzzy, and blurring distinctions between labor and management. Respondents were also likely to report that labor unions distrusted and did not support pay-for-knowledge plans. On the other hand, few respondents reported using pay-for-knowledge to minimize the probability of being unionized, although

many of them thought that pay-for-knowledge plans could indeed make it more difficult for unions to organize a work force.

It may be recalled that only two plants in this dataset were unionized. The perceptions of respondents from these two plants offered a marked contrast to those obtained in non-unionized settings.

Respondents from these two plants were asked about the concerns of organized labor during the development of the skill-based compensation system. Both plants reported concerns about the specific mechanics of the pay-for-knowledge system, and the role of the union is implementing these mechanics. Jurisdictional disputes, however, were not reported by either respondent as being a concern among unions during the development of the skill-based pay plan. With respect to the operation of the pay-for-knowledge plan, respondents reported similar labor concerns again.

Another issue of interest was the extent of union involvement in the pay-for-knowledge plan. The broad objectives and the details of the skill based pay plan were jointly developed by union and management in one case, and with the active involvement of the union in the other. Union rank-and-file, shop stewards, local and national union leadership, and local and corporate management were all reported as having moderate to a great deal of "say" in contract negotiations about the pay-for-knowledge plan. In general, respondents also did not see much change in union influence as a result of the pay-for-knowledge plan.

No grievances or unfair labor practice charges relating to skill-based pay plans were reported by either respondent. Seniority rights regarding layoffs, overtime, job assignments, and eligibility for training were not considered different from what they would have been without pay-for-knowledge. Movements of employees across skill units were specified in the collective bargaining contract in one of the two plants.

In short, the data show that, although unions have many concerns about the development and implementation of pay-for-knowledge plans, these concerns can generally be handled effectively through labor-management cooperation.

Attitudes of Organized Labor. Because of the perceived threats discussed above that pay-for-knowledge plans can pose to labor concerns, it is generally believed that organized labor will react negatively to these plans. This issue was addressed in both the corporate and plant datasets.

Respondents from unionized pay-for-knowledge corporations generally reported positive union attitudes; only one unionized pay-for-knowledge corporation indicated the presence of some union opposition. When asked about the feelings of organized labor in general to pay-for-knowledge plans, however, most corporate respondents indicated that they expected negative attitudes.

Thus, although local union leaders were seen as generally positive toward skill-based pay, respondents still perceived organized labor in general to be resistant to the idea. The resistance tended to be attributed to the potential of pay-for-knowledge for violating jurisdictional guidelines that were traditionally followed in collective bargaining settings. These managerial attitudes persisted despite the fact that no grievances, challenges, or other disputes were experienced by any corporation as a result of pay-for-knowledge.

These data indicate that, despite local labor-management cooperation, corporate personnel generally continue to believe that organized labor will oppose pay-for-knowledge plans, largely because pay-for-knowledge plans potentially violate many labor priorities.

The plant data source painted a similar picture. When only the two unionized plants were considered, favorable union attitudes toward pay-for-knowledge were evident. Respondents from both plants agreed that unions were supportive of their pay-for-knowledge plans. No grievances or unfair labor practices charges related to pay-for-knowledge were reported by either respondent. Both respondents reported further that the overall union-management relationships in their plants were moderately to very cooperative.

When all 19 plants in the dataset are considered, however, a different picture emerges. Many respondents believed that unions distrusted and did not support pay-for-knowledge, and that the use of pay-for-knowledge in unionized settings could cause problems.

With both corporate and plant data, then, the myth that labor unions and skill-based compensation are incompatible is supported by non-unionized pay-for-knowledge users. That both unionized pay-for-knowledge plants in the dataset had good labor-management relationships may provide a clue to explaining the discrepancy between the experience of unionized users and the beliefs of non-unionized users. When management and unions get along well, and when there is trust between the two parties, the use of pay-for-knowledge may pose no problem, but when labor-management relationships are antagonistic, the use of pay-for-knowledge in unionized settings may lead to severe difficulties.

Success of Pay-for-Knowledge Plans. A final issue of concern was the overall success experienced by pay-for-knowledge plans in unionized settings. Respondents from unionized pay-for-knowledge corporations, as well as respondents from unionized pay-for-knowledge plants, rated their compensation systems to be at least moderately successful. The outcomes and effectiveness of pay-for-knowledge in unionized and non-unionized settings were not perceived as being very different.

In short, pay-for-knowledge plans were seen as successful on many counts. Furthermore, presence of organized labor did not detract from these successes.

Summary. What emerges from these data is an interesting contrast between unionized and non-unionized firms. Non-unionized firms continue to believe that unions and pay-for-knowledge are incompatible. The experiences of unionized pay-for-knowledge firms belie this belief. Although unionized pay-for-knowledge organizations are few and far between, their perceptions of the interplay between pay-for-knowledge and unionization are positive. These organizations report the realities of pay-for-knowledge in unionized settings to be quite successful. Thus, our data, while incorporating only a few unionized pay-for-knowledge settings, do begin to dispel several myths about labor-management relationships and pay-for-knowledge plans.

The Future of Pay-for-Knowledge Plans

Given the dynamics, the costs, and the benefits of pay-for-knowledge plans, the following question arises: Would pay-for-knowledge users continue to use

these plans, or use them in other settings? This question was addressed with both the corporate and the plant data sources.

Corporate respondents indicated overwhelmingly that they would use pay-for-knowledge plans again in the right circumstances. Plant respondents also had a similar reaction. Most thought it would be a mistake to discontinue the plan, and many felt that pay-for-knowledge should be used in all their corporations' facilities. Opinions were mixed about the cost-benefit balance of pay-for-knowledge plans and about the discrepancy between the anticipated and actual benefits of these plans.

In short, the future of pay-for-knowledge plans appears moderately positive. Most users are reasonably happy with their plan and, given the right circumstances, would use them again.

Summary

This study explored how well the realities of pay-for-knowledge plans correspond with the myths that flourish about them. The results of our investigation support several "myths": that pay-for-knowledge plans are used in participative organizations; that they increase work force flexibility, promote employee growth and development, lead to leaner staffing, and contribute to lower absenteeism, lower turnover, and improved product quantity and quality; and that pay-for-knowledge plans require managerial commitment and the "right" kinds of employees to succeed. More interesting, the results dispel several myths: that pay-for-knowledge plans are used only in manufacturing facilities and only with production employees; that pay-for-knowledge plans require start-up or "greenfield" situations; that pay-for-knowledge plans cannot succeed in unionized settings; that these plans emphasize skill acquisition rather than skill retention; and that they increase administrative costs.

VII.2: Policy Implications

The results of this study, while tentative, suggest certain implications for organizational and national policy-makers. These implications are discussed below.

Organizational Policy-Makers

With respect to organizational policy-makers, several implications can be drawn from the data.

Organizational Benefits. The results suggest that pay-for-knowledge can be used to the organization's advantage in many ways. It can increase flexibility, the quality and quantity of output, quality of working life, and employee commitment while at the same time reducing costs, absenteeism and turnover, and helping the organization through leaner staffing. Although these benefits are possible under pay-for-knowledge systems, they cannot be realized without proper care and commitment. Organizations interested in implementing or modifying pay-for-knowledge plans, therefore, should keep several issues and caveats in mind. These are discussed below.

Organization Diagnosis. To work successfully, pay-for-knowledge systems must be implemented with great attention and care with respect to the specific situation. Our data, as well as the literature, suggest that pay-for-knowledge

must fit with the overall managerial philosophy of an organization. This implies that managerial attitudes, biases and preferences must be systematically examined to determine their consonance with pay-for-knowledge systems. As an innovative compensation system, pay-for-knowledge is unlikely to succeed in an otherwise traditional organization. Likewise, the data suggest that pay-for-knowledge systems work best with employees interested in growth opportunities, and those who have good interpersonal skills. Human resources planning efforts, therefore, should detail the nature of the work force, so that the resultant diagnosis can ensure a match between employee types and organizational strategies. The local culture can also have an impact on the degree of success an organization has with its pay-for-knowledge plan. Cultures that value growth, opportunity, and advancement are more suited to pay-for-knowledge than those that do not. A fit between these kinds of aspects and the pay-for-knowledge plan is necessary to maximize the benefits of the compensation strategy. A detailed diagnostic effort is therefore necessary prior to the decision to use pay-for-knowledge. The diagnosis may in fact reveal that pay-for-knowledge is inappropriate for a particular organization.

Managerial Commitment. Another prerequisite that our data and the literature indicate for pay-for-knowledge's success is managerial commitment at both the corporate and local levels. Without such commitment, the implementation of pay-for-knowledge is likely to falter. Organizations are also likely to regress under pressure and in times of crisis to a more traditional mode of operation, unless both corporate and local management is fully behind the pay-for-knowledge plan. Lack of commitment is probably responsible for the unreported failures of some pay-for-knowledge plans. Thus, pay-for-knowledge should not be used in settings where such commitment is lacking.

Ongoing Attention. Although our data show pay-for-knowledge plans to be more frequent than originally anticipated, they are still innovative, and many "kinks" in these plans have not been well addressed so far. It is impossible for an organization to have a "perfect" pay-for-knowledge plan yet. It is critical, therefore, that organizations be prepared to address the problems that arise through the ongoing use of pay-for-knowledge, problems such as feelings of inequity, topping out, bottlenecks, etc. It is essential that these logistical problems be anticipated, pre-empted, or, at the very least, addressed as they develop.

Other Innovations. Most successful pay-for-knowledge plans have been implemented in the context of other work innovations, most noticeably, participative management and the use of teams. Organizations must therefore be prepared to use pay-for-knowledge within a network of innovations. The use of pay-for-knowledge as the sole innovation in an otherwise traditional organization is likely to backfire. Rather, the approach to human resources management should be examined and designed *in toto* to increase the likelihood of pay-for-knowledge's success.

Labor Concerns. It has been argued that pay-for-knowledge is sometimes used to keep the organization non-unionized. In fact, most pay-for-knowledge companies in our sample were not unionized. Our data show, however, that the presence of labor unions does not automatically guarantee pay-for-knowledge's failure. Rather, with labor-management cooperation, pay-for-knowledge can realize great success in unionized organizations as well. Instead of viewing pay-for-knowledge as a tool for union avoidance, then, it appears more reasonable to view pay-for-knowledge as a tool for labor-management cooperation,

a vehicle whereby both parties work jointly to maximize gains for organizations and employees.

In short, pay-for-knowledge plans are not automatically guaranteed to work in all organizations under all conditions. Only great care and attention to detail can lead to the realization of their potential benefits. An organization must be aware of these concerns in its decision to use pay-for-knowledge.

National Policy-Makers

The results of this investigation also bear several implications for national policy-makers.

Productivity Increases. Pay-for-knowledge plans appear to improve the quality and quantity of output, reduce costs, and enhance the quality of work-life, at least as perceived by corporations, plants, and employees using these systems. As such, they hold the potential for stimulating productivity in the American marketplace. Furthermore, the multiskilled work force that pay-for-knowledge plans tend to produce is probably better suited to an environment of changing demands and changing skill needs. Organizations using pay-for-knowledge may be better able to adapt to economic and technological developments. Thus, encouraging the use of pay-for-knowledge, at least under certain conditions, may be beneficial to economic growth.

Labor-Management Relationships. As noted above, pay-for-knowledge plans do well in unionized settings *if* labor and management cooperate with each other. In this way, pay-for-knowledge plans may offer a mechanism to stimulate labor-management cooperation. This cooperative rather than adversarial relationship could then be used to promote other areas of agreement between the two parties. Thus, pay-for-knowledge plans could play a role in redefining the traditional relationships between organized labor and management.

Redefinition of Roles, Rights, and Responsibilities. Pay-for-knowledge plans run counter to many historical definitions of labor issues. Rigid job classifications, strict jurisdictional boundaries, etc., are not consonant with the use of pay-for-knowledge. These traditional roles and responsibilities, often legally determined, must be reexamined and, if necessary, redefined if pay-for-knowledge plans are to enjoy widespread use. Strict legal definitions and jurisdictions may no longer be appropriate under the changing economic conditions of our times, that is, if American business and industry is to reaffirm its role as an international leader. Redefinition of rights, roles, and responsibilities must be cooperatively attempted by management, labor, and the government.

Employment Stability. Our data show that pay-for-knowledge plans can offer leaner staffing for organizations and greater job security for employees. Most people would agree that these outcomes are desirable. Leaner staffing, however, may affect unemployment figures. On the other hand, greater job security reduces the drain on unemployment funds. It is therefore necessary to explore ways that the leaner staffing under pay-for-knowledge can be used to the national advantage. Employment stability must be encouraged; at the same time, efforts to increase employment opportunities must be undertaken.

Special Targets. Pay-for-knowledge plans appear to have greater success in certain types of settings -- smaller size, greenfield situations, etc. It may, therefore, be appropriate to offer special incentives to new small business openings for the use of pay-for-knowledge.

Increased Information. The data showed inconsistency between the experiences of pay-for-knowledge users and the beliefs of non-users along several dimensions, e.g., the consonance of pay-for-knowledge and unionization. This suggests that more information about pay-for-knowledge, its dynamics, its costs and benefits, etc., needs to be communicated to organizational policy-makers. With greater knowledge, organizations can make more informed decisions about the value of pay-for-knowledge for their companies.

In short, national policies concerning incentives for the selective use of pay-for-knowledge in the right circumstances could offer benefits in terms of productivity gains, quality of work life, employment stability, and labor-management cooperation. Furthermore, more information about pay-for-knowledge could lead to its wider use.

VII.3: Research Agenda

The present study was exploratory in nature. As such, it provided answers to many questions; it also left many other questions unanswered. This section discusses additional research questions raised by the study.

The data for this study were primarily the perceptions and opinions of respondents. No "hard" measures of productivity, profits, absences, turnover, etc., were available. Furthermore, the data were cross-sectional, precluding a longitudinal determination of the impact of pay-for-knowledge. Thus, the following kinds of research studies are still needed:

- Studies using pre-post designs to analyze the impact of pay-for-knowledge in ongoing organizations.
- Studies using control groups (e.g., matched "sister plants") to examine the effects of pay-for-knowledge in new organizations.
- Studies focusing on the transformation from traditional to pay-for-knowledge compensation systems.
- Studies that obtain "hard" measures of productivity and profits.
- Studies that rely on ongoing measurements rather than retrospective reports.
- Studies that compare experiences of companies with good and bad labor-management relationships.
- Studies that focus on pay-for-knowledge plans that have failed or experienced severe problems.
- Studies that compare the relative efficacy of horizontal and vertical pay-for-knowledge systems.

- Studies that examine the effectiveness of pay-for-knowledge among clerical and salaried employees.

- Studies that focus on the effects of pay-for-knowledge when accompanied by other compensation and non-compensation innovations.

- Studies of pay-for-knowledge when used without a participative managerial approach.

- Studies of pay-for-knowledge plans that have already matured.

- Studies of the economic impact of pay-for-knowledge on the marketplace.

In short, much still remains unknown about pay-for-knowledge dynamics. Given the promise and potential that these compensation systems hold, it is reasonable that future research efforts attempt to untangle some of these unresolved issues.

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