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Masters, John K., <u>Predicting the use of external labor arrangements: A transaction costs perspective</u>. Doctor of Philosophy (Organization Theory and Policy), December, 1998, 121 pp., 13 tables, 3 illustrations, 98 titles.

Firms' use of external labor arrangements (ELAs), such as temporary, contract and seasonal workers, has become increasingly prevalent over the last two decades. Despite the increasing importance of this phenomenon, little is known about firms' reasons for using ELAs. Most research to date has been exploratory, using qualitative methods or archival data not well suited to the constructs. The result of this research has been a long and often contradictory list of proposed antecedents of ELA use.

The failure to identify a consistent set of antecedents of ELA use stems, at least in part, from the lack of a theoretical framework to guide the research. Theory helps the researcher decide which constructs to include, how to measure those constructs, and the level of analysis to use in measurement. The lack of an a priori theory of ELA use has left the ex post interpretations of previous findings open to question with respect to the variables included in those studies, the constructs they measured, and the appropriateness of the level of analysis used.

In this study, I tested the ability of the transaction costs theory to predict when firms will fill a given job using an ELA rather that a permanent employment relationship. According to this theory, three characteristics of the job will determine whether the job will be filled using an ELA: transaction-specific investment, likelihood of repetition, and uncertainty of performance. Firms will be less likely to staff a given job using an ELA

when the job requires investment in idiosyncratic skills, when the firm is likely to require a person with that set of skills regularly, and when performance in that job is difficult to measure.

To test this theory, a survey was mailed to the human resource managers of firms which use ELAs asking them to describe the characteristics of the job most recently filled using an ELA and of the job most recently filled using a permanent employment relationship. Logistic regression was used to assess the ability of the model to predict the use of ELAs.

The model proved to be a significant predictor of ELA use. Two of the three main predictors were significant. ELAs were less likely in positions which required firm-specific skills and in positions which were likely to recur regularly. The ability to measure performance was not a significant predictor of ELA use. The interactions among these variables did not signi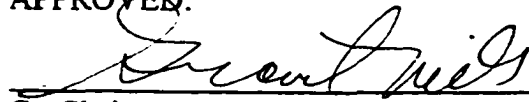ficantly improve the predictive ability of the model. Limitations of the study and directions for future research are discussed.

PREDICTING THE USE OF EXTERNAL LABOR ARRANGEMENTS:

A TRANSACTION COSTS PERSPECTIVE

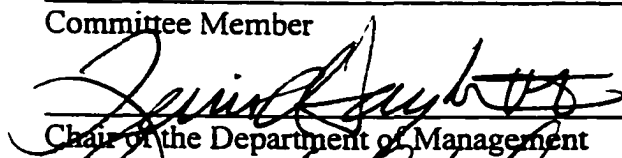John K. Masters, B.S., M.B.A.

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PREDICTING THE USE OF EXTERNAL LABOR ARRANGEMENTS:

A TRANSACTION COSTS PERSPECTIVE

DISSERTATION

Presented to the Graduate Council of the

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for the Degree of

DOCTOR OF PHILOSOPHY

By

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CHAPTER I

INTRODUCTION

One of the most prevalent and least understood trends in the management of organizations is the increasing use of external labor arrangements (ELAs). ELAs include the use of temporary, contract, part-time, and seasonal workers to meet staffing requirements (Pfeffer, 1994; Belous, 1989; Polivka & Nardone, 1989; Abraham, 1988; Pfeffer & Baron, 1988). Labor externalization has grown at a much faster rate than any other segment of the workforce and at many times the rate of the workforce as a whole (Belous, 1989). Howe (1986a) concluded that employment in the temporary help industry alone grew 211 percent in the decade from 1974 to 1984. Belous (1989) estimated the number of workers in ELAs at between 29.1 and 35.1 million, or from 24 to 29 percent of the U.S. labor force.

Many popularly held beliefs about the nature of ELAs have been challenged by recent findings. For example, the jobs being externalized are not limited to unskilled labor or clerical work. Applebaum (1987) found that professionals such as accountants and registered nurses make up a significant part of the external labor force. ELAs form an increasingly diverse and important part of the workforce. Moreover, ELA use does not appear to be driven by the desire to reduce labor costs, as is often assumed. Recent findings (Cohen & Haberfeld, 1993; Davis-Blake & Uzzi, 1993) suggest that the costs of ELAs are not lower than those for permanent employees. With the fall of many popularly

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held notions about ELA use, and the increasing prevalence of the phenomenon, an understanding of labor externalization has become increasingly important.

Statement of the Problem

Despite the size and growth of ELA use, few researchers have conducted empirical research on ELAs or their antecedents. Table 1 reviews the work done on ELAs to date and the methods used in those studies. That research which has been conducted has been almost exclusively exploratory and descriptive in nature. The result of such research has been a list of unrelated and often contradictory potential correlates of ELA use.

This list of proposed correlates includes lowered costs of salary and benefits, environmental uncertainty, demographic discrimination, skill specificity, the influence of powerful external constituencies, occupational differences, the need for bureaucratic control mechanisms, responses to bureaucratic control mechanisms, the influence of dual labor markets, firm size, site specificity, geographic location, and a host of other variables—in short, this research suggests that nearly everything results in ELA use. No one has yet systematically reviewed and compared the findings concerning ELAs to see whether a concise explanation is possible. Now the task of researchers is to organize these findings and to try to find any underlying patterns which will help in understanding the underlying reasons driving firms' use of ELAs.

The failure to identify a consistent set of antecedents of ELA use stems, at least in part, from the lack of theory in the area. As Sloane suggested, the research on ELAs has grown "in a theoretical vacuum" (1989, p. 131). Davis-Blake and Uzzi agreed that

research on ELAs has been "hampered by the lack of a theoretical framework" (1993, p.

257). This lack of theory raises several concerns about previous researchers'

interpretations of their finding.

TABLE 1

Methods Used to Study ELA Use

Study	Methods
Cohen & Haberfeld (1993)	Secondary data from 1990 Israeli census and the records of a temporary help service (THS) firm.
Davis-Blake & Uzzi (1993)	Secondary data from the Department of Labor's Employment Opportunity Pilot Project in 1979 and 1981
Jackle (1993)	Structured interviews with 153 temporary nurses
Benders (1991)	Case study of a sugar refining plant
Sloane (1989)	Qualitative interviews with 51 managers in Aberdeen, UK
Atkinson & Meager (1986)	Qualitative interviews with 72 managers in UK
Howe (1986)	Secondary data from the BLS supplement to the Current Population Survey for May, 1985
Mangum, Mayall, & Nelson (1985)	In-depth interviews with 80 employers, 15 THS managers, and 5 union representatives; secondary data from 1977 US Commerce Dept.; and mail survey
Carey & Hazelbaker (1984)	Secondary data from the Current Employment Statistics Survey and interviews with THS agencies and their customers

The first concern relates to the observed relationships between variables. Past

research has been conducted without an a priori theory of labor externalization. Without

benefit of theory, important relationships may be obscured. Schwab (1980) argued that

theory tells the researcher what constructs are important, how those constructs are related,

and why the constructs relate to each other as they do. This information is important. Omitting a variable can change the relationships the researcher finds. For example, variables that were strongly related when observed alone may prove unrelated when a new variable enters the equation. Conversely, some variables which have no effect independently may be significant predictors of ELA use when their interaction with other variables is considered. Theory tells the researcher which variables to include and which to omit. As the literature review in chapter two will be used to show, just such problems may have arisen with respect to ELAs. Recent studies (Davis-Blake & Uzzi, 1993; Cohen & Haberfeld, 1993) using multivariate analyses have found antecedent variables previously viewed as significant predictors of ELA use to be unrelated when new variables enter the equation.

A second issue concerns the interpretation of findings when the measures used have not been derived from theory. Cronbach and Meehl (1955) contended that an assessment of the construct validity of a measure is impossible without definitions derived from the nomological net. Previous studies of the determinants of ELA use have differed in their levels of analysis, the constructs studied, and the operational definitions of those constructs. Researchers have not been able to determine which variables are most important in predicting ELA use or even whether the different measures which have been significant predictors are measuring the same constructs or different constructs. As Cook and Campbell (1979) noted, researchers cannot know what a significant finding means if they do not know what they measured. Previous studies of ELAs have used measures not based on theory, raising concerns about the researchers' ex post

interpretation of their findings. Others have relied exclusively on secondary data which has not been particularly well suited to their constructs. Without a theory, the validity of the measures is open to question.

A third problem raised by the lack of theory concerns the appropriate level of analysis. Most studies of ELAs have based their analyses on the firm, asking when firms choose to use ELAs and when they do not. This dichotomous view of the firm as a user of ELAs or not contradicts the findings in these same studies that ELAs are not used in all positions in the firm. The researchers conducting these studies ask what kinds of firms use ELAs but not under what conditions--environmental, firm-specific, and job-specific-- ELAs will be used to fill a position in place of a permanent employment relationship. The latter question, when ELAs will be used to fill a given job, seems the more important question. Firms rarely, if ever, choose to use either all permanent employees or all ELAs. Indeed, nearly 90 percent of firms have used ELAs (Belous, 1989). The dichotomous operationalization of ELAs also omits the possibility that ELA use may reach a "critical mass" beyond which ELA use is harmful to the firm (Ettore, 1994).

The lack of theoretically-grounded research on ELAs has left the data open to multiple, conflicting interpretations. The researchers have little basis for the inclusion or exclusion of variables from their studies, the interpretation of the measures' meanings cannot be assessed, and no basis exists for the choice of the level of analysis. Although this exploratory work has served a valuable purpose, an explanation for the underlying reasons for ELA use will not progress without tests of theoretically based hypotheses.

Purpose of the Research

Nearly a decade ago, Pfeffer and Baron contended that an explanation for the growing use of ELAs "should be one of the primary tasks of scholars interested in organizations" (1988, p. 257). After years of research, though, the picture is, if anything, perhaps less clear. The question to be addressed is when firms choose to fill a job opening with ELAs rather than with permanent employment relationships. In this study, I suggest that the findings on the determinants of ELA use by firms can be reconciled within a transaction costs framework and I propose a model which does so. This model predicts which characteristics of the individual's job determine when a firm will use external labor arrangements to fill that position.

Theoretical Foundation

In searching for an explanation of ELA use, previous researchers have suggested any number of theories as ex post explanations for their findings. Most consistently, though, these researchers have turned to the transaction costs perspective, as expounded particularly by Williamson and his colleagues, in discussing their findings. Mangum, Mayall and Nelson (1985) used the transaction costs perspective to interpret their data ex post, while many others (Davis-Blake & Uzzi, 1993; Sloane, 1989; Pfeffer & Baron, 1988) cite Williamson in discussing their findings.

Transaction cost economics (TCE) is particularly appropriate as a possible explanation for the externalization of labor arrangements. TCE defines the firm in terms of those transactions which should be left to market mechanisms (externalized) and those which should be governed internally by bureaucratic or clan mechanisms within the firm

(Williamson & Ouchi, 1981; Ouchi, 1980; Williamson, Wachter & Harris, 1975). In short, TCE explicitly proposes to explain the conditions under which a firm will choose to externalize or internalize a given transaction. While traditional long-term employment relationships correspond to bureaucratic or clan governance mechanisms, external labor arrangements are governed by market mechanisms (Coase, 1937).

TCE proposes that the decision to use relationships within the firm to govern transactions rather than relying on the pricing mechanism of the market is based on which of the two governance mechanisms best minimize transaction costs. Transaction costs are those costs incurred due to the need for cooperative action (Ouchi, 1980). All costs can be divided into production costs, which add value to the goods or services being produced, and transaction costs, which arise solely from the need for exchange (Williamson & Ouchi, 1981). If an individual can produce a good or service without the assistance of others, and for his or her own use, transaction costs are not incurred. Transaction costs, then, are the frictions of exchange which add to the cost of goods and services over and above the costs necessary for their production and distribution. Since transaction costs add no value, total cost is minimized by their elimination.

TCE rests on two assumptions about human nature--bounded rationality and opportunism. Bounded rationality refers to the inability of individuals to fully incorporate all non-trivial considerations into their decision processes--particularly when faced with complex or dynamic decision environments. Opportunism is defined as "self-interest seeking with guile" (Williamson & Ouchi, 1981: p. 351). TCE does not require

that all people behave opportunistically, only that some people do so, and that it is costly to distinguish those who are opportunistic from those who are not.

Both bounded rationality and the potential for opportunistic behavior are required for transaction costs to arise. In the absence of bounded rationality, all possible contingencies for all time could be negotiated most efficiently by a single, all-encompassing contract. Such a contract need never be renegotiated and would constrain opportunism, since every contingency would be specified. Similarly, in the absence of opportunism, all parties could rely on each other to act in the spirit of their agreements and to deal fairly with each other as unforeseen contingencies arose. The problem of governing transactions occurs precisely because humans are neither free of opportunism nor perfectly rational (Williamson & Ouchi, 1981).

These behavioral assumptions only explain why transaction costs arise—they do not explain how such costs can be minimized. Three considerations determine the governance mechanism which will best minimize transaction costs: the level of uncertainty, the extent to which the transaction is likely to recur, and the level of transaction-specific investment required of the parties to the transaction (Williamson & Ouchi, 1981).

Williamson and his colleagues (e.g., Williamson & Ouchi, 1981; Ouchi, 1980; Williamson, 1975; Williamson, et. al., 1975) have generally been credited with developing the transaction costs perspective. The earliest work on transaction costs was conducted by Coase (1937), who first suggested that "the distinguishing mark of the firm is the supercession of the price mechanism" associated with market transactions (p. 386).

Several studies have provided empirical support for the transaction costs perspective

(e.g., Anderson, 1988; Klein, 1988; Harrigan, 1986; Monteverde & Teece, 1982).

Numerous studies have also tested the applicability of TCE to human resources.

Williamson, et. al. (1975) explicitly linked elements of the transaction costs perspective

to employment transactions, explaining the mechanisms which come into play. Klein

(1988) found specific human capital, in the form of technical knowledge, to be important

to General Motors' decision to buy Fisher Body. Specific human capital has also been

found to be related to the decision to internalize the research and development function in

firms (Pisano, 1990; Armour & Teece, 1980; Globerman, 1980). Studies by Walker and

Weber (1984) have also found support for the efficacy of transaction costs with respect to

the employment relationship. Anderson (1982) found both firm-specific skills and

demand uncertainty to predict internalization or externalization of the sales forces of

firms. The transaction costs perspective, then, has been well supported both generally

and with respect to human resources in particular. TCE is explicitly designed to explain

the conditions under which a firm will externalize or internalize transactions. As such,

the theory has the potential to serve as a good predictor of ELA use specifically.

Significance of the Research

Understanding the forces driving firms' use of ELAs grows more important as the

phenomenon becomes more prevalent. Feldman, Doerpinghaus, and Turnley (1994)

noted that temporary positions accounted for 20 percent of all new jobs created in the

U.S. between 1991 and 1993. Approximately 90 percent of the firms in the U.S. use

temporary workers, and a temporary service firm, Manpower, is now the nation's largest

employer (Belous, 1989). Given the widespread use of ELAs, this research has significant consequences for individuals, firms, society, and theory.

At the individual level, several authors have suggested that the use of ELAs may result in a permanent underclass of poorly trained and poorly compensated workers (Belous, 1989; Stevens, 1994a & b). Mangum, and his colleagues' (1985) work led them to conclude that firms are consciously creating two separate and distinct groups of workers: ELAs and permanent employees. Williamson, et. al. (1975) called the use of these two sets of employees in a single firm a firm internal labor market and Davis-Blake and Uzzi (1993) referred to the practice as the "new structuralist" perspective (p. 217). Firms' use of ELAs may also influence the lives of permanent employees. Barnett and Miner's (1992) study of career patterns in a Fortune 500 company found that the use of ELAs increased the time between promotions for poorly trained workers and decreased the time between promotions for workers with higher skill levels. Understanding when a job is likely to be externalized has important repercussions for workers both in ELAs and in permanent employment relationships.

At the firm level, Pfeffer has argued that "the recent trend toward using temporary help, part-time employees, and contract workers, particularly when such people are used in core activities, flies in the face of the changing basis of competitive success" (1994, p. 22). If employers are not using a quarter of the U.S. labor force irrationally, then the use of ELAs must in some way support the development of competitive advantage. Ettore (1994) suggested that overuse of ELAs may dilute a firm's core competency, flexibility, and performance and that inappropriate use of ELAs may reduce the satisfaction,

commitment, and productivity of both permanent and externalized workers. In support of the idea of an optimal use of ELAs, Berman and Larson (1994) presented a mathematical model purported to determine the optimum size of a temporary call-in labor pool for firms using ELAs. Kerwin and Dahlstrom (1994) reported that a major issue in a recent strike at General Motors' Buick plant was the use of ELAs. Such arguments make ELA use seem irrational. If the TCE perspective does predict when firms will use ELAs, however, then the use of ELAs may be seen to be economically rational. In such a case, firms' use of ELAs can be explained as an attempt to operate efficiently--to minimize transaction costs.

At the societal level, understanding ELA use is also important. For example, both Becker (1962) and Stevens (1994a, 1994b) have suggested that ELA use can result in underinvestment in training. A study of ELAs in the petrochemical industry (Kochan, Smith, Wells, & Rebitzer, 1994) found that a hesitancy to invest in training for externalized (i.e., contract) workers resulted in a significantly higher proportion of lost-time accidents among those workers than among their permanent counterparts. If efficiency explanations hold true, then public policies designed to discourage ELA use would be seen to be detrimental to the economy. If not, then such policies would be justified.

For theory, this research can serve two purposes: as an explanation for ELA use and as a rare test of all three constructs suggested by the transaction costs perspective in a single study. This study addresses many of the shortcomings of past research on ELAs and on TCE. First, no theory of ELA use has proven to significantly and consistently

predict firms' use of ELAs. If TCE does predict ELA use, people's understanding of many recent trends (downsizing, outsourcing, etc...) will be greatly enhanced. Second, previous studies have used an all-or-nothing approach to the question. Firms were assumed to be users of ELAs or not. The past research has not tested the reasons firms use ELAs in particular positions and not in others. By using a job level analysis in the present study, the antecedents of ELA use are likely to be more understandable. Third, this model tests two relationships previously untested. Although Pfeffer and Baron (1988) posited that the ability to monitor employee performance would be important to the decision to externalize, no one has yet tested this relationship. Neither has anyone tested whether the variables influencing ELA use change when interaction effects are considered.

As a test of TCE, the study also fills gaps in the research stream. As a recent debate highlighted, TCE is still a controversial subject (Ghoshal & Moran, 1996; Moran & Ghoshal, 1996; Williamson, 1996). Weick (1989) suggested that the cultivation of paradox is fertile ground for theory-building. Pfeffer's (1994) statement, quoted above, points out the apparent paradox inherent in the use of ELAs. If human resources are increasingly important as the basis for firms' sustainable competitive advantage, firms should not be externalizing that source of advantage and thereby risking its loss to competitors. Firms appear to be doing just that, however, when they use ELAs.

None of the tests of TCE and employment has yet tested all three of the constructs presumed in TCE to influence externalization. This research will serve to clarify the relationships between the constructs as well—particularly the relationship between

uncertainty and likelihood of repetition. Past research seems to have used these terms almost interchangeably. If the terms are not distinct, the theory does not need both constructs. Finally, no study has yet been able to test all three constructs and their interactions at once. By testing these relationships, this study will significantly enhance the understanding both of TCE and of ELAs. If TCE is a good predictor of ELA use, it will provide a much more parsiomonious explanation of the phenomenon than has heretofore been offered.

Definitional Issues

The transaction costs perspective suggests that firms choose to govern transactions based on the governance mechanism which will best minimize transaction costs. With respect to employment, the transaction is the decision to hire, or to retain, an employee to perform a given task or set of tasks. This transaction, the employment relationship between the worker and the firm, may be governed internally by hiring the worker as a member of the firm or externally by using an ELA. Three features of the transaction determine which governance mechanism will best minimize these costs: transaction specific investment, uncertainty, and the likelihood of repetition. Each of these terms requires definition. Transaction specific investment refers to the accumulation of skills the worker will require to perform the duties required of him or her. Likelihood of repetition refers to the regularity with which the firm is likely to require a worker with that set of skills. Uncertainty refers to the ability of the firm to assess the performance of those duties by the worker. Because of confusion in past research concerning the operational definitions of uncertainty and the likelihood of

repetition, the definitions of these constructs will be more fully specified in chapter two. The final construct which requires definition is that of ELAs themselves.

Pfeffer and Baron (1988) were among the first to discuss the phenomenon of ELAs. They suggested that labor externalization could take three forms: externalization of place, of duration, and of administrative control. Externalization of place refers to the use of work-at-home schemes and telecommuting, in which the workers are separated from the employer in terms of physical location. Externalization based on duration of employment concerns those workers who are directly employed by the firm, but whose employment is for a limited time, such as non-tenure-track faculty, construction workers hired until completion of a specific project, and other contract workers. Externalization of administrative control refers to workers who are nominally the employees of a firm other than the one for which they perform a service (e.g., a temporary help agency or business service firm). While these people work in jobs prescribed by the firm, their employer is, in fact, the temporary agency and they are paid by that agency. The employer of record receives a fee from the firm which includes the cost of the employee's wages, recruiting and administrative costs and any profit the agency may earn.

External labor arrangements, then, are those employment relationships in which the worker is "only weakly connected to the organization" on one or more of these dimensions (Pfeffer & Baron, 1988, p. 257). For the purposes of this paper, only the latter two categories (duration and administrative control) will be considered. As Polivka and Nardone (1989) point out, the key feature these two categories share is the lack of employment security. These two categories encompass "any job in which an individual

does not have an explicit or implicit contract for long-term employment" with the firm (Polivka & Nardone, 1989, p. 11). Such a categorization would subsume both externalization of duration (e.g., contract workers) and of administrative control (e.g., the employees of temporary help service firms).

Organization of the Proposal

This dissertation is organized in five chapters. This first chapter presents a brief introduction to the study. The chapter includes (1) a statement of the problem to be addressed, (2) the purpose of the research, (3) the theoretical foundation for the study, (4) the significance of the research, and (5) a definition of external labor arrangements.

Chapter II begins with a thorough review of the literature on external labor arrangements and relates that literature to the tenets of the transaction costs perspective. The findings of previous researchers will be related to these three tenets and the implications for measurement discussed. The chapter concludes with the hypotheses to be tested and the proposed research model.

Chapter III concerns the research design and methods used in the dissertation. After discussing the number and type of subjects to be included, the chapter turns to development of the survey measurement instrument, the procedures, and the methods of data collection and analysis.

Chapter IV presents the findings of the dissertation. The chapter begins with a description of the procedures used to screen the data for potential problems. The demographic characteristics of the sample are next described and compared to those of the U.S. labor force as a whole. The chapter next includes descriptive statistics for the

measures used and finally includes the results of the tests of the model as a whole and each variable individually.

Chapter V concludes the dissertation with an analysis of the findings and their implications for the field. The chapter then includes a discussion of the limitations of the study and an assessment of validity of the study. Finally, directions for future research are suggested.

Conclusion

Despite the significance of ELAs for practice and theory, research on the phenomenon to date has resulted in a list of apparently unrelated and often contradictory antecedents of the use of ELAs by firms. This confusion has been caused, at least in part, by the lack of a priori theory to guide the research. In this study, I propose hypotheses drawn from transaction costs theory and test the ability of the theory to predict firms' use of ELAs. This work will provide a significant leap forward in understanding the increasingly common use of ELAs.

CHAPTER II

REVIEW OF THE LITERATURE

Although firms' use of external labor arrangements (ELAs) has attracted the attention of researchers for well over a decade now (e.g., Gannon, 1978; Eccles, 1981; Mangum, et. al., 1985), the findings remain confusing, disorganized, and often contradictory. The blame for this state lies, at least in part, with the lack of a theoretical framework on which research can build (Sloane, 1989; Davis-Blake & Uzzi, 1993; Pfeffer, 1994). No general theory of labor externalization has yet proven to predict firms' use of ELAs consistently. In this chapter, the findings of previous research are organized and compared to give a clearer picture of the state of understanding in the field and then to examine the applicability of the transaction costs perspective to ELAs.

Following a brief historical overview, the chapter examines four sets of variables used in past research: cost variables, demographic variables, proxies for bureaucracy and, finally, transaction costs variables. This examination will show that, once the variables have been examined systematically, the transaction costs economics (TCE) perspective not only clarifies the findings of earlier researchers, but also predicts previously overlooked antecedents of ELA use. Next, the chapter reviews past research on TCE and employment. The chapter concludes with a model of ELA use, based on the TCE perspective, from which hypotheses are drawn.

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Historical Review

The study of ELAs is still in its infancy. No one has yet tested why firms choose

to externalize some positions and not others. A number of studies have provided clues to

this question in their studies of related research questions. Table 2 provides a list of

studies of ELAs and the research questions each asked.

Table 2

Studies of ELA Use and Related Topics

Study	Research Focus
Berman & Larson, 1994	Examined the relationship between training and accident rates among for temporary workers
Cohen & Haberfeld, 1993	Comparison of the demographic and wage characteristics of temporary workers and permanent employees
Davis-Blake & Uzzi, 1993	Firm-level analysis of the antecedents of ELA use, dichotomous treatment of firms as users or non-users of ELAs
Jackle (1993)	Exploration of why some nurses choose to work as temps
Kochan, Smith, Wells, & Rebitzer, 1991	Exploratory study of seasonal staffing variations in a single firm
Sloane, 1989	Exploratory study of firms' flexible staffing strategies
Williams, 1989	Temporary workers and wage levels
Atkinson & Meager, 1986	Exploratory study of firms' flexible staffing strategies
Howe, 1986a	The demographic characteristics of temporary workers
Mangum, Mayall, & Nelson, 1985	Exploratory study of firms' use of ELAs
Carey & Hazelbaker, 1984	Reasons for the growth of the temporary help service industry
Eccles, 1981	The reasons for the use of subcontractors in the construction industry

The questions addressed in previous studies include the characteristics and wages of workers in ELAs (Cohen & Haberfeld, 1993; Jackle, 1993; Williams, 1989; and Howe, 1986a), and exploratory studies of firms' reasons for using ELAs (Kochan, et. al., 1994; Benders, 1991; Sloane, 1989; Atkinson & Meager, 1986; Mangum, et. al., 1985; and Eccles, 1981). Only one study has attempted to test a priori theories of when firms use ELAs. That study found none of the theories it tested to be consistently good predictors of ELA use (Davis-Blake & Uzzi, 1993). By looking at these past studies, though, the researcher may find patterns which will lead to a theory of ELAs.

This research suggests that the variables tested in the past fall into four categories: cost variables, demographic variables, bureaucracy variables, and transaction cost variables. When these categories are examined systematically, clear patterns emerge among many of the supposed antecedents of ELA use and many of the variables can be discounted. Moreover, the examination will show that the methods used to analyze the data, whether they are bivariate or multivariate, explain some of the inconsistency in the findings to date. Finally, the examination of the grouping of the variables suggests that the way the variables are measured may change the relationships found.

Cost Variables

If asked why firms are using ELAs with increasing frequency, the average person would likely suggest a cost motive—ELAs cost less than permanent employees. Cost, in this instance, refers to direct labor costs—salaries and fringe benefits. Not surprisingly, cost variables have been included in many studies of ELAs. The weight of evidence, though, suggests that cost is not, in and of itself, a determinant of ELA use. No

researchers to date have included the fees paid to employments agencies, temporary

service firms or business service firms in their assessments of the costs of ELAs, costs

which can often be significant. Even without including those costs, ELA use has not

proven significantly cheaper that staffing with permanent employees. Cost is related to

skill level, not to classification in an ELA or a permanent employment relationship

(Becker, 1962). Indeed, when skill level is included in the analysis, cost is not a

significant predictor of ELA use (Cohen & Haberfeld, 1993; Davis-Blake & Uzzi, 1993).

Two studies examined temporary workers employed from temporary help service

firms and their cost relative to permanent employees. Carey and Hazelbaker (1984) first

suggested the connection between cost and skill level with respect to ELAs. Their

examination of Current Employment Statistics data indicated that, while temporary

workers received lower fringe benefit levels, the differences in salary between temporary

and permanent employees were related to occupation. While temps in low-skill

occupations did earn lower wages, temps in highly skilled occupations actually earned

more than their permanent counterparts. Williams (1989), using census data, reached

similar conclusions. Neither study actually tested skill level per se. The conclusions

resulted from post hoc analysis of the data on occupations and focused only on temporary

workers rather than on ELAs more generally.

Two British studies used interviews with managers to investigate multiple types

of ELAs. Sloane's (1989) study of flexible staffing strategies was based on interviews

with managers from 51 Aberdeen firms. He found that temporary workers in these firms

actually earned higher salaries than the permanent employees, but that firms with higher

benefit levels employed more temps. Although he, too, suggested that cost was related to skill level, he did not test the hypothesis. A similar study of 72 large U.K. firms reached similar conclusions (Atkinson & Meager, 1986).

Mangum et. al. (1985) used a nationwide mail survey to test whether cost influenced the use of ELAs of several sorts (limited duration hires, temporary help service workers, and temporary call-ins). They found that industries with high benefit costs were more likely to use all three forms of ELAs. They also found that occupation and the lack of specialized skills were related to ELA use. Occupations requiring low skill levels were more likely to be filled by ELAs. This analysis relied on simple chi-squared statistics with no multivariate analyses, so the authors were not able to test whether occupation or benefit levels were still significant after controlling for skill level.

Taken as a whole, these studies suggest that both cost (salary and benefits) and skill level help to predict ELA use. Although the authors routinely posited a relationship between cost and skill level, they did not control for the effect of skill level when testing the effect of cost on ELAs. A recent study filled this gap in the research.

Davis-Blake and Uzzi (1993) used archival data to test the effects of skill specificity, salary, benefits, and a host of other variables on firms' use of ELAs. Using logistic regression, they found that neither salary nor fringe benefits were statistically significant predictors of ELAs once skill level was considered. This relationship (or lack thereof) held true for both temporary workers and contract workers, the two sorts of ELAs tested. This finding upsets the traditional view of the relationships between cost, skill level, and ELAs, indicating that the presumed cost advantages of ELAs are illusory.

Figure 1 illustrates the relationships before and after Davis-Blake and Uzzi's (1993)

study. In the past, both costs and skill specificity were assumed to be antecedents of ELA

use. With the additional information provided by the multivariate studies, the antecedent

variable, skill specificity, is seen to drive both cost and ELA use.

Three other studies in that same year lent support to this new view of the cost

Figure 1: Potential Relationships between
Cost, Skill Specificity, and ELA Use
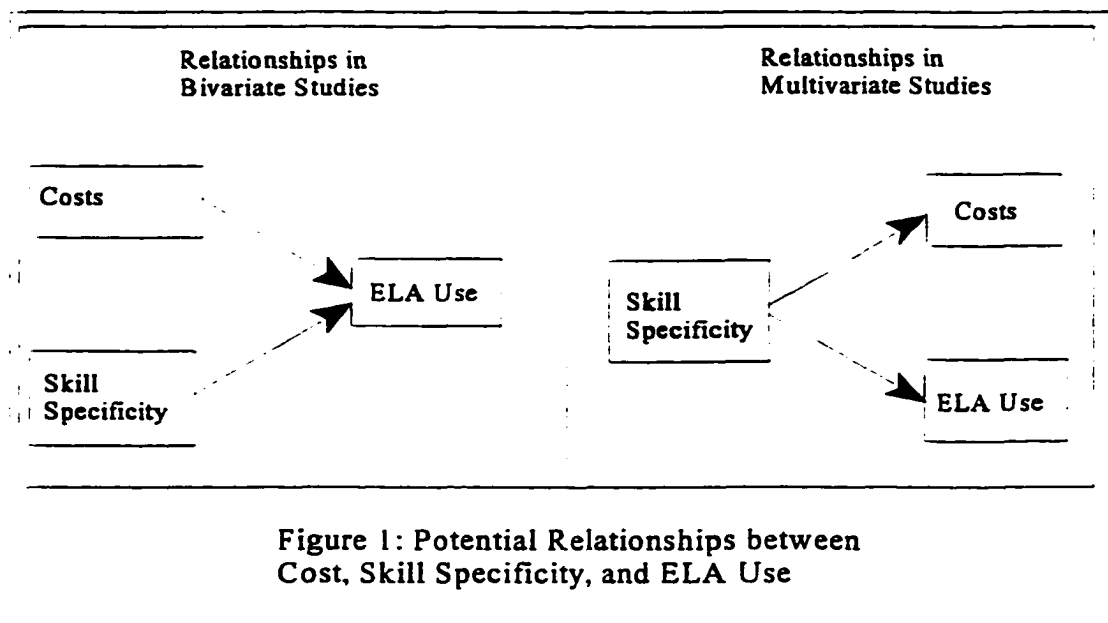
relationship (Cohen & Haberfeld, 1993; Golden & Applebaum, 1993; Jackle, 1993).

Each of these studies took a more fine-grained look at the relationship between cost and

externalization in specific occupations. Jackle (1993) interviewed 193 nurses voluntarily

working as temps about their reasons for choosing temp work. These nurses claimed that

higher wages were an important factor in their decisions to work as temps. Golden and

Applebaum (1993) found that temps in both the nursing and accounting professions

earned significantly higher wages than their permanent counterparts. These higher

salaries are not limited to professional occupations. Cohen and Haberfeld (1993)

examined four groups of clerical workers in their study of the characteristics of temporary

workers. While clerks and key-punch operators earned more as permanent workers than

as temps, bookkeepers and typists earned higher salaries when working as temps. This

finding indicates that the relationship between the skill level required for a job and the

salary reaches beyond professional occupations to the clerical occupations where ELA

use has been most prevalent. As shown in Figure 1, these findings indicate that the

relationship between cost and ELA use is spurious—an artifact of the methodological

shortcomings of the research. The multivariate studies conducted in 1993 suggest that

both cost and ELA use result from skill specificity. A recent article mirrored the

prevailing view of ELAs as "made up of an army of low-skilled people for whom

contingent work is a grim, downward spiral, and a relative handful...for whom contingent

work is a boon" (Geber, 1993, p. 26). This view of ELAs as harmful to the worker is

only viable to the extent that firms use ELAs to reduce labor costs. Recent research

(Davis-Blake & Uzzi, 1993; Jackle, 1993; Cohen & Haberfeld, 1993) indicates that cost

is not driving firms' decisions. Rather, the lack of employees' skills drives both ELA use

and lower wages. Those employees with higher skill levels, whether in ELAs or in

permanent employment relationships, earn more than those with lower skill levels. If cost

is not driving the use of ELAs, some other explanation must be sought.

<u>Demographic Variables</u>

A second widely studied group of variables focuses on the demographic

characteristics of the workers employed in ELAs. This focus assumes that workers from

disadvantaged groups (based on gender. age, race or ethnicity) are more likely to be forced into ELAs. If true, such a finding would support the power-based perspective of Pfeffer and his colleagues (Pfeffer, 1994; Pfeffer & Baron, 1988; Pfeffer & Salancik, 1978; Salancik, 1979).

Four studies have included demographic variables in the study of ELA use and, as with the cost variables, the results depend on whether the variables are examined singly or in concert. The studies which examined the variables separately (Howe. 1986a; Williams. 1989) found significant relationships between the demographic variables and ELAs. Those which controlled for skill levels, on the other hand, found the relationships to be insignificant (Davis-Blake & Uzzi, 1993; Cohen & Haberfeld, 1993). The findings from these studies are presented in Table 3. When other variables (e.g., skill levels) are controlled, the demographic variables do not predict ELA use.

Table 3

Demographic Variables in Previous ELA Research

Variables	Davis-Blake & Uzzi (1993)	Cohen & Haberfeld (1993)	Howe (1986)	Williams (1989)
Gender	NS	NS	S	
Education	NS	NS		
Age	NS	NS	S	
Age (squared)	S			S
Occupation	NS	S	S	
Experience	S	NS		
Method	Multivariate	Multivariate	Bivariate	Bivariate

Only age is consistently correlated with ELAs. The youngest and oldest workers

in the labor force are more likely to work in ELAs, but the explanation for this

relationship may have little to do with firms' preferences. Although firms may, for

some reason, prefer middle-aged employees, other explanations are just as likely.

Perhaps younger and older workers are more likely to seek out employment in ELAs for

the flexibility they offer. Without benefit of a theory with which to assess the construct

validity of the measures, the merits of such explanations cannot be evaluated. Again,

another explanation for the use of ELAs must be sought.

Bureaucracy Variables

Davis-Blake and Uzzi (1993) drew variables from two perspectives they termed

the external control and bureaucratic control perspectives (Cohen & Pfeffer, 1986).

According to the logic of these perspectives, firms with powerful external constituencies

will be more likely to require the use of bureaucratic human resource practices and

therefore will be less likely to use external labor arrangements. This logic resulted in

three pairs of variables.

The first pair, the indirect relationships (i.e., the presence of powerful external

constituencies), were measured by whether the firm's work force was unionized and

whether the firm was subject to government oversight. The authors measured the second

pair, the direct relationships (i.e., bureaucratic human resources practices), by the amount

of paperwork required to terminate an employee and by the length (in weeks) of a

probation period, if any, for new hires. Finally, they posited that large, multi-site firms

would also be more bureaucratic, resulting in a third pair of variables, firm size and

multiple sites. Each of the six variables was tested for two types of ELAs--temporary

help service employees and contract employees--making four tests of each pair of

variables. The results were, at best, mixed. Only one other study of ELAs has included

any of these variables (Mangum, Mayall, & Nelson, 1985). That study tested the effect of

firm size on three sorts of ELAs. Table 4 presents the findings from these two studies.

Table 4

Bureaucracy Variables in Previous ELA Studies

	Davis-Blake & Uzzi. 1993		Mangum, et. al., 1985		
Variables	Temps	Contract Workers	THS workers	Call-ins	Contract Workers
Unionization	NS	NS			
Government Oversight	- (p. <.05)	NS			
Termination Paperwork	- (p. <.10)	+ (p. < .05)			
Probation Period	- (p. <.01)				
Firm Size	- (p. <.01)	+ (p. <.05)	+ (p. <.01)	+ (p.<.01)	+ (p. < .01)
Multiple Sites	NS	NS			

As Table 4 shows, none of the three pairs of variables was well supported. In the

external control perspective, for example, government oversight reduced the likelihood of

temp use but not of the use of contract workers. The presence of unions had no

significant effect on ELA use. Firms which used bureaucratic human resources practices

were less likely to use temporary workers, but these firms were more likely to use contract workers--in direct opposition to the hypothesized relationship. Perhaps the biggest problem with this and the preceding theory of ELA use is that firms rarely use ELAs exclusively. These theories, which examine differences only at the firm level, give no reason for the firm to use an ELA to fill one position while using a permanent employment relationship in a second position. Examinations at the firm level cannot explain differences within a firm at the job level. Still, some of the findings in this category have been significant.

An alternate explanation for these findings suggests that these arguments are tautological. If markets (ELAs) and hierarchies (bureaucracy) are alternate governance forms, then the propositions above can therefore be stated differently--the opposite of ELAs will be negatively related to ELAs. Of course measures of internalization (bureaucracy) are likely to be negatively related to measures of externalization. They are simply measures of opposite governance mechanisms. When restated, the logic of these arguments is seen to be tautological and the variables lose their value as predictors.

The other variables, government oversight and firm size, can be thought of as predictors not of ELA use but of the likelihood of sophisticated human resource departments. Very small firms are less likely to have human resource departments at all, making multiple recruiting methods less likely. Similarly, the reporting requirements of government agencies are likely to increase the need for an HR department. Again, the presence of an HR department is likely to increase the number of methods the firm uses to recruit employees (Wright & MacMahon, 1992). Such an interpretation reduces the

importance of the direction (sign) of the relationships. Whether positive or negative, the result is indicating the use of multiple recruiting methods rather than ELA use per se. This explanation is consistent with the findings that large firms are also more likely to use internal labor markets and that internal labor markets are more likely in firms with a human resources department (Baron, Davis-Blake, & Bielby, 1986; Pfeffer & Cohen, 1984).

Transaction Costs Variables

If none of the preceding categories of variables has proven a consistently good predictor of ELA use, the search for an explanation for the phenomenon must focus on those variables which have. The two variables from previous studies which have been included most consistently in studies of ELA use are demand uncertainty and skill specificity. These two variables also have been the most consistent predictors of ELA use (Kochan, et. al., 1994; Davis-Blake & Uzzi, 1993; Benders, 1991; Sloane, 1989; Atkinson & Meager, 1987; Mangum, et. at., 1985). Demand uncertainty (the likelihood of repetition) and skill specificity are central to the transaction costs perspective.

Demand uncertainty has been measured in several ways. Mangum and his colleagues (1985) measured demand uncertainty by whether a firm's sales were growing, declining, or stable. They found that both growing and declining firms were more likely to use ELAs than were firms with stable employment patterns. Davis-Blake & Uzzi (1993) measured demand uncertainty using "the coefficient of variation in establishment employment on six dates"—July and December of 1979, 1980, and 1981 (p. 207). They found that firms with higher coefficients of variation were more likely to use both

temporary workers and contract workers (the two types of ELAs they tested). Generally, then, past research has suggested that firms are more likely to use ELAs when they are unsure of the level of staffing they will need in the future.

The same studies also indicate a relationship between skill specificity and ELA use. ELAs are less likely in positions requiring high skill-specificity (Kochan, et. al., 1994; Davis-Blake & Uzzi, 1993; Benders, 1991; Sloane, 1989; Atkinson & Meager, 1987; Mangum, et. al., 1985). If skill specificity and demand uncertainty each are consistently related to ELA use, a relationship between all three variables--skill specificity, demand uncertainty and ELA use--may also exist. A recent study tied skill specificity, demand uncertainty, and ELA use together most clearly.

Benders' (1991) case study of a sugar-refining company found that firm to be using a stable core of permanent employees augmented by a peripheral group of workers hired to meet seasonal variations in labor requirements. Benders noted that the firm made strategic investments in its human capital by reserving training and socialization expenditures for the core employees it was likely to retain in the long run. Other researchers have uniformly concluded that skill specificity and demand uncertainty are intertwined in firms' decisions to use ELAs. A recent study of the petrochemical industry (Kochan, et. al., 1994) supported the view that firms are hesitant to invest in training for workers in ELAs. The researchers attributed the higher incidence of lost-time accidents among temporary workers to the minimal training provided by the firms.

Pfeffer (1994) suggested, but did not test, a reason for the tie between these variables. The training costs needed to develop firm-specific skills are immediate, but

temporary workers are likely to move to other companies before the employer can reap

the benefits of the training. Pfeffer contended that the use of ELAs to shield core

employees from layoffs allows the firm to develop its core employees as a source of

competitive advantage. Without the provision for this dual internal labor market, the

limited resources of the firm would be spread among a greater number of workers and

investments in human capital would be lost to layoffs during periods of slack demand.

Pfeffer's contention that firms use ELAs to buffer a core work force from demand

uncertainty and to make efficient use of investments in human capital has been mirrored

by other authors in recent articles (Berman & Larson. 1994; Mingle, 1994; Belous, 1989,

Pfeffer & Baron, 1988). If some interaction between demand uncertainty and skill

specificity influences the use of ELAs, then the beginnings of a theory of ELA use can be

seen. The next task is to more fully specify the relationships and to test them.

<u>Summary of Past ELA Research</u>

The literature discussed in the preceding pages supports the contention that

research on contingent work to date has been almost exclusively exploratory and

descriptive. Some of the variables from previous studies, when viewed in the context of

similar research. prove to be unconnected to ELAs. In other cases, great similarity exists

between the findings of different researchers, but the characteristics of firms which use

ELAs which these researchers describe have been developed from the data and cannot be

considered to have been adequately tested.

The theme which appears repeatedly in the literature on ELAs is the use of ELAs

to buffer permanent employees against demand uncertainty. These actions protect the

human capital investments made by the firm from being lost to competitors and allow the firm to develop distinctive competencies over time. Moreover, the lack of skill specificity appears to be a distinguishing feature of ELAs, accounting both for wage levels and for the likelihood that particular positions will be externalized. These same features--skill specificity and demand uncertainty (the likelihood that transactions will recur), together with the ability to monitor workers' performance (performance uncertainty)--have been proposed as general explanations for the internalizing or externalizing of exchange in the transaction costs literature. Not surprisingly, many of the ELA researchers have suggested that TCE may explain their findings. Mangum, et. al. (1985) devoted most of the conclusion section of their paper to explaining their findings in transaction costs terms. Others (Davis-Blake & Uzzi, 1993; Sloane, 1989) have cited Williamson's transaction costs discussions in explaining their findings as well. None of these researchers set out to test the applicability of TCE to the study of ELAs. Consequently, some facets of the theory have not been examined and the ex post fitting of the observed variables to the TCE constructs is open to question. The next section discusses what the transaction costs perspective has to offer the study of ELAs and reviews the research which has been done concerning transaction costs and employment generally.

Transaction Costs and ELAs

The transaction costs perspective suggests that specific transactions may be governed either by market-mediated mechanisms (ELAs) or by hierarchical mechanisms (permanent employment relationships). The transaction, with respect to employment, is

the firm's decision to hire or retain a worker to perform a task or series of tasks. The question is whether conditions will warrant employing that worker in the future. Three conditions determine whether a market or a hierarchy will be the most efficient governance mechanism: uncertainty, the need for transaction-specific investment, and the likelihood of repetition (Williamson & Ouchi, 1981).

Uncertainty

With respect to employment, "uncertainty is the ease with which the productivity of human assets can be evaluated...the ease with which productivity can be metered" (Williamson, 1981, p. 564). Uncertainty of performance increases the adverse effects of bounded rationality and opportunism. If the performance of the parties in the transaction is predictable, the parties to the transaction can spell out their obligations to each other under each eventuality in a contract. This reliance on contracting is the essence of market-based transactions and can take several forms.

In the spot market contract, the exchange is complete and immediate. All obligations are fulfilled at one time, so no provision need be made for describing contingent rights or responsibilities. Contingent claims contracting incorporates the element of time. The parties specify all future rights and responsibilities under given circumstances. With increasing uncertainty, such contracts may fail to account for all circumstances and permit opportunistic behavior by one or both parties. Sequential spot contracting limits the need to predict future performance by using a series of short-term contracts instead of one long-term contract. In the face of transaction-specific investment, though, sequential spot contracts also allow for opportunism. Transaction-

specific investment creates a condition of small numbers bargaining. With small numbers bargaining, the potential for opportunistic behavior increases and the parties may wish to move the transaction from the governance of the market to some internal governance arrangement. Relational contracting removes the transaction from market control by internalizing the transaction within a hierarchical (authority-based) or clan (relationship-based) governance structure (Ouchi, 1980).

Transaction-Specific Investment

While uncertainty of performance is important in predicting whether internal or external governance will be most efficient, the essential element is the extent to which the parties must invest in durable, non-marketable assets to facilitate the transaction (Williamson & Ouchi, 1981a). As Ouchi (1980) noted, transaction-specific investment negates the effectiveness of sequential spot contracting by providing a basis for opportunistic behavior.

In short, transaction-specific investment limits the ability of the market to govern exchange by creating a condition of small-numbers bargaining (Williamson, et. al., 1975; Williamson & Ouchi, 1981a). If the transaction does not require idiosyncratic investment, either party can simply turn to others to avoid opportunism. In the face of transaction-specific investment though, only those parties who hold the specialized asset or skill can engage in the bargaining process. Both physical and human assets can represent transaction-specific investments. Examples of "idiosyncratic" human capital include the sorts of accommodations which only experience on the job can create-- equipment idiosyncracies, process idiosyncracies, communication idiosyncracies, and

informal team accommodations--as well as specific skills or knowledge (Doeringer and Piore, 1971; Williamson, et. al., 1975).

Idiosyncratic skills offer firms a source of competitive advantage (Pfeffer, 1994; Teece, 1984). Such skills are often difficult to imitate, analyze, or teach and require large investments of time and money to obtain (Williamson, et. al., 1975). By the time competitors can copy these abilities, they are often obsolete (Lincoln, 1990). Competitors wishing to acquire such skills may attempt to hire those who possess them instead of developing the skills internally. Human capital such as specialized training, on-the-job training, socialization, and acculturation often requires substantial investment by the individual or the firm (Williamson & Ouchi, 1981a).

Firms may acquire human capital either by hiring individuals who already possess the requisite skills in the labor market, or by investing in the training of current employees (Snell & Dean, 1992). Firms invest in training when they expect the benefits of increased productivity to outweigh the costs of training. The length of time an employee stays with the firm after receiving training is important to this calculation. The nature of the skill--whether it is specific or general--may influence the amount of time the worker remains with the firm after receiving training.

Becker (1962) argued that the acquisition of firm-specific skills ties the worker and the firm together. If the employee leaves, the firm must invest in training a new worker and the employee loses the productive capacity of the firm-specific skills. As Pfeffer and Cohen (1984) noted. "Specific training raises the value of the worker to the

employer but not the wage that the worker could command in the external labor market"
(p. 553).

Workers who have acquired specialized skills are less able to move to alternate
employment without losing productive capacity than are workers who have acquired
general-purpose skills. Therefore, Becker (1976) argued, firms are more likely to assist
employees in acquiring skills which are firm-specific, or at least highly specialized, since
such skills are less transferable to competitors than are generic skills. To encourage
employees to develop such skills on their own, firms may alternatively wish to internalize
employees who have developed such skills to reduce the threat that the employees'
investment in specific skills will be lost if they have to find new jobs.

<u>Likelihood of Repetition</u>

Internalizing transactions, though, requires a substantial investment in the
governance structure (e.g., creating a firm, hiring employees, setting policies and
procedures). Such costs are only justified if the transactions are likely to recur with some
frequency. The costs of internalization can then be amortized over a large number of
transactions. To the extent that a firm's employment levels are stable, the firm can be
more sure of a recurring need for the worker and will be more likely to employ the worker
on a permanent basis (and less likely to use an ELA). If the transaction is the decision to
hire or retain a worker in a given job (or not), the likelihood of repetition stems from the
firm's belief that a person with this particular set of skills will be of value in the future.
In this way, the three features of the transaction are interrelated.

Summary

The transaction costs perspective is explicitly a theory of when firms will choose to internalize or externalize a given transaction. In externalization, firms rely on market-based contracts: the spot market contract, the contingent claims contract, or the sequential spot market contract. In internalization, firms govern the transaction with relational contracting—creating a bureaucratic structure. Three features of the transaction govern whether a market or a bureaucracy will govern the transaction most efficiently: uncertainty, the likelihood of repetition, and the need for transaction-specific investment. These three features of transactions do not, taken singly, create a governance problem. Alone, any of the three features can be handled by some form of market contracting. When the three problems begin to interact with each other, though, relational contracting (e.g., long-term employment) may be the more efficient governance form. These relationships can be visually represented by the model in Figure two.

Two of these three features, demand uncertainty and skill specificity, have been seen to be central to predicting ELA use in firms. The distinction between uncertainty of performance and uncertainty of demand (e.g., likelihood of repetition) is important to relating the ELA research to the transaction costs perspective. Uncertainty, in a transaction costs framework, does not refer to the demand uncertainty discussed in much of the ELA research. In TCE, uncertainty is uncertainty of performance—not of demand. Uncertainty of demand, in TCE, is called likelihood of repetition. In the remainder of this paper, likelihood of repetition will refer to demand uncertainty while the term uncertainty will refer to uncertainty of performance (meterability). To the extent that the demand for

labor is uncertain, the likelihood of repetition (of employing this worker in the long run) is reduced.

Figure 2: The Transaction Costs Model
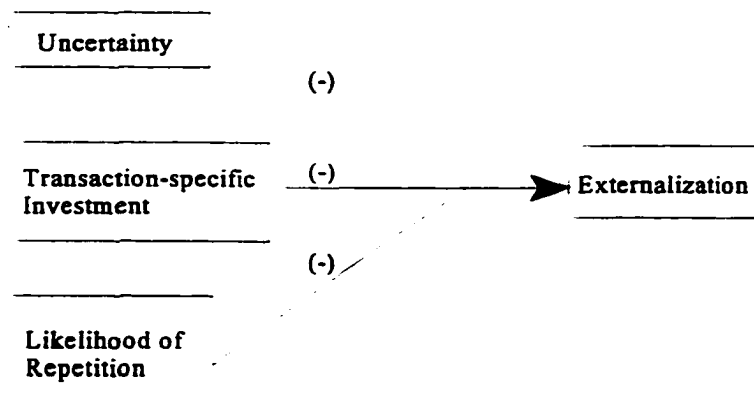
Adapted from Williamson, 1981

From a transaction costs perspective, then, ELAs would be more likely when firms are unable to predict the need for a person to fill a position in the long run (likelihood of repetition), when the position requires few specific skills (transaction-specific investment), and when the performance of the worker is easy to assess (uncertainty). Although TCE has not been tested in connection with ELAs, the theory has received much support in studies of firms' decisions to internalize or externalize functions of their work forces more generally. None of these studies has tested all three facets of the transaction costs perspective at once, but each facet of the theory has been tested in one study or another. Taken as a whole, they provide very strong support for the

theory and its application to employment. The studies which used TCE to predict

employment decisions generally are reviewed in the following section.

Studies of Transaction Costs and Employment

The application of TCE to employment relationships is by no means new. Many

of the earliest discussions of TCE addressed its implications for employment (e.g.,

Hashimoto & Yu, 1980; Ouchi and Jaeger, 1978; Ouchi, 1980; Williamson, et. al., 1975).

The findings suggest that likelihood of repetition, skill specificity, the ability to monitor

performance, and their interaction are good predictors of firms' decisions to internalize or

externalize parts of their work forces. Moreover, they lend support to the contention that

the transaction, as defined above, is the appropriate unit of analysis.

Eccles (1981) first tested the applicability of TCE in the employment

relationship. He asked whether the extensive use of subcontractors in the homebuilding

industry was rational. From interviews with the managers of 38 homebuilding firms

regarding their use of subcontractors and permanent employees, he found the use of

subcontractors to be justified as the most efficient governance form from a transaction

costs perspective.

Later work by Anderson and her colleagues (Anderson & Schmittlein, 1984;

Anderson, 1985; Anderson, 1988) examined when firms choose to internalize or

externalize their sales forces. Using data from 16 firms in the electronics industry, they

looked at 153 such decisions in specific sales districts. Transaction costs proved to be

good predictors of the firms' choices. The greater the firm-specific knowledge required,

the greater the chance that firms would move the sales function in-house rather than

relying on manufacturers' representatives external to the organization. Firms were also more likely to internalize their sales forces when they considered performance to be difficult to measure (uncertainty). The interaction between the two variables was also significantly related to the firms' decisions. These studies did not test likelihood of repetition, but did test an alternate measure of uncertainty. This second measure, called environmental uncertainty, was the deviation between actual and forecast sales for the year, expressed as a percentage. This measure was not significantly related to the decision to internalize, strengthening the argument that uncertainty should be considered to be uncertainty of performance rather than environmental variability. Although these tests did not look at likelihood of repetition, a later study (Harrigan, 1986) found that sales variation reduced the likelihood of vertical integration in the automobile industry. The finding that ability to forecast sales was not a good predictor, while actual employment variation was a good predictor, lends credence to the distinction between demand uncertainty as a proxy for likelihood of repetition and more general measures of environmental uncertainty.

Other studies of vertical integration in the auto industry have emphasized the importance of specific human capital in the decision to internalize functions (Masten, Meehan, & Snyder, 1989; Klein, 1988; Monteverde & Teece, 1982). In his study of General Motors' decision to acquire Fisher Body, Klein (1988) suggested that Fisher's investments in human capital were more important to the decision than was physical asset specificity. Monteverde and Teece's (1982) study of make-or-buy decisions for 133 auto components found the decision to internalize to be significantly positively related to

engineering effort, their measure of transaction-specific knowledge. Masten and his colleagues (1989) specifically tested whether human asset specificity was more important than physical asset specificity in make-or-buy decisions. They found that, when engineering effort, physical asset specificity, and site specificity were all regressed on the decision to make or buy 118 auto components, only the human asset was a significant predictor. Walker and Weber's (1984) study supported the importance of human capital to these decisions. They found that volume uncertainty did significantly predict make-or-buy decisions at a U.S. auto manufacturer, but uncertainty about tooling requirements did not. Moreover, they found TCE to be a valuable predictor of the decisions generally. Their structural equation model explained 70 percent of the variance in the auto maker's decisions.

None of these studies tested all three transaction costs variables at once. Taken collectively, though, they emphasize the applicability of TCE to the employment relationship. They emphasize the importance of specific human capital to the decisions, support the contention that meterability (uncertainty of performance) is more consistent with the TCE variable uncertainty than are environmental uncertainty measures, indicate that transaction-specific skills and knowledge are also important predictors, and note that the interactions among the three factors are important to explaining the decision to internalize or externalize. While these general studies support the TCE perspective, they tend to presuppose that the choice of governance structure is an either/or decision. Another stream of research gives valuable insight into the use of multiple governance forms within a single firm.

Internal Labor Markets and Transaction Costs

A substantial body of research has addressed the relationship between transaction

costs and internal labor markets (ILMs). This research is of particular interest because

the distinguishing features of ILMs appear to be precisely opposite those of ELAs. ILMs

are characterized by careful recruitment, screening and selection of employees; entry to

the firm primarily through a few. low-level positions; heavy investment in the training

and socialization of employees, which discourages voluntary departure because of the

accumulation of a firm-specific set of skills; a high level of employment security; career

paths based on seniority and skill accumulation; low employee turnover and strong

employee identification with the firm; and formal grievance procedures such as company

labor unions to resolve disputes (Doeringer & Piore, 1971; Kalleberg & Sorenson, 1979;

Pfeffer & Cohen, 1984). Stewman (1986) found that few ILMs really use tenure as a

condition for promotion to higher pay levels. More commonly, promotion is based on

skill-accumulation. This emphasis on skill-specificity, as in the research on ELAs, has

been a consistent predictor of ILMs in firms.

Transaction-Specific Investment

Carmichael (1983) argued that ILMs deter opportunistic behavior on the part of

employees and firms through the acquisition of firm-specific human capital. If relatively

high wages are tied to positions at the top of the career ladder. and access to that position

is tied to the acquisition of firm-specific skills. employees will not wish to leave the firm

because they could not attract the same wages elsewhere. By the same token. the firm is

constrained from acting opportunistically since the wage is tied to the position--if the

current occupant leaves, another (presumably slightly less qualified) person will take his or her place at the same wage.

Pfeffer and Cohen's (1984) examination of ILMs supported the argument that ILMs are most likely to be found in positions requiring firm-specific skills, knowledge, or training. This literature also suggests a tie between ILMs and ELAs in the same firm (Pfeffer & Cohen, 1984; Pfeffer & Baron, 1988; Pfeffer, 1990; Snell & Dean, 1992; Sloane, 1989). Doeringer (1967) posited that the development of ILMs represents an attempt by the firm to retain idiosyncratic (firm-specific) skills. A study of California firms which operated ILMs found that more than 80 percent of the jobs in ILMs were based on skill accumulation, and not merely on tenure. The strongest predictor of whether a particular job would be organized in an ILM was the extent to which the position required firm-specific skills (Baron, et. al., 1986). The results were also stronger and more consistent when the analysis was done at the transaction (or job) level rather than when whole firms were considered. Within the same firm, some jobs were organized into ILMs and others were not. Baron and his colleagues concluded that ILMs are a response to firm-specific human capital requirements and that ILMs are organized at the transaction level rather than at the industry or firm level. As Sloane (1989) noted, the precise opposites of many of these same characteristics have been discussed in connection with the contingent work force. While ILMs are organized to retain skilled workers, "The flexible firm is dependent on the absence of firm-specific skills" (Sloane, 1989: p. 131). The research on ILMs also suggests a connection between skill-specificity and uncertainty of performance.

Uncertainty

Pfeffer and Baron (1988) suggested that the formation of an ILM allows the firm

to assess the skills and character of workers before promoting them to high-level

positions in the organization. Recent researchers (Snell, 1992; Snell & Dean, 1992) have

found that individual worker performance is more difficult to measure under systems

which emphasize collective output measures (e.g., TQM, JIT, and advanced

manufacturing). Ouchi (1980) argued that, by creating employees who share the same

values and beliefs, ILMs allow the firm to use a clan form of control instead of individual

performance measures. When workers internalize the company's goals. all parties are

reassured that the others will not act opportunistically. Such firms were consequently

more likely to be selective in their hiring practices, to invest more in employee training,

and to use appraisal techniques which focused more on employee development than were

firms using traditional production techniques (Snell & Dean, 1992). Internal labor

markets, therefore, reduce the risk associated with staffing by allowing for the promotion

of individuals who are more completely socialized to the values of the firm (Doeringer &

Piore, 1971). Japanese firms use ILMs extensively--a factor to which Ouchi (1980)

attributed much of their recent success. The heavy investment in employee socialization

creates congruence between the goals of employees and those of the firm.

Many researchers have tied the features of ILMs (e.g., lifetime employment,

investment in training and socialization. strong identification with the firm) to the

successful implementation of management practices associated with Japanese firms, such

as Total Quality Management and Just-in-Time management In one of the earliest

accounts of Japanese management practices, Juran (1967) described quality management as essentially a motivational phenomenon equally capable of improving overall firm performance as of improving product quality. He claimed that lifetime employment and incentive systems which aligned the interests of the worker with those of the firm were essential to the motivational power of quality management. Sugimori, Kusunoki, Cho, and Uchikawa (1967) posited that the "respect-for-humans" system, which incorporates lifetime employment and employee empowerment principles, was one of the two reasons Toyota had experienced such success (p.553). Ouchi and Jaeger (1978) went so far as to propose that the Internal Labor Markets (ILMs) found in Japanese firms were a principal reason for their success. The use of ILMs aligns the interests of the worker and the firm. This explanation, however, is incomplete.

The authors who tout the efficacy of worker ties to the organization fail to account for the heavy concurrent use of contingent workers in Japan. Lifetime employment is reserved for only a minority of workers. As in U.S. companies, contingent workers are used to absorb fluctuations in demand (Clark, 1979). After World War II, Japanese firms fired many of their workers and then offered lifetime employment only to certain key groups of employees. These moves were calculated efforts to increase the flexibility of the Japanese firms while, at the same time, increasing the skill and commitment of the permanent labor force (Cusumano, 1988).

Likelihood of Repetition

Both ILMs and ELAs occur more frequently as the level of demand uncertainty rises. Both are determined, at least in part, by the extent to which the firm depends on

specialized (transaction-specific) skills, but transaction specific investment affects the

two constructs in opposite ways, increasing the likelihood of ILMs and decreasing the

likelihood of ELAs. The factor which determines to which of these opposing groups the

job will be assigned is the centrality of the job to the firm's ongoing operations. The

likelihood of recurrence, or the length of time the employee will remain with the firm,

also affects whether a job is externalized or exists in an ILM. Jobs which are likely to be

needed only intermittently will be externalized, while those which are sure to recur will

be internalized.

ILMs and ELAs

Lincoln (1990) argued that the ILM is simply a special case of TCE. The use of

ELAs just extends that case. ILMs and ELAs may be viewed as the polar extremes in the

employment relationship. With decreasing likelihood of repetition, firms respond by

moving their human resource policies toward *both* extremes. The extent to which jobs

are internalized or externalized depends on the level of transaction-specific investment.

To maximize the benefits of its human capital investments, the firm must focus

investment on those employees who are most critical to the success of the firm. The use

of contingent workers who neither expect nor receive investment by the firm allows the

organization to focus its limited resources on areas of critical importance. Sloane saw the

connection between transaction costs, internal labor markets, and external labor

arrangements. He argued that the transaction costs literature should be "linked with the

concept of the flexible firm in order to derive a more general model of manpower

utilization" (1989, p. 132). Pfeffer and Baron (1988) agreed, saying that the incorporation

of ELAs may tie the study of employment even more closely to the transaction costs approach.

ILMs do coexist with other employment systems within single firms. Osterman (1984) found ILMs and secondary employment systems in the same firms--with different employment rules for the two types of employees. Both Japanese firms and U.S. firms claim that they use contingent workers to shield permanent workers from environmental uncertainty. These findings support Bolt's (1983) contention that contingent workers may support the development of ILMs by making lifetime employment offers economically feasible and by clearly designating those employees to whom the firm is committed during downsizing. Both Lincoln (1990) and Ouchi (1980) have emphasized the importance of clearly distinguishing those workers to whom the firm is bound from those with relatively little attachment.

The use of ELAs may have an even more direct effect on permanent employees. Barnett and Miner (1992) studied the effect that temporary workers have on the promotion prospects of permanent employees. Using the employment records of a Fortune 500 utility company, they examined the promotion prospects of 6,850 people hired between 1973 and 1987. During that period, 1,282 employees, or 27 percent of hires, were temporary workers. Barnett and Miner found that the presence of temporary workers in a firm had very different effects on workers with specialized skills than they did on workers with more general skills. When a firm used temporary employees, workers with high skill levels were promoted more quickly than in firms without

temporary workers. At the same time, the promotion prospects for permanent employees with lower skill levels were diminished by the presence of temporary employees.

This review suggests that uncertainty, transaction-specific investment, and likelihood of repetition appear to predict the use of both ELAs and ILMs. Williamson and his colleagues argued that "the use of sequential spot contracting, where jobs are fungible, and internal labor markets, where jobs are idiosyncratic, is relatively easy to rationalize in efficiency terms" (Williamson, Wachter & Harris, 1975, p. 251). Some evidence suggests that TCE is even better able to explain the employment relationship with the addition of ELAs.

As employment levels fluctuate more widely, managers are less able to predict staffing requirements. To protect human capital investments, managers must clearly distinguish between workers the firm will retain and those who will face layoffs in the event of a reduction in demand. The firm can then focus its investments in training and acculturation on the employees who are most critical to organizational success. Those workers who possess rare firm- or industry-specific skills represent the least replaceable parts of the work force.

Hypotheses

Comparing the literature on ELAs with that on TCE results in several important points. First, firms use ELAs and permanent employment relationships at the same time (Barnett & Miner, 1992). This finding contradicts the assumption prevalent in much ELA research that ELA use is a yes or no decision. In fact, ELAs may support the development of core competencies in the firm (Pfeffer & Baron, 1988; Pfeffer, 1994;

Mangum, et. al., 1985) and the development of ILMs (Baron, et. al., 1986). The use of the firm level of analysis, therefore, is inappropriate to the study of ELAs. Firms do not choose either internalization or externalization for their labor needs. Rather, firms are likely to use both forms and the question then is why the firm chooses one form over the other to fill particular positions. This point is consistent with the TCE perspective. In TCE, the transaction is the appropriate unit of analysis (Williamson, 1975, 1985). In the employment relationship, the transaction is the decision to hire, or to retain, an employee (Barnett & Miner. 1992; Williamson. 1981; Williamson. et. al., 1975).

This decision, in TCE, is predicated on three factors. The first, often supported in the literature on ELAs, suggests that firms use ELAs to respond to uncertainty concerning their need for employees. Previous firm-level studies (Davis-Blake & Uzzi, 1993; Mangum, et. al., 1985) have found that variations in staffing levels were related to ELA use. To the extent that a firm can predict its staffing requirements accurately, it requires less numerical flexibility in its work force. Only when the firm cannot assess its need for workers in a particular position does the firm need to move away from relational contracting and back toward market-based contracting. This rationale results in the first hypothesis to be tested in this study:

Hypothesis 1: Firms will be less likely to use ELAs in positions which are likely to recur frequently (uncertainty of repetition).

Numerical flexibility, though, is not sufficient to predict ELA use. If it were, firms would use ELAs exclusively when the level of demand uncertainty rose. As the findings on ILMs suggest, though, demand uncertainty is also related to the formation of

ILMs. Firms which are seeking an advantage over their competitors may gain such an advantage through the skills of their employees, but only to the extent that these skills can be maintained. Consequently, firms must determine which employees have such skills. "Skill acquisition is a necessary but not sufficient condition for a human asset governance problem to arise. The nature of the skills also matters; the distinction between transaction-specific and nonspecific human assets is crucial" (Williamson, 1981, p. 563). By creating a condition of small numbers bargaining, skill specificity limits the ability of the firm to rely on market-based contracting, a condition suggested by theory (Becker, 1962; Doeringer & Piore, 1971; Williamson, 1981; Williamson, et. al., 1975) and supported by past research on ELAs (Davis-Blake & Uzzi, 1993). This need to retain employees who possess transaction-specific skills raises the second hypothesis to be tested:

Hypothesis 2: Firms will be less likely to use ELAs to fill positions requiring firm-specific skills.

A third factor in determining ELA use, and one which remains largely unexplored in the research on ELAs, is the ability to assess performance. This factor is most closely tied to the assumptions of bounded rationality and opportunism on which TCE is based. Past ELA research has omitted this factor, but it is central to understanding ELA use. If the performance of the worker is clear and immediate, the worker's ability to act opportunistically is minimized. In such circumstances, the market is an efficient governance form. Only as performance becomes more uncertain do firms have more incentive to internalize the transaction within a permanent employment relationship.

Thus the inability to monitor workers' performance suggests a third hypothesis to be tested:

Hypothesis 3: Firms will be less likely to use ELAs to fill positions in which performance is difficult to assess (meterability).

Williamson makes clear that the three factors above, taken independently, are not necessarily sufficient to necessitate internalizing the transaction. While each of these three factors increases the likelihood of ELA use, their determinant effect should be much stronger when two or more factors are found in combination. Only in combination do the factors require a hierarchical governance mechanism to minimize transaction costs. This interaction effect is often left out of tests of TCE, but is perhaps the most important relationship. Anderson (1988) found a significant relationship between externalization and the interaction between uncertainty of demand and transaction specificity. Relationships between the independent variables make the theory make sense in the first place. Jones (1987) found performance ambiguity, a measure of uncertainty, to be strongly correlated (p. <.001) with on-the-job training, a proxy for skill-specificity. The determinant effect of the three variables relies on the interaction between them.

Hypothesis 4: The interactions between 1, 2, and 3 above will be significantly related to ELA use.

Conclusion

Firms are increasingly relying on external labor arrangements to meet their staffing needs. Although many researchers have begun to study ELAs, an explanation for this phenomenon has been elusive. By systematically reviewing the past research on

ELAs, the previously confusing findings can be seen to be explained by the transaction costs perspective.

This perspective has received good support in the literature, but has not been tested as a whole. By applying the TCE perspective to the study of ELAs, this study proposes an explanation for firms' increasing externalization of employees and serves as a test of all three transaction costs constructs at one time. The four hypotheses specified in the model presented in Figure two represent the basic outline for this study. In the next chapter, the measures of each construct will be explained, the methods for testing the four hypotheses will be discussed and the ties to past ELA research made more explicit.

CHAPTER III

RESEARCH METHODOLOGY

In the following chapter. the methods used to test the hypotheses suggested in chapter two are described. First, the procedures for data collection and the type and number of subjects to be used in the study are outlined. Next, the measures for each of the variables in the study are discussed. Then, the statistical tools used in analyzing the data are described. Finally, the potential limitations of the study are discussed.

Procedure

The primary procedure for collecting data for this study was a mail survey. A questionnaire was mailed to subjects in which each subject was asked to describe two positions in his or her firm: the most recent for which a permanent employee was hired and the most recent for which an external labor arrangement was used. The initial mailing included a cover letter. questionnaire. postcard for nonrespondents who have been sampled in error, and a postage paid, preaddressed return envelope. The questionnaire contained a code designating the firm to which the questionnaire was mailed. enabling the following mailings to be focused on those firms which had not responded.

Ten days after the initial mailing, a reminder postcard was mailed to all nonrespondents asking them to complete and return the survey. Ten days after the second mailing, a third mailing was sent to those firms which had still not responded, again

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including a cover letter, questionnaire, and return envelope. By carefully conducting the data collection in this manner, the response rate should be maximized and the possibility of nonresponse bias minimized.

Subjects

The appropriate subjects for a study are dictated by the study's research question (Alreck & Settle, 1985). In this case, the phenomenon of interest concerns why firms use ELAs in some positions and not in others. As such, some informant must provide information regarding the characteristics of the jobs to be filled using either an ELA or a traditional long term employment relationship. This research question dictates that the appropriate informants meet three criteria in particular: (1) access to information on hiring decisions, compensation and control methods, and employment levels in the firm; (2) access to this information across most, if not all, occupational groups in the firm; and (3) input into the hiring decision for these occupational groups. The informants who best fit these parameters are the human resource managers of firms which use external labor arrangements.

Human resource managers have access to the sorts of information needed. The human resource department is often the repository for such information in the firm. Although direct supervisors might have such information concerning workers within their own departments, only human resource managers are likely to have such information across occupational groups. The research question also concerns the perceptions of people involved in hiring decisions. The perceived likelihood that the firm will need a worker to fill a given position consistently in the future is as likely to influence labor

externalization as is the true likelihood. In the same way, the actual ability to monitor a worker's performance may be less important than the perceived ability to monitor performance in the mind of the person making the hiring decision. The research question therefore dictates that the informant have input into the hiring decision if perceptions of meterability and likelihood of repetition are to be measured appropriately.

The sampling frame for this research was a random sample of firms included in the Hunt-Scanlon Directory of Human Resource Executives mailing list. This sampling frame had the advantages of specific focus on the informants of interest as well as broad generalizability across industries and geographic regions. This sampling frame was also attractive because it was available for use in this study. Another potential sampling frame was considered for this study. The membership list of the Society for Human Resource Management, with its wide cross section of interested human resource managers, was considered first, but the Society for Human Resource Management would not sell its membership list for this research.

The number of cases used in analyzing a survey is important in achieving valid statistical conclusions (Cohen, 1988). To determine the appropriate number of cases for this study, an analysis of the statistical power of the test was conducted. Three parameters influence the power of a test. The significance level is the chance of incorrectly concluding that a phenomenon is present in the population when, in fact, it is not present (Type I error). The effect size is the degree to which the phenomenon is present in the population. The third contributing factor to the power of the test is the size of the sample. A power analysis performed for the current study is described below.

Cohen (1988) suggested that the chance of committing a type II error (Beta), or

mistakenly concluding that the phenomenon is not present in the population, should be

held to approximately four times the chance of a type I error (alpha). Since alpha is

generally held to about .05, the beta should be .20, resulting in a power of .80. Alpha for

this power calculation was therefore held at .05 and beta at .20. The effect size was

estimated using small (.10), medium (.30), and large (.50) effect sizes. The resulting

numbers of cases required were 1194 for small effect sizes, 133 for medium effect sizes,

and 48 for large effect sizes (Cohen. 1988, p. 259).

Using the medium effect size as a base, surveys were mailed to the human

resource managers of 986 firms. This number of surveys would yield between 986 and

1972 cases depending on the number of firms which reported on both a traditional

employment relationship and an external labor arrangement (ELA). Given the proportion

of firms which use both types of employment relationships, the maximum likely number

of cases the survey might have reached was approxinately 1200. Of the firms to which

surveys were mailed. 223 firms did not receive the questionnaire. The surveys were

returned as nondeliverable, yielding a net mailing of 773 firms. This somewhat high rate

of nondeliverables does raise some question as to the value and currency of the initial list

purchased. While 223 surveys were returned because the firm was no longer at the

address in the mailing list. more surveys may have failed to reach the manager to whom

they were addressed if the managers had left the firms to which the survey was mailed.

The initial and follow-up mailings resulted in 34 informants reporting on 76 jobs. While

this sample is small, it does meet the rule of thumb of 15 cases per variable recommended

for logistic regression (Hair, et. al., 1992; Stevens, 1986). This somewhat low response rate is of some concern, but as will be discussed in later chapters, several tests were used to examine the adequacy of the sample. The demographic characteristics of the sample were compared to the characteristics of the U. S. labor force to assess the similarity of the sample to the population and a post hoc calculation of power also was conducted. See chapter 5 for the results of the post hoc power calculations.

Measures

To test the hypotheses in a study appropriately, the constructs of interest must be measured as accurately as possible. In this study, great care has been taken to ensure that the measures used are both valid and reliable measures of the constructs. The following sections contain descriptions of the measures used in this study and the steps taken to assess the reliability and validity of those measures.

Independent Variables

This study includes three independent variables: uncertainty (the ability to monitor worker performance), transaction-specific investment, and the likelihood of repetition. As illustrated in Figure 3, each variable was measured in two ways: a primary measure used to test the hypotheses and a second measure using a different, but related construct. These secondary measures of similar but distinct constructs were used to create a nomological network of the relationships suggested in the transaction costs perspective. By assessing the relationships between the dependent variables, the independent variable, and the measures of these similar but not identical constructs, it was hoped that the past problems with the use of measures which were only loosely tied to theory can be avoided

or assessed. Where possible, the measures chosen mirror those used in previous studies

in which the measures showed good conceptual and theoretical ties to the constructs of

interest. A description of each measure, together with its reliability and validity, follows.

Figure 3

A Transaction Costs Model of External Labor Arrangements
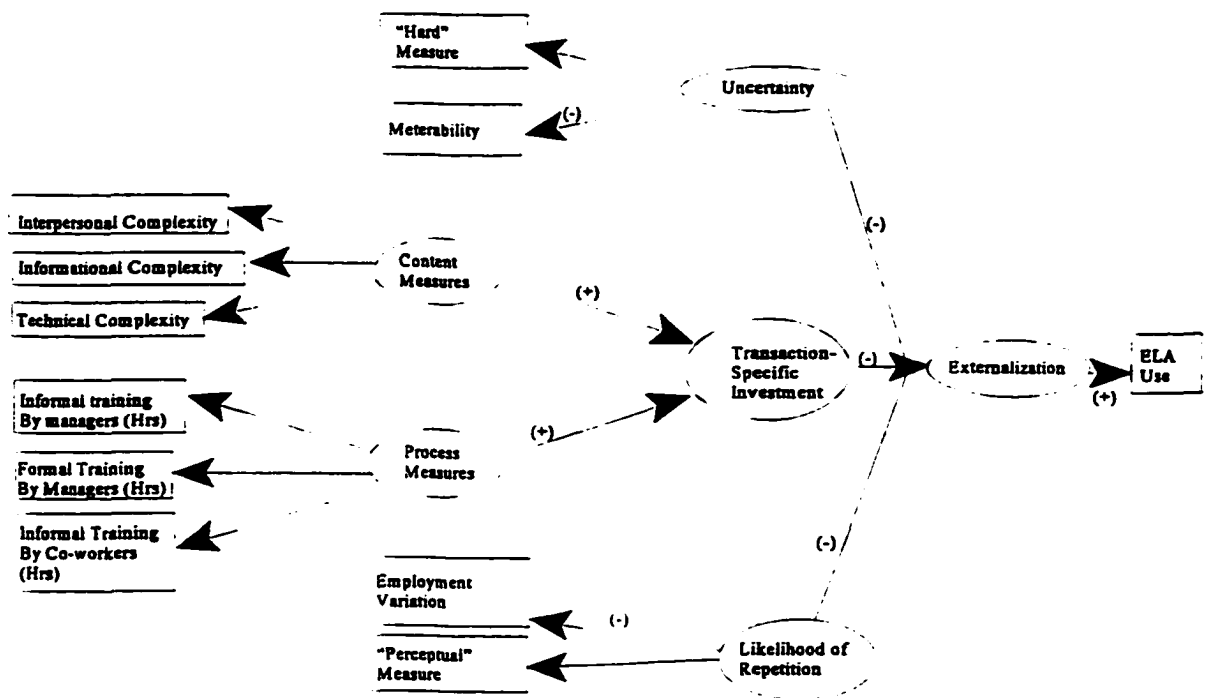
Uncertainty/Meterability

Greater ability to monitor performance should increase the likelihood that a firm

will fill a given job opening using an external labor arrangement. As the ability to

monitor performance grows more uncertain (uncertainty), the firm should be more likely

to hire a permanent employee to fill the position. The primary measure of uncertainty

will be a six item scale adapted from Jones (1987). In Jones' meterability scale,

respondents indicate the extent to which they agree or disagree with six statements concerning the ability of supervisors to monitor a worker's job performance on a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree). (See appendix, items a through f.) Three of the statements are worded positively and three are worded negatively to assess the extent of agreement bias (Podsakoff & Organ, 1986). Higher scores, with the negatively worded items reverse scored, indicate higher levels of meterability. The scores on the six items are added to obtain a score from 6 (very difficult to monitor performance) to 42 (very easy to monitor performance). Higher scores should coincide with the use of an external labor arrangement to fill the position.

Jones found this scale to have acceptable reliability (alpha = .72) despite using employee respondents to rate customers' perceptions. Asking questions of one group of people to measure the perceptions of a different group is likely to decrease the reliability of the measurement since the researcher is measuring not only the perceptions in question, but also the respondents' ability to interpret those perceptions. The respondents in this study are the subjects whose perceptions matter in the hiring decision. Since the human resource manager's perception of the meterability of the positions is posited to influence his or her use of ELAs to fill the position, this scale should prove more reliable in this study than in its original use.

Jones' scale also shows good construct validity. Jones used the scale in a test of the transaction costs perspective in service transactions. He found the results of the measure to be strongly correlated with theoretically related concepts such as span of control (p. < .01) and type of control mechanism (p. < .001). As a check of the validity of

the scale, a second measure of meterability will assess the use of varying techniques to control workers' performance.

Jones tested four forms of control: formalization, output control, behavior control and professional control. Only output control used a technique other than self reports of the respondent's perceptions. Since the purpose of the second measure, in this instance, is as a check for monomethod bias, a second self report of the respondent's perceptions is not particularly useful. The second measure of meterability in this study was therefore an item asking the respondent if any portion of the subject worker's compensation is based on performance, such as commissions, piece rate pay, or bonuses, and , if so, what percentage of the compensation is derived from performance-based sources.

This second measure is by no means a perfect measure of a job's meterability. Those positions which are not compensated using performance-based compensation may still allow supervisors to easily monitor performance. Those positions which are subject to performance-based compensation are, however, quite likely to be easily meterable. To base compensation on performance, the supervisor must have some measure of that performance. Measures like this one have been used in previous studies and have proven to fit well within the conceptual framework used here (Eisenhardt, 1985; Jones, 1987).

Transaction-Specific Investment

Transaction-specific investment, or the extent to which the firm invests in specific training for the worker, should increase the likelihood that the firm will fill a position with a permanent employee rather than with an ELA. Again, two measures were used to limit the likelihood of monomethod bias (Campbell & Fiske, 1959; Podsakoff & Organ,

1991). Following the technique used by Davis-Blake and Uzzi (1993), both a process measure of specific training (the number of hours of on the job training the worker receives) and a content measure (the complexity of the skills required of the worker) were used.

In the process measure, the respondent was asked to estimate the number of hours of training the worker received in four categories: formal training by managers, formal training by coworkers, informal training by managers, and informal training by coworkers. (See appendix A. Section 1 and 2, Items 1 through 4.) These four numbers were added to obtain a score for the amount of training the firm provides the worker. Higher scores should coincide with the use of a permanent employee to fill the position, while lower scores should coincide with the use of ELAs. On-the job training has served as a measure of firm-specific training in numerous studies (e.g., Becker, 1962; Williamson, et. al., 1975; Davis-Blake & Uzzi, 1993) and has proven to have good discriminant and convergent validity with other constructs in the nomological net.

The process by which firms invest in transaction-specific skills for their workers may not tell the whole story. Some jobs with a high need for specific skills, such as accounting and nursing, do not lend themselves readily to on-the-job training exclusively. Williamson, et. al. (1975) noted that the jobs which were most likely to be internalized within a bureaucratic form were those jobs high in complexity with respect to informal team accommodations, communication idiosyncracies, and process and equipment complexity. Williamson noted, however, that such training must still be transaction-

specific—not transferrable to other firms. As such, the value of such training should be only tangentially related to ELA use.

These categories have been condensed into three sorts of complexity: interpersonal, informational, and technical complexity (Davis-Blake & Uzzi, 1993). To measure these three types of complexity, multiple raters assigned the position described to a Dictionary of Occupational Titles code using the job title and occupational category provided by the respondents.

The Dictionary of Occupational Titles (DOT) code is a nine digit code assigned to specific job titles. The first digit assigns the job title to an occupational category. For example, DOT codes beginning with one (1) indicate managerial occupations, while codes beginning with two (2) indicate clerical occupations and jobs beginning with six (6) indicate machine trades. The second and third digits of the DOT code narrow the occupation further. For example, a code beginning with 65 indicates a job in the machine trades (6) and, more specifically, in the printing occupations (5). Type setters fall into the 650 code while book binders have a code of 653 (Dictionary of Occupational Titles, , p. xviii).

The fourth, fifth, and sixth digits of the DOT code are of particular interest in the present study. These digits refer to the job's required complexity with respect to data, people, and things, respectively. These digits range from zero, indicating the most complexity, to six (for data), eight (for people), or seven (for things), indicating the least complex job requirements (DOT, p. 1005).

Table 5

Skill Levels Required of Occupational Groups

Occupational Group	Data (Informational)	People (Interpersonal)	Things (Technical)
Managerial	5.94	3.69	1.12
Professional	4.82	3.10	4.55
Sales	3.81	3.39	1.47
Clerical	3.69	2.53	4.92
Craft	3.40	1.80	5.46
Service	2.41	2.21	2.94
Operative	2.25	1.54	3.63

Source: Davis-Blake and Uzzi, 1993, p. 221

Previous researchers have found the data, people, and things complexity rating to be good measures of informational, interpersonal, and technical complexity (Davis-Blake & Uzzi, 1993; Baron, et. al., 1986). Davis-Blake and Uzzi (1993) tested the three categories against both specific job titles and occupational groups. They found the complexity codes to be "generally consistent with our interpretation of the variables" (Davis-Blake & Uzzi, 1993, p. 207). For example, lawyers and instructors rated highest in interpersonal complexity, underwriters and accountants rated highest in informational complexity, and machinists and mechanics rated highest in technical complexity. Table five presents the rating for occupational categories which rated highest and lowest in each area of complexity.

Multiple raters used the responding managers' descriptions of the job title and occupational category to assign each job to a DOT classification. The inter-rater

reliability was assessed and found to be acceptable (alpha = .92). These DOT ratings then were reverse-scored so that higher numbers coincided with higher levels of complexity. The three complexity measures were considered both as a sum of the three measures and separately during data analysis, in case summing them resulted in a loss of meaning.

Likelihood of Repetition

The extent to which managers can assess their firm's need for a worker in a particular job, or likelihood of repetition, was again measured in two ways. A higher likelihood that the employer will need a worker in a particular position in the future should coincide with the use of a permanent employee to fill that position. Each measure of this variable offers strengths to offset the weaknesses in the other measures.

The primary measure uses the respondents' assessment of their certainty that they will need at least the current number of employees (full time equivalents) in the job described at six points in the future: one week, one month, three months, six months, one year, and five years. The respondents assessed their level of certainty on a seven point Likert scale (1 = very uncertain, 7 = very certain). The items were added, resulting in a range of from 6 to 42. Lower scores should coincide with the use of ELAs to fill the position.

While this measure has not been used in past studies and its reliability and validity have therefore not been assessed, the measure does show good face validity with respect to the construct under consideration. The reliability of the scale was assessed ex post using Cronbach's alpha. The scale's validity was assessed by examining its correlation with other measures of the same and different constructs. This measure was also used to

check the possibility that the job is seasonal in nature. For example, a firm may be quite sure they will need this employee next year at the same time, but at the same time be quite uncertain about their need for the worker in three months. Such seasonal jobs should lower the likelihood of repetition since only one or two of the items will reflect the seasonal nature of the job. None of the jobs in this sample appeared to be seasonal in nature.

A second measure used historical employment data to collect the number of employees in each occupational category on six dates in the past: June 30 and December 31 of 1997, 1996, and 1995. The number of employees on these six dates was used to calculate a coefficient of employment variation. Previous researchers have noted that higher levels of employment variation coincided with the increased use of ELAs in that firm (Davis-Blake & Uzzi, 1993). This relationship, according to TCE, should only hold true to the extent that past variability is used to assess future likelihood of repetition. While this second measure of the likelihood of repetition is not truly a departure from the self-report method, it does address a slightly different aspect of the construct—actual past variation as opposed to perceived future uncertainty. In this measure, the respondent also is asked to use archival data instead of his or her own perceptions. The use of archival data is hoped to limit the respondents' reliance on a consistency motif in their responses. The archival data request followed the perceptual measure in the questionnaire to reduce the likelihood that the archival data might influence the respondents' answers on the perceptual items. The coefficient of variation has shown good ties to the construct in previous studies (Davis-Blake & Uzzi, 1993; Baron, et. al., 1986).

Dependent Variable

The dependent variable in this study, the filling of a job position using either a permanent employment relationship or an ELA, is likely to be measured with little error. In fact, one previous study, which used a structural equation model to test its hypotheses, set the measure of externalization equal to one. presupposing no measurement error whatsoever (Walker & Weber, 1984). Still, sloppy completion of the questionnaire could result in some minimal measurement error. To search for the existence of such error, each section of the questionnaire will ask two questions about the position the respondent is describing.

First, the respondents were asked to pick the one category of employment which best describes the method used to fill the position: (1) permanent full-time employee. (2) permanent part-time employee. (3) temporary services agency hire. (4) limited duration direct hire, or (5) contract worker. Only categories one or two should be selected when describing the permanent employee and only categories three. four. or five should be selected when describing an ELA.

In a second test of the accuracy of the measure, the respondent selected whether or not the firm will supply a W-2 income tax form to the worker in question. Although some ELAs will require a W-2, making this measure an imperfect check. all permanent employees should receive a W-2. If a position categorized as permanent does not receive a W-2 form. the measure will signal some problem with the data. Between the three checks. the possibility of measurement error should be minimized.

Additional Variables

Several variables have, in past research, received mixed support as predictors of ELA use. While these variables are not posited to have a significant effect in this study, they were included to test for the predictive value of the transaction costs perspective over and above the influence of variables posited by competing theories. As discussed in chapter two, the significance of these variables is believed to have been a relic of imperfect construct measurement or incomplete model specification. By testing for the effects of these variables in addition to those predicted by the transaction costs perspective, the additional predictive value of these variables, if any, can be assessed. Three categories of variables were considered for inclusion: cost variables, demographic variables, and bureaucratic control variables. The cost and demographic variables were included in the final survey.

Cost Variables

Perhaps the most widely held belief about firms' reasons for the use of ELAs is their supposed lower cost. ELAs are presumed to be less costly than permanent employees. While this presumption has not been well supported in past research, it remains a widely held belief. If this study is to truly assess the reasons firms use ELAs, cost must be considered.

Since total cost is of interest here, the respondents were asked to estimate the total cost to their firms of the subject worker including salary, benefits, and other costs on a daily, weekly, or annual basis. These figures were converted to an hourly cost using an eight hour day, a forty hour week, and a 50 week year to allow comparison.

Demographic Variables

Early dual market hypotheses of ELA use posited that disadvantaged groups based on race, age, or gender would be more likely to be found in ELAs. Consequently, the present study included single items to measure these attributes of the workers holding the positions described. These variables are not posited to have any significant effect on ELA use in the present study. Previous findings that ELA use was associated with these demographic attributes did not examine the skill level of the workers. Once skill level has been measured. the effects of demographic differences apart from the differing skill levels of the groups should not be statistically significant.

ELAs also have been posited to be more prevalent in jobs requiring little formal education. Education should already be reflected in the job complexity measure of transaction-specific investment. Indeed, previous studies have not found education to be relevant to ELA use when skill level has been considered. Education was nevertheless included in the study to test for status effects independent of the actual requirements of the job. The respondents were asked to report the number of years of education attained by the worker on whom the respondent is reporting (e.g., 12=high school, 16= college, 18=Master's degree).

Bureaucratic Control Variables

The final category of possible variables for inclusion concerns the influence of powerful internal or external constituencies on firms' use of ELAs. Again, these variables have received only mixed support in past studies and they are not posited to have any significant effect in the present study. These variables also are viewed as being

firm-level rather than job level variables and therefore have been excluded for this investigation of job-level differences. Past research at the firm level has included information on the total number of workers employed by the firm (firm size), what percentage of the firm's work force is unionized (external control) and the number of pages of paperwork required to terminate an employee (bureacratic procedures). None of these variables seems likely to differ at the job level within a firm.

Data Analysis Techniques

Following the collection of appropriate measures of the relevant variables, the resulting data was analyzed to determine whether the hypotheses should be rejected or not. While the results of these procedures are described in chapter 4, each is briefly described here. Several methods were used in this study to examine the data, to assess the degree to which the transaction costs perspective does, indeed, predict the use of ELAs, and to determine the strength of each construct in predicting ELA use.

To assess the basic fit of the data to the model proposed by the transaction costs perspective, the primary data analysis technique for this study is logistic regression. Logistic regression was chosen because the dependent variable in this study is dichotomous. Each position will have been filled using either an ELA or a permanent employment relationship. Hair, Anderson, Tatham, and Black (1992) contend that logistic regression is the most appropriate statistical tool when dealing with a single, nonmetric dichotomous dependent variable and several metric or nonmetric (dummy coded) independent variables. Logistic regression allows for data which takes a binomial distribution rather than a normal distribution and is robust to violations of the

assumptions of multivariate normality and equal variance/covariance matrices across

groups. These features make the technique preferable to multivariate regression and

discriminant analysis when the dependent variable can only assume two values. This

logistic regression will test the regression equation in the form

$$Y=B1X1+B2X2+B3X3+B4X1X2+B5X2X3+B6X1X3+B7X1X2X3+e$$

where X1 is the level of uncertainty present when measuring the performance of the job

holder. X2 is the level of transaction-specific investment required in the position, X3 is

the likelihood of repetition in the position, and Y represents whether the position was

filled with a permanent employee rather than by using an external labor arrangement.

Each coefficient (B1, B2, B3) is a positive or negative logarithm which must be

transformed (the antilog) into a number greater than (for positive logs) or less than (for

negative logs) one. A coefficient greater than one increases the probability of an event

occuring, in this case the use of an ELA to fill a position, while a coefficient less than one

decreases the probability of the event (with ELA use coded as one and permanent

employment coded as two). Transformation into antilogs provides a number which can

be used to assess the contribution to explained variance for each variable. The statistical

significance of the contribution was assessed using the Wald statistic.

In addition to testing the variance explained by each hypothesized relationship, the

overall predictive power of the transaction costs perspective was also tested. The Chi-

squared goodness of fit statistic was used to assess the overall fit of the data to the model

(Hair, et. al., 1992).

Because some of the independent variables and the dependent variable are measured using the same method (i.e., a self-report questionnaire), the possibility of monomethod bias exists. To test for the presence of such bias, if any, a multi-trait multi-method matrix was used to summarize the relationships between the variables and the methods used to measure those variables.

Potential Limitations

In designing the methods used to test a set of hypotheses, the researcher should make every effort to reduce the number of potential limitations inherent in his or her design. Nevertheless, the design is likely to have limitations of one kind or another. In the present study two related problems are the most likely to represent potential limitations. By recognizing these limitations in advance, the researcher can test for the effects of the problems and every effort can be made to limit the effect these limitations have on the study's results

Each of the variables in this study was measured in at least two ways. In several instances, though, both measures come from the same source--the firm's human resource manager. In such instances, the researcher must consider the possibility of single source bias. Single source bias is systematic error variance attributable to the use of a single rater to measure two or more constructs (Podsakoff & Organ, 1986).

Another potential problem concerns the use of the same instrument, the self-report questionnaire, to collect multiple measures. The problem, common method variance, is "the overlap in variance between two variables attributable to the type of measurement instrument used rather than due to a relationship between the underlying constructs"

(Avolio, Yammarino, & Bass, 1991, p. 572; Campbell & Fiske, 1959). These two problems are related. In fact, single source bias is simply a special case of common method variance and the two problems may limit the study in the same way. The concern with these potential limitations is that any correlations found between variables may be artifacts of the method used to measure the constructs rather than evidence that the constructs are, themselves, related in any meaningful way.

As several researchers have suggested (e.g., Podsakoff & Organ, 1991; Spector, 1987; Nunnally, 1978), these potential limitations are caused by the same sorts of things. For example, the respondents may have a desire to make their responses internally consistent and so, although their views of the constructs when measured seperately might be different, the respondents alter these views to make their responses appear consistent when responding to items on the same instrument. Respondents are also prone to acquiescence (Cronbach, 1950) or agreement bias, in which the respondent is more likely to agree than to disagree with a given item. Social desirability may also cause bias in the results of a study. Respondents may want to seem as if they act in a way that is acceptable to society when they, in fact, do not act in that way. The goal of the researcher is to attempt to break up these response sets, to limit the extent to which agreement will bias results in one direction or the other, and to limit the impact that socially desirable attitudes have on the respondents' answers.

Several steps have been taken to limit, or at least test for, the effects of common method variance and single source bias in this study. First, each area has been measured in at least two ways. Where possible, two different methods have been used for

measurement or two different raters have provided measures. In some cases both measures use the same rater, but the measures use different instruments. While this procedure will not eliminate the potential for common method variance, it may serve to break up the respondents' response sets or schema by accessing different sorts of information. The measures of likelihood of repetition are both reported by the same rater, but the first asks for the rater's perceptions of future likelihood of repetition while the latter asks the rater to merely report archival data about past employment variation collected by his or her firm. The archical data should rely less on previously devised scripts or schema in the respondents' minds, thereby reducing the likelihood of the consistency motif problem. By asking for the perception first, it is hoped that the rater will not rely heavily on the archival data when providing his or her perceptions about the future. Where agreement bias or acquiescence might be a problem, in the meterability scale, half the items have been worded negatively and half positively to reduce bias in either direction.

A final potential problem lies with the statistical conclusion validity of the study. Great care has been taken to select the appropriate statistical tools, but a potential problem still remains. Because the same firms are reporting on two jobs, the measures are not truly independent. To assess the impact of such a problem, the data will be reanalyzed using one job per firm, with the firms randomly assigned to each condition. This procedure will effectively halve the sample size, but is necessary to assess the independence of the data or the effect of non-independence.

Conclusion

This chapter concerns the methods used to test the hypotheses originally presented in chapter two. The appropriate subjects for the study, the sampling frame, and the number to be selected from the sampling frame have been carefully considered. The procedures used to gather and analyze the data have been discussed. The best available measures of the variables have been selected. The limitations inherent in these choices have been discussed. In the next chapter, the results of this method will be discussed and the results interpreted.

CHAPTER IV

RESULTS

The data analysis techniques employed in this study are presented in this chapter. First, data screening techniques were used to examine the data and its fit with the assumptions of later statistical tests. Second, an analysis of the sample's demographic characteristics was performed. Third, descriptive statistics were calculated, including correlations and internal reliabilities. Fourth, two logistic regression models were tested. The results of these analyses are presented in the following sections.

Data Screening

Before analyzing any data, the data were first screened for problems which might effect the later analyses. The data did not require any modifications. Less than 1 percent of the observations had missing data, so no modifications were made. The data also were visually inspected for outliers. Since no obvious outliers were seen, again no changes were made to the data and no data points removed.

Since the primary method for testing the hypotheses in this study is logistic regression, the data were next checked against the assumptions of that test. Under logistic regression, the data does not have to conform to the assumption of a normal distribution curve, but the solution may be more stable if the predictor variables do approximate a normal distribution. Consequently, the data were visually inspected using histograms and scatter plots. The data appeared to conform to the normal distribution

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curve. As an additional check, numeric tests for kurtosis and skewness were conducted. These tests did not reveal any variables which approached or exceeded the + or - 1.96 level which Hair and his colleagues (Hair, Anderson, Tatham, & Black, 1992) recommend as a conservative (p. <.05) critical value.

Logistic regression also requires that no exact linear dependencies exist among the predictor variables (DeMaris, 1992). While none of the predictor variables showed high intercorrelations, scatter plots were inspected for linearity as an additional check. No multicollinearity was observed among the three main predictor variables or the cost or demographic variables.

A final assumption concerns data independence. To make sure that the observations were independent of each other, the cases were randomly assigned to two groups and Levene's test of data independence was conducted (DeMaris, 1992). This test revealed no significant dependence among the cases. Further, a logistic regression test of the model using only one case per firm resulted in the same basic findings as the test using the entire sample. Since the data appeared to conform to the assumptions of the statistical tests, the investigation now turned toward understanding the data.

Demographic Characteristics

The demographic characteristics of the sample are presented in Table 6. Each respondent was a human resources manager who reported the characteristics of the subject holding a given position in the firm. The subjects they described, the employees hired to fill each position, appear to conform closely to the U.S. labor force as a whole on most characteristics. These subjects ranged in age from 19 to 57 years old and averaged

Table 6
Demographic Characteristics
(N = 72)

Characteristic	Sample Percent	U.S. Labor Force Percent
Gender		
Male	45	51.8
Female	55	48.2
Race/National Origin		
Caucasian/White	76	83
African American/Black	13	12
Hispanic	8	9
Asian/Pacific Islander	3	*
Education (Mean = 13.7, Std. Dev. = 2)		
Some High School	3	12
High School	47	32
Some College	12	27
College	36	18
Graduate School	1	11
Age (Mean = 33.5, Std. Dev. = 10)		
<34	56	57
>34	44	43
Occupational Category		
Managerial	3	5
Technical	32	19
Sales	4	6
Clerical	41	21
Craft	0	11
Service	1	17
Operative	19	20

Source: U.S. Bureau of Labor Statistics (Polivka, 1996)
*Figures will not total because Asians are included in Caucasian category and Hispanics are sometimes counted as Caucasian or African American.

13.7 years of education. Slightly more than half the subjects (55%) were female and 76% of the subjects were Caucasian. The subjects worked mostly in clerical (41%), technical (32%), and operative (19%) occupations although six of the seven occupational categories were represented. In the next section, these and other variables will be examined more closely.

Descriptive Statistics

The means, standard deviations, internal reliabilities (coefficient alphas), and intercorrelations among the variables in this study are presented in Table 7. Two of the three scales showed acceptable reliabilities (Nunnally, 1978). Uncertainty of Repetition, the measure of Likelihood of Repetition, showed an internal reliability of .92. The Meterability scale had an internal reliability of .73. This reliability could be increased slightly by dropping the only negatively phrased item using from the scale.

Only On-the-Job Training, the measure of firm-specific skill acquisition, showed a low internal reliability (alpha = .52). Subsequent factor analysis (presented in Table 8) revealed that three of the four items loaded on a single factor, with the two measures of training by managers loading most strongly on that factor. This result indicated the possibility that training by managers may differ from training by coworkers. Consequently, the two items measuring training by coworkers and the negatively phrased item from the Meterability scale were dropped and the analyses re-run. These changes did not improve the reliabilities significantly, and did not change the factor loadings on the factor analysis. Both the original scale and the truncated scale were used in subsequent analyses. While the changes strengthened the results, they did not change the

basic findings of the study's results. Consequently, the analyses using the measures as originally specified are presented here.

An examination of the significant correlations among the variables provided few surprises. Education was positively correlated with Costs (p.<.001), suggesting that workers with more education command higher salaries. Neither Education nor Costs was correlated with the dependent variable (the correlations are near zero). Gender was positively correlated with both Costs (p. <.05) and Race (p. < .01). Males in the sample earned more money than females and were more likely to be minorities. Again. neither Gender nor Race was correlated with the dependent variable.

The only two variables which were significantly correlated with the dependent variable, ELA use, were the independent variables in hypotheses 1 and 2. On-the-Job Training, the measure of firm-specific skills, was negatively correlated with the dependent variable, ELA status (p. <.001). Uncertainty of Repetition, the reverse of Likelihood of Repetition. was positively associated with ELA status (p. < .001). Both of these correlations were in the directions predicted. lending partial support for hypotheses 1 and 2. These two variables were significantly (p. <.05) correlated with each other. Not surprisingly, more uncertainty about the likelihood that the firm would need a worker in the position in the future is related to reduced investment in training for that position. Although the correlation between firm-specific skills and uncertainty of repetition was only .286. a scatter plot inspection was conducted to test for multicollinearity among these items. This test did not reveal multicollinearity among the three main predictor variables to be a problem. The third variable of interest, Meterability, was not significantly associated with ELA use.

Table 7

Descriptive Statistics and Correlations Matrix
(N= 76)

Variable Name	Mean	Std. Dev.	Reliability (Alpha)	Costs	Age	Educ	Gender	Race	Uncert	OJT	Meter	Skill Level	Emp Var	Com- pens
Costs	41948.3	33993.63	-	-										
Age	33.67	10.09	-	.077	-									
Educ	13.67	1.98	-	.611***	-.008	-								
Gender	1.45	.50	-	.263*	-.057	.017	-							
Race	1.35	.75	-	.139	-.110	-.182	.372**	-						
Uncert.	13.55	9.58	.92	.019	.163	-.069	-.052	.172	-					
OJT	51.02	53.20	.53	.210	-.032	.204	.018	-.091	-.286*	-				
Meter	31.98	5.66	.73	-.207	.121	-.111	.032	.021	.197	-.040	-			
Skill Lev	12.17	3.98	-	.222	.130	.223	-.077	-.208	-.052	.183	.025	-		
Emp Var	5.89	7.04	-	.243	-.232	.249	.173	.029	.031	.169	-.009	.120	-	
Compens	6.69	6.69	-	.352**	.057	.337	.136	-.115	-.028	.164	-.113	-.037	.243	-
ELA Use	1.51	5.03	-	.016	.025	-.021	-.073	.233	.470***	-.378***	.127	-.072	-.075	-.037

* p. < .05
** p. < .01
*** p. <.001

Table 8

Factor Loadings

Scale Item	Component 1	Component 2	Component 3	Component 4	Component 5
Meter A				.798	
Meter B		.907			
Meter C		.912			
Meter D				.821	
Meter E					.743
Meter F					.865
OJTFC			.343	.360	-.303
OJTFM			.775		
OJTIC			.613		
OJTIM			.774		
Uncert A	.661				
Uncert B	.881				
Uncert C	.873				
Uncert D	.907				
Uncert E	.857				
Uncert F	.716				

Total Variance Explained = 73.436

Of additional interest was the finding that neither the cost nor the demographic variables were associated with ELA use. These variables had been included in the study originally because so many previous authors had speculated as to their effect on ELA use. No relationship between these variables and ELA use was hypothesized in this study and

none was found. Further testing of the hypotheses was completed by conducting a

logistic regression analysis.

Logistic Regression Results

To examine the effects of Meterability, Likelihood of Repetition, and Firm-

specific Skills on ELA use, two separate logistic regressions were performed. The first

examined only the main effects of the three variables while the second included both the

main effects and the interaction effects of the three independent variables.

Main Effects

The results for the logistic regression of the three independent variables on ELA

use are presented in Table 9. The model as a whole explains, to a significant degree, the

conditions under which firms may fill a given position using an ELA rather than with a

traditional long-term employment relationship (X^2 = 23.626, p. <.0001, d.f. = 3). This

chi- square is analogous to the global F-test in regression: it suggests that at least one

predictor variable is a significant predictor of ELA use.

Table 9

Logistic Regression: Main Effect of Independent Variables on ELA Use

Overall Fit of Model: -2LL = 78.96, X^2 =23.63 (p. <.0001, df = 3)

Variable	B	S.E.	Wald	df	R	Exp (B)
Uncert	.1123	.0386	8.49 (p. <.01)	1	.025	1.12
OJT	-.0121	.0058	4.31 (p. <.05)	1	-.15	.99
Meter	.0223	.0482	.21	1	.00	1.02
Constant	-1.5681	1.6299	.93	1		

The model correctly classified 72.97% of the observations. The cross validation technique was employed to estimate the proportion of variance explained by the model (DeMaris, 1992). This technique suggested that the model explains about 45 percent of the variance above that which would be predicted by chance (similar to an R^2 of .45 in regression).

To interpret the effect of each independent variable on ELA use, the reader must understand that the binary dependent variable, ELA use, was coded 0 for permanent employees and 1 for ELAs. Therefore, positive beta coefficients correspond with an increased probability that the position will be filled using an ELA. Negative beta coefficients reduce the probability of ELA use. Two of the three independent variables proved to be significant predictors of ELA use.

As predicted, Uncertainty of Repetition showed a significant positive association with ELA use (Wald = 8.49, p. <.01). This result suggests that firms are more likely to fill a position using an ELA to the extent that they are uncertain of their need for such an employee in the future. Again, hypothesis 1 was supported.

On-the-Job Training, the measure of firm-specific skill acquisition, was negatively associated with ELA use (Wald = 4.31, p. <.05). This finding supports hypothesis 2. ELAs are less likely in positions requiring firm-specific skills.

The beta coefficient for meterability was positive, the direction predicted in hypothesis 3. However, the Wald statistic was not significant at the p. <.05 level. Hypothesis 3, therefore, was not supported.

Interaction Effects

To test for the effects on ELA use of interactions among the independent variables, a second logistic regression was performed. The results of this regression are presented in Table 10. The addition of the interaction terms appears to improve the overall fit of the model, but this fact is misleading. The model still explains, to a significant degree, when firms fill a position using an ELA rather than a permanent employee ($X^2 = 25.10$, p. $=.0007$, df $=7$). The model was now able to classify 77.03% of the observations correctly. This improvement in the ability to classify observations cannot be said to support hypothesis 4. Simply adding terms to a nested model will necessarily raise its predictive ability. To determine whether the interaction model predicts ELA use better than the main effects model, the difference in model Chi²s ($X^2_{(ie)}$ - $X^2_{(me)}$) was calculated. This term, $X^2 = 1.478$, was not significant at the p. $< .05$ level with four degrees of freedom (DeMaris, 1992).

An examination of the Wald statistics and beta coefficients in the new model reveals that none of the variables, either the main effects or the interaction effects, are now significant. This result is quite surprising given the improved predictive ability of the interaction model.

One possible explanation for this finding would be the power of the statistical test. Given the low response rate and correspondingly small N in this study, the statistical power may not be sufficient to deal with the loss of additional degrees of freedom in the second model. The sample size in this study does meet the rule of thumb of 15 cases per predictor variable for the main effects model, but not for the interaction model (Hair, et.

al., 1992; Stevens, 1986). To see if this were the case, a post hoc power analysis was

conducted. The results of that analysis confirmed that a sample size of more than 700

would have been required to detect the effect size present in the sample. Further

discussion of the power analysis is presented in Chapter 5

. A second possible explanation for the lack of significance could be

multicollinearity among the interaction terms. An examination of the main effect and

interaction effect variables revealed high correlations related to the interaction terms.

Further examination via scatter plots supported the contention that multicollinearity was

present among the interaction terms.

Table 10

Logistic Regression: Interaction Effects

Overall Fit of Model: -2LL = 77.48, X^2 = 25.10 (p. = .0007, df=7)

Variable	B	S.E.	Wald	df	Exp(B)
Uncert (A)	.05	.33	.02	1	
OJT (B)	.01	.09	.01	1	
Meter (C)	.05	.15	.12	1	
B X C	.00	.00	.13	1	
A X C	.00	.01	.01	1	
A X B	.00	.01	.05	1	
A X B X C	.00	.00	.01	1	
Constant	-2.16	4.99	.19	1	

These two explanations may well both contribute to the lack of significant

findings with respect to the interaction terms. Cortina (1993) and Bobko (1986) note that

high correlations among interaction terms are to be expected since the interaction terms are the products of the same main effects variables. Any effect of the interactions on the criterion variable can only be seen past the multicollinearity in very large samples. While the interaction effects did not prove significant, the lack of significance may have resulted from a sample size which was not large enough to detect a relationship in the presence of multicollinearity.

Chapter Summary

This chapter contains descriptions of the statistical procedures used to analyze the data in the study. The data screening techniques used revealed no problems which required modification of the data, but multicollinearity was a problem with the interaction measures. An examination of the demographic characteristics revealed that the subjects in the sample mirrored the characteristics of the U. S. labor force as a whole. Descriptive statistics showed significant correlations between the dependent variable and two of the three independent variables. These correlations were in the expected directions for all three independent variables.

The test of the model presented in Chapter 2 was conducted using logistic regression analysis. This model, based on the tenets of transaction cost economics, proved to be a good predictor of ELA use (p. < .0001). Two of the three hypotheses regarding main effects drawn from TCE also were supported, while the third main effect variable did not prove to be a significant predictor of ELA use. The fourth hypothesis, that interactions among the main effects would also be significant in predicting ELA use, was not supported. In Table 11, a summary of the results is presented as they relate to the hypotheses from Chapter 2. These results will be discussed further in Chapter 5.

Table 11

Synopsis of Findings

Hypotheses	Result
H1: Firms are less likely to use ELAs in positions which are likely to recur frequently	Supported (p. <.01)
H2: Firms will be less likely to use ELAs to fill positions requiring firm-specific skills	Supported (p. <.05)
H3: Firms will be less likely to use ELAs to fill positions in which performance is difficult to assess.	Not Supported
H4: The interactions between 1, 2, and 3 above will be significantly correlated with ELA use.	Not Supported

CHAPTER V

DISCUSSION

This chapter presents an analysis of the results presented in the previous chapter.

First, each of the four hypotheses and the implications of the findings for each are

discussed. Next, the limitations of the study are discussed, with particular reference to

each of the major threats to validity. Finally, directions for future research are discussed.

Analysis and Implications of the Findings

The structure of the following discussion of the study's findings and implications

follows the four hypotheses originally suggested in Chapter 2. These hypotheses were

based on the basic tenets of transaction cost economics (Williamson & Ouchi, 1981a;

Coase. 1937) as a theory of externalization. The model as a whole proved to be strongly

significant in predicting when firms would fill a given position using an ELA. Notably,

none of the variables drawn from competing explanations for ELA use proved statistically

significant in predicting ELA use at the individual job level. Previous studies. which

used the firm as the unit of analysis, had found both costs and demographic

characteristics to be predictors of ELA use. As was posited in the current study, neither

of these categories of variables proved to predict ELA use at the individual level. The

overall pattern of findings in the present study, then, provides support for the transaction

costs theory in explaining ELA use.

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According to this theory, labor externalization should be more likely when there is a high uncertainty regarding the likelihood of repetition, low investment in firm-specific skills, and high ability to monitor performance. Additionally, the likelihood of ELA use should be greater when two or more of these influences are present simultaneously. As was noted in the previous chapter, some, but not all, of these hypotheses were supported.

Likelihood of Repetition

Hypothesis 1 suggested that ELA use would be more likely in the presence of high uncertainty regarding the likelihood of repetition. This hypothesis was strongly supported (p. <.01). ELA use showed a significant positive relationship with the uncertainty of repetition measure, suggesting that ELA use is more likely when the future need for a worker in that position is uncertain.

This relationship is consistent with the TCE contention that uncertainty regarding the need for a worker to fill a given position in the future should increase the probability that a given transaction will be externalized--that the position will be filled using an ELA. Firms in this sample did appear to be attempting to minimize transaction costs. This contention has received some support in previous findings in ELA research (Davis-Blake & Uzzi, 1993; Sloane, 1989; Mangum, Mayall, & Nelson, 1985). Those studies, however, used the firm as the level of analysis, when TCE explicitly assumes each transaction at the individual job level will differ. The relationship was quite strong in this study, supporting the contention that the appropriate level of analysis is the job rather than the firm. It is particularly important to note that this relationship held true whether the cost and demographic variables were included in the regression equation or not.

Firm-Specific Skills

Hypothesis 2 suggested that ELA use would be less likely in positions which required firm-specific skills. This hypothesis was also supported (p. <.05). ELA use showed a significantly negative relationship with On-the-Job Training, the measure of firm-specific skills.

Again, this finding is just what would be seen in a firm which was attempting to minimize transaction costs. This finding also supports previous findings in ELA research conducted at the firm level (Davis-Blake & Uzzi, 1993; Mangum, Mayall, & Nelson, 1985). That both the likelihood of repetition and skill-specificity variables were associated with ELA use lends credence to the contention that firms create dual labor markets to shield key employees from layoffs during slack demand (Pfeffer, 1994; Pfeffer & Baron, 1988), as well as supporting the contention by Kochan and his colleagues (1994) and Benders (1991) that firms are hesitant to invest in training for workers in ELAs.

Meterability

Hypothesis 3 suggested that ELA use would be more likely in positions in which performance was easy to measure. While the direction of the association was in the predicted direction, the relationship was not significant at the p. <.05 level. Thus, hypothesis 3 was not supported.

While TCE clearly maintains that a relationship should exist between these two variables, no support has been offered to date in the research on ELAs. No previous studies have included the variable; most collapse it into the Likelihood of Repetition

measure even though the constructs are conceptually distinct. This lack of a significant relationship between meterability and ELA use may mean that the ability to monitor the performance of the worker in a given job is not important to the decision to internalize or externalize that job. The lack of significance may also have been a methodological artifact, though. For example, the relatively small sample size may have been insufficient to detect a smaller effect size in the meterability variable.

Interactions Among the Predictor Variables

Hypothesis 4 suggested that interactions among the predictor variables would increase the explanatory power of the model. While including the interaction terms did increase the model's predictive power, it did not do so to a significant level. Thus, hypothesis 4 was not supported. Whether this finding means that the decision to internalize or externalize workers is based on independent decisions regarding the three main predictor variables, or whether multicollinearity obscured the relationship, cannot be assessed on the basis of these results.

McClelland and Judd (1993) note that field researchers are at a disadvantage compared to experimenters with respect to detecting interaction effects. Data collected in field settings often has less variability than data collected in an experimental setting. Thus, field researchers are often less able to detect interaction effects because they are in a less controlled setting. McClelland and Judd recommend increasing the number of observations to help detect interaction effects not otherwise seen. Future researchers may wish to use larger samples. The effect of sample size and other possible limitations will be discussed more fully in the next section.

Limitations and Validity Issues

By acknowledging the limitations of this study, the author hopes to assist readers

in accurately interpreting the results, and to assist future researchers in focusing their own

studies of ELA use. This section is organized according to Cook and Campbell's (1979)

four types of validity issues. The limitations of the study are grouped according to (1)

statistical conclusion validity, (2) internal validity, (3) construct validity, and (4) external

validity.

Statistical Conclusion Validity

Statistical conclusion validity concerns issues which might lead the researcher to

make incorrect statistical inferences. The first issue concerns statistical power. If the

sample size is too large, the researcher runs the risk of finding relationships which do not,

in fact, exist (Type I error). If the sample size is too small, the risk is that true

relationships may be obscured (Type II error). Since Type I error is generally held to be

more damaging than Type II error, the power analysis is commonly run using an alpha

(probability of type I error) of .05 and a beta (the probability of Type II error) of .20, or

four times as large as the alpha (Cohen, 1988). Table 12 presents the results of a post hoc

power analysis run to determine the effect of the sample size on the findings.

As shown in Table 12, the sample size was not adequate to test for the small effect

sizes commonly associated with organizational research. The effects of uncertainty of

repetition and firm-specific skills were large enough to be observed despite the study's

small number of cases. However, it is possible that the effects of meterability and the

interaction terms might have been observed given a larger sample size. Thus, a limitation

of the study may have been that sample size was too small to detect significant relationships in hypotheses 3 and 4. That the predictive ability of the model was so strongly significant is testimony to the strength of the associations between the predictors and ELA use.

Table 12
Results of Post Hoc Power Analysis

Description of Item	Model I Main Effects Only	Model II Interaction Effects after Partialling for Main Effects
Test Statistic (Chi^2)	23.626	1.478
Sample Size (N)	74	74
Degrees of Freedom	3	4
Type I Error Rate (α)	.05	.05
Contingency Coefficient (C)	.4919	.1399
Effect Size (w)	.565	.1413
Power (1-β)	.952	.151
Sample Size necessary for Power = .80	45	702

A second issue concerns the reliability of the measures. While the reliabilities for two of the three measures were good, the measure of skill-specificity was below the level recommended for appropriate statistical conclusions. The four items which make up the measure of reliability were subsequently entered as four seperate items in stepwise fashion. The step was still significant (p. <.05) and three of the four items individually were significant. Only informal training by coworkers did not prove to be a significant predictor of ELA use. Since the test of the hypotheses using the individual items did not

differ from the test using the additive scale, the original additive measure of skill specificity was retained. Higher reliability levels might have resulted in stronger significance levels for this variable.

A third issue concerns whether the data meet the assumptions of the statistical tests used. As reported in Chapter 4, a check of the data against the assumptions of logistic regression revealed no major violations with respect to the three basic variables. One area of concern was the discovery of multicollinearity among the interaction effects variables. No multicollinearity was observed among the main effects variables, but multicollinearity may have obscured any effect that the interactions among the variables have on ELA use.

Internal Validity

Internal validity, in correlation-based research, concerns the possibility that an unmeasured variable or event may promote spurious correlations among the measured variables (Mitchell, 1985). To limit the potential threat from unmeasured variables, a thorough literature review was conducted and variables which had been found to relate to ELA use were included in the study. None of these variables was significantly correlated with ELA use and including them in the regression equations as control variables did not change the basic findings on any of the hypotheses.

The wide range of settings in which data were collected should limit, though not eliminate, the effect of some unmeasured event on the variables of interest. Despite these precautions, it is not possible to completely rule out the potential for unmeasured variables to have caused spurious correlations in a cross-sectional correlational study such

as this one. While the data were collected in many firms, industries, and locations, all the data were collected at the same time. Some event which occurred across the settings, such as a transient event in the national economy, may still have posed a threat to the internal validity of the study.

Construct Validity

Construct validity refers to the extent to which the measures selected actually measure the constructs of interest. Using a single method and a single source to collect the data led to another possible limitation in this study—common method variance. In such a case, it is difficult to tell whether the observed relationships are due to real associations among the constructs of interest, or whether the correlations come from some form of measurement bias in the instrument or the respondent.

Spurious correlations may stem from the respondents' desire to appear consistent in their responses (the consistency motif), from a desire to give answers which are socially desirable, from attempting to guess the answers which should be given to support or contradict the theory assumed to lie beneath the questions, or from a host of other considerations detailed in the literature (e.g., Spector, 1994; Avolio, Yammarino, & Bass, 1991; Podsakoff & Organ, 1986). Both procedural and post hoc methods were used to remedy these potential problems.

Procedurally, several steps were taken to ensure the construct validity of the measures. First, the measures used were deemed to be the best available. ELA research is still in its infancy, but each item used had been validated in previous studies of ELAs,

TCE, or both. On their faces, the measures appear to relate well to the constructs of interest.

The measure of transaction-specific investment has shown good validity in previous research (Davis-Blake & Uzzi, 1993). For example, Williamson and Ouchi (1981a) have argued that firm-specific skills can only be acquired on the job. Such a statement suggests that on-the-job training is a better measure of firm-specific skills than are related measures like skill level. If a transaction does not require idiosyncratic investment, the parties to the transaction could buy or sell the skills on the open market and thereby avoid opportunism. Past ELA researchers (Cohen & Haberfeld, 1993; Jackle, 1993; Golden & Applebaum, 1993) have noted that many high-skill occupations (e.g., accounting and nursing) are commonly found in ELAs. The findings in the present study support this view. The questionnaire used in this study contained measures of both skill level and skill specificity, although only skill specificity was posited to predict ELA use. As predicted, while skill specificity did prove to be a significant predictor of ELA use, skill level was almost unrelated to ELA use. Additionally, skill specificity and skill level showed a low correlation. This pattern of results suggests not only that skill level and skill specificity are distinct constructs, but that lack of skill specificity, not low skill levels per se, drives ELA use.

Second, care was taken to break up common method variance at the item level. For example, the researcher attempted to break up response sets by reverse coding some items. Additionally, multiple scaling formats were used, and the questionnaire was organized such that perceptual measures always preceded more fact-based measures. For

example, the perceived uncertainty of repetition scale preceded the section asking for

actual employment levels on six dates in the past. No single-item measures were used

and the best available scales were selected for each measure. Each of these techniques

has been suggested as a way to minimize the potential for common method variance

(Spector, 1994; Pierce, J. L., Gardner, D., Cummings, L., & Dunham, R., 1989; Spector,

1987). Finally, an attempt was made to assess the construct validity of the measures by

measuring each variable in at least two ways--the perceptual measure and a theoretically

related measure from the nomological net using hard data.

Table 13

Summary of MTMM Matrix Results

Trait Correlations	Method Correlations
A1:A2 = .031 Likelihood of Repetition Measures	A1:B1 = -.286
B1:B2 = .183 Skill Specificity Measures	A1:C1 = .092
C1:C2 = -.113 Meterability Measures	B1:C1 = -.062
D1:D2 = .849 ELA Use Measures	

Despite these procedural remedies, common method variance may still

have posed a threat to the construct validity of the study. To assess the potential threat of

common method variance, a post hoc Multi-Trait, Multi-Method matrix was created.

This matrix did not show clear evidence either for or against the influence of a common

method on the results, though. While two of the three method correlations were quite

low, the method correlation between uncertainty of repetition and skill specificity was -

.286. Despite the lack of clear evidence concerning common method variance, several

features of this matrix are worthy of discussion.As noted above, the secondary measures

are not measures of exactly the same construct, as would be recommended in the best

case, but of nomologically related constructs (Avolio, Yammarino, & Bass, 1991;

Campbell & Fiske, 1959). As such these measures would not be expected to correlate as

strongly with the primary measures of the predictor variables as would true second

measures of the same constructs. The only instance in which the method correlation

exceeded the trait correlations was in the case of uncertainty of repetition and skill

specificity. Three reasons may exist for this pattern of correlations.

First, a real relationship may exist between on-the-job training and uncertainty of

repetition. Several researchers have suggested just such a relationship. Both Benders

(1991) and Kochan and his colleagues (1994) have argued that, in the face of uncertainty

that the transaction will recur, the firms would reduce their investment in training of

workers in ELAs.

Second, the weak correlation between actual past employment variability and

perceived future variability may reflect an actual weak relationship between the

constructs. Stability in demand for an employee in the past may not be perceived as

evidence that the firm will have a consistent need for the employee in the future. Other

considerations may carry more weight in the minds of the human resource managers.

Third, common method variance may have influenced the results. Such a threat

cannot be completely eliminated from consideration. However, the method correlation

between the uncertainty and meterability measures was quite weak, lending credence to the possibility that the constructs may actually be related rather than being a mere artifact of method variance.

Further support for the lack of monomethod bias comes from noting that, as was suggested in Chapter 3, previous studies of ELAs and of TCE (Davis-Blake & Uzzi, 1993; Walker & Weber, 1992) have tacitly assumed that the dependent variable, ELA use, had been measured without error. To the extent that such a position is correct, the potential for the effect of common method variance to have biased the findings would be reduced. A test of the correlation between ELA status and receipt of a W-2, the two measures of ELA status, showed the measures to be very highly correlated (r=.849). Given that some ELAs do require W-2s from the employer, this correlation suggests little or no measurement error with respect to the dependent variable.

Despite the problems inherent in using a single source and method for collecting the primary measures of each independent variable, a self-report questionnaire was still the best method for measuring the constructs of interest. What is important in hiring decisions (like the decision to use an ELA or not) is the perception of the person making those decisions. These perceptions are best measured by a self-report (Spector, 1994; Podsakoff & Organ, 1986). Consequently, a self-report questionnaire was the most appropriate method for collecting the data in this study. Nevertheless, common method variance may have influenced the construct validity of the study.

External Validity

External validity refers to whether the findings of a study can be generalized to

other populations, settings, and times. The demographics of the workers in this sample are quite similar to those of the U.S. work force as a whole. The use of multiple occupations suggests that these findings are generally representative of the population of U.S. workers. These findings should not, however, be generalized to other nations.

While the study was conducted using multiple firms and industries, the use of human resource managers as respondents may make this sample different from firms which do not have a human resource department. For example, very small firms may differ in their use of ELAs from those firms in this sample. Extending these findings to firms with different characteristics should be considered carefully.

A cross-sectional study such as this one is also very limited in the times to which the results can be generalized. For example, the state of the economy and current unemployment levels may influence firms' use of ELAs. Caution should be exercised in extending these findings to other times. Additional research is needed to test whether the findings of this research apply to other populations, settings and times. Filling this need is but one suggestion for future research offered in the following section.

Directions for Future Research

As noted previously, ELA research is still in the very early stages of investigation. Numerous gaps remain in understanding the use of ELAs. To fill these gaps, several suggestions for future research are offered. These suggestions fall into two broad categories: predictors of ELA use and methodological issues.

One important area for future research concerns the level of analysis appropriate to ELA decisions. In the present study, the individual (job) level of analysis was used to

test when firms choose to fill a given position with an ELA. Previous studies were conducted at the firm level and were therefore examining the characteristics of the firm which might lead to ELA use. The argument made in chapter 2 was that, since 90 percent of firms use ELAs and few, if any, use ELAs exclusively, the decision to externalize was likely made for individual jobs within each firm rather than from one firm to another. By using the firm as the level of analysis, confounding variables may have entered the picture. By testing the hypotheses at the job level in the present study, it was hoped that these presumably spurious correlations could be eliminated. While some of the findings are similar, further research is needed to examine whether the characteristics of the firm are still important in predicting ELA use when individual level characteristics are held constant. Neither cost nor the demographic variables were significant predictors of ELA use at the job level even though they had proven significant in previous firm-level studies. If these variables do not predict ELA use, a more parsimonious explanation of ELA use is possible.

The results of this study raised several questions concerning the primary constructs of interest. In each case, the primary measure of the construct proved to be a better predictor of ELA use than were related, but conceptually distinct, constructs. With respect to the measure of transaction-specific investment, on-the-job training proved to be a better predictor of ELA use than was the level of skill required for the job. This result is consistent with the TCE perspective. Transaction-specific skills, not skill levels, are important to the decision to internalize or externalize a given job. Previous studies have usually tested skill level rather than skill specificity. The constructs are clearly different.

A closer examination of the skill specificity measure suggests that the type of training on the job may matter. Three of the four items measuring on-the-job training were significantly correlated with ELA use. Formal training by managers was most strongly correlated with ELA use, while formal training by coworkers was not significantly correlated with ELA use. Factor analysis revealed that formal training by coworkers was the only item in the measure which did not load strongly on the same factor. This pattern raises questions concerning whether different processes are at work in the decision to use an ELA. Skill specificity appears to be more important in predicting ELA use than is the level of skills acquired. Perhaps the methods used to acquire those specific skills (e.g., vestibule training vs. true on-the-job training, formal vs. informal training, managerial training vs. training by coworkers. etc...) are also important in predicting ELA use.

The results of the study also raise questions concerning whether meterability is a predictor of ELA use. This was the first study which included meterability as a predictor of ELA use. The lack of a significant effect cannot rule out meterability as potential predictor of ELA use. Methodological artifacts may have obscured the relationship if one exists. Several facts support this contention. While the meterability scale showed acceptable internal reliability, the factor analysis showed the six items to load in pairs on three separate factors. One of the pairs consisted of the only two items in the scale which were significantly correlated with ELA use. When the factor made up of these two items was used in the regression equation. meterability had a significant effect on predicting ELA use (p. <.05). Alternatively, a log transformation of the original six-item meterability scale also allowed the variable to become a significant predictor in the

regression equation. While the three factors which make up the meterability scale are not easily interpretable, the two items which correlated significantly with ELA use were the items in the scale most specifically focused on process issues rather than outcome issues:"It is difficult for supervisors to estimate the amount of time it takes to perform this job" and "It is difficult for supervisors to estimate the amount of resources it takes to perform this job." The other items in the scale tended to be results-oriented, for example: "It is difficult for supervisors to tell whether this worker has done a good job." Like the skill-specificity issue, the process of evaluation or of acquiring skills may be more important than the outcomes in predicting ELA use. These process versus content issues seem to be fruitful areas for further investigation.

The process vs. content issue raised above may also contribute to clarifying which theories of ELA use have the most value. Both the human capital and resource based views, in addition to TCE, incorporate similar constructs. The present study has begun to address the distinctions between these views, but specific tests comparing the predictive value of the theories are also needed. For example, in the human capital view, the worker becomes more valuable to the firm as the worker raises the level of skills he or she can bring to the firm (Becker, 1962). The resource-based view adds that this value is more important to the extent those skills are not transferrable between firms. The present findings suggest that this distinction is important, but further investigation is needed to distinguish the relative merits of these theories.

The cross-sectional and correlational nature of the present study also raises issues for further investigation. All that can really be said based on the present results is that the

predictor variables are related to ELA use in some way. Causality cannot be established. Longitudinal research is needed to examine whether firms truly use these construct in choosing to internalize or externalize a given position, or whether the causal order is reversed. The present results may indicate that firms externalize a given job because they believe that job does not require firm-specific skills. These same results might also be interpreted to mean that, having used an ELA to fill a position, the firm is hesitant to invest in training the job-holder. The former interpretation seems more likely given that the skills are firm-specific and therefore not transferrable to other firms.

A related area for future research would incorporate other factors which influence ELA use. While the model tested here was a strong predictor of ELA use, it does not explain all of the variation in the decision to internalize or externalize a given position. Future researchers should attempt to identify and test other important predictors of externalization if they exist. Perhaps additional qualitative research could begin to identify additional predictors of ELA use.

Finally, every study of ELA use to date has been conducted in the U.S. or in Great Britain. Further tests are needed to see if cultural factors are influencing the relationships seen between ELA use and it predictors. Likewise, future researchers should attempt to ascertain whether the findings of the present study are applicable to other settings or times.

Chapter Summary

The major contribution of this study is the finding that tenets of the transaction costs perspective do appear valuable in explaining ELA use. Firms seem to be attempting

to minimize transaction costs with their use of ELAs to augment more traditional employment relationships. The overall model suggested by TCE proved to be a good predictor of ELA use in the sample (p. <.0001). Both likelihood of repetition and skill-specificity proved to be good predictors as well. Moreover, two considerations which were instrumental in forming the hypothesized model also received support in the study.

Based on a review of the literature, the author noted that no previous study had examined ELA use at the individual job level using multivariate statistical techniques. The use of the firm as the unit of analysis made some of the findings difficult to accepts. Previous studies had suggested a relationship between costs and ELA use and between demographic variables and ELA use. The current study found no significant relationships between these variables. Consequently, the TCE model appears to be a more parsimonious explanation for ELA use than previous studies which drew from multiple theories. While this contribution is significant, the study was not without limitations.

The limitations of this study were organized around the four main types of validity: statistical conclusion validity, internal validity, construct validity, and external validity. The greatest potential threats relate to the use of a single source of information and a self-report questionnaire, and to the relatively low power of the study resulting from the small sample size. With respect to the latter threat, the fact that the model proved to be so significant a predictor of ELA use may be viewed as testament to the strength of the underlying effects.

Both the strength of the findings and the limitations in this study emphasize the importance of further research to investigate ELA use. The suggestions for future

research revolve around specifying more concretely the relationships among the variables and tying them more closely to specific theories. This study should be viewed as a single step in a long journey toward an understanding of ELA use.

APPENDIX

RESEARCH QUESTIONNAIRE AND COVER LETTER

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Section I: Describing a Temporary Worker

Please Read: *In the first section of this questionnaire. please describe the worker in your firm who has been most recently hired through some external labor arrangement (contract workers. temporary employees and limited duration direct hires fall into this category). If your firm has never employed a temporary worker. please write "NONE" under job title and move on to Section II.*

What is this worker's job title?_____

(Note: the above response will be used to assign the job to a Dictionary of Occupational Titles code).

Please circle the ONE category which most closely describes the method used to fill this position.

1. Temporary Services Agency hire
2. Contract Worker
3. Limited Duration Direct Hire

4. Permanent Full-time Employee
5. Permanent Part-time Employee
6. Other (please specify)_____

Do you expect to provide a W-2 form to this worker? (Circle One)

1. Yes   2. No

With respect to THIS WORKER. Please circle the number which best indicates the extent to which you agree or disagree with EACH of the following statements.							
a. If supervisors watch this employee at work. they can easily tell how well he or she is doing the job.	Strongly Agree					Strongly Disagree	
	1	2	3	4	5	6	7
b. It is difficult for supervisors to estimate the amount of time it takes to perform this job.	1	2	3	4	5	6	7
c. It is difficult for supervisors to estimate the amount of resources it takes to perform this job.	1	2	3	4	5	6	7
d. Supervisors can always tell if this employee has done a good job.	1	2	3	4	5	6	7
e. It would be time consuming for supervisors to check up on how well this employee is doing his or her job.	1	2	3	4	5	6	7
f. It would NOT be very expensive for supervisors to check up on how well this employee is doing his or her job.	1	2	3	4	5	6	7

Please estimate the number of hours of training your firm plans to provide and has provided already to this worker in each of the following four categories.

a. Formal training by managers _____ hours
b. Informal training by managers _____ hours
c. Formal training by coworkers _____ hours
d. Informal training by coworkers _____ hours

Please rate how certain you are that your firm will require AT LEAST the current number of employees (full time equivalents) in this job at each of the following six times in the future.							
a. One week	Very Certain					Very Uncertain	
	1	2	3	4	5	6	7
b. One month	1	2	3	4	5	6	7
c. Three months	1	2	3	4	5	6	7
d. Six months	1	2	3	4	5	6	7
e. One year	1	2	3	4	5	6	7
f. Five years	1	2	3	4	5	6	7

Please circle the ONE occupational category which best describes the position this worker holds

1. Managerial
2. Professional/Technical
3. Sales
4. Clerical
5. Craft
6. Service
7. Operative

How many people did your firm employ in this job category (including both permanent and temporary employees) on each of the following six dates?

Dec. 31, 1997 _____   June 30, 1997 _____
Dec. 31, 1996 _____   June 30, 1996 _____
Dec. 31, 1995 _____   June 30, 1995 _____

Please estimate the total cost to your firm of this employee including wages, benefits, salary, fees and other costs? _____ per _____ (Hour, Day, or Year)

What percentage of this employee's compensation is based on performance outcomes, such as commissions, piece-rate pay, etc. _____% (A zero (0) means none of this worker's pay is based on performance.)

What is this employee's Age? _____

What is this employee's Race or National Origin?

1. Caucasian/White   4. Asian or Pacific Islander
2. African-American/Black   5. Other. Please specify:_____
3. Hispanic

What is this employee's gender?
1. Female   2. Male

How many years of education does this worker possess? _____
(Note: 12=high school, 16=college degree)

Section II: Describing a Permanent Employee

> **Please Read:** In the second section of this questionnaire. please describe the worker in your firm who has been most recently hired through some traditional labor arrangement. The title permanent employee is meant only to distinguish those jobs which are expected (as opposed to legally guaranteed) to be ongoing from jobs which carry no such expectation.

What is this worker's job title?_____
(Note: the above response will be used to assign the job to a Dictionary of Occupational Titles code).

Please circle the ONE category which most closely describes the method used to fill this position.

1. Temporary Services Agency hire
2. Contract Worker
3. Limited Duration Direct Hire

4. Permanent Full-time Employee
5. Permanent Part-time Employee
6. Other (please specify)_____

Do you expect to provide a W-2 form to this worker? (Circle One)
 1. Yes 2. No

With respect to THIS WORKER, Please circle the number which best indicates the extent to which you agree or disagree with EACH of the following statements.							
a. If supervisors watch this employee at work. they can easily tell how well he or she is doing the job.	Strongly Agree					Strongly Disagree	
	1	2	3	4	5	6	7
b. It is difficult for supervisors to estimate the amount of time it takes to perform this job.	1	2	3	4	5	6	7
c. It is difficult for supervisors to estimate the amount of resources it takes to perform this job.	1	2	3	4	5	6	7
d. Supervisors can always tell if this employee has done a good job.	1	2	3	4	5	6	7
e. It would be time consuming for supervisors to check up on how well this employee is doing his or her job.	1	2	3	4	5	6	7
f. It would NOT be very expensive for supervisors to check up on how well this employee is doing his or her job.	1	2	3	4	5	6	7

Please estimate the number of hours of training your firm plans to provide and has provided already to this worker in each of the following four categories.

a. Formal training by managers _____ hours
b. Informal training by managers _____ hours
c. Formal training by coworkers _____ hours
d. Informal training by coworkers _____ hours

Please rate how certain you are that your firm will require AT LEAST the current number of employees (full time equivalents) in this job at **each** of the following six times in the future.							
a. One week	Very Certain					Very Uncertain	
	1	2	3	4	5	6	7
b. One month	1	2	3	4	5	6	7
c. Three months	1	2	3	4	5	6	7
d. Six months	1	2	3	4	5	6	7
e. One year	1	2	3	4	5	6	7
f. Five years	1	2	3	4	5	6	7

Please circle the ONE occupational category which best describes the position this worker holds

1. Managerial
2. Professional/Technical
3. Sales
4. Clerical
5. Craft
6. Service
7. Operative

How many people did your firm employ in this job category (including both permanent and temporary employees) on **each** of the following six dates?

Dec. 31. 1997 _____   June 30. 1997 _____
Dec. 31. 1996 _____   June 30. 1996 _____
Dec. 31. 1995 _____   June 30. 1995 _____

Please estimate the total cost to your firm of this employee including wages. benefits. salary. fees and other costs?_____ per _____(Hour. Day. or Year)

What percentage of this employee's compensation is based on performance outcomes. such as commissions. piece-rate pay. etc._____% (A zero (0) means none of this worker's pay is based on performance.)

What is this employee's Age? _____

What is this employee's Race or National Origin?
1. Caucasian/White   4. Asian or Pacific Islander
2. African-American/Black   5. Other. Please specify:_____
3. Hispanic

What is this employee's gender?
1. Female   2. Male

How many years of education does this worker possess? _____
(Note: 12=high school. 16=college degree)

March 14, 1998

Dear Colleague,

Recent events have emphasized the importance of firms' use of temporary and contract workers to supplement more traditional, long term employment arrangements. More than twenty percent of the jobs created in the 1990s used these external labor arrangements. By some estimates, as much as a quarter of the U.S. work force is employed in external labor arrangements. Despite the increasing importance of labor externalization, little is known about this phenomenon.

The enclosed survey is part of a research project I am conducting at the University of North Texas. The survey concerns firms' reasons for using external labor arrangements such as temporary workers and limited duration direct hires. As a participant in the study, you may receive a copy of the study's results if you wish. The questionnaire has been designed so that you can complete it in a few minutes and you need only circle your responses or jot down a few numbers. Your participation is voluntary and no further action will be requested. I have enclosed a postage paid envelope to make participation easier.

Your responses to the survey items are very important to this project's results, since you represent many other firms. The insights you provide will go far toward helping us understand this phenomenon. I have included an identification code on your questionnaire solely to prevent your receiving follow-up mailings once you have responded. You can be absolutely sure that the responses you provide are strictly confidential—no individual responses will be published. Your answers will be used only in combination with many others for statistical analysis.

I truly appreciate your taking a few minutes to complete the survey. With your help, I believe we can take a major step forward in understanding the changing nature of staffing. If you should have any questions or concerns, please contact me at (940)565-3140. Thank you again for your help.

Sincerely,

John K. Masters
Principal Investigator

This project has been reviewed and approved by the University of North Texas Institutional Review Board for the Protection of Human Subjects in Research (940)565-3940.

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IMAGE EVALUATION
TEST TARGET (QA-3)

1.0   2.8   2.5

1.1   3.2   2.2

     3.6

     4.0   2.0

          1.8

1.25   1.4   1.6

150mm

6″
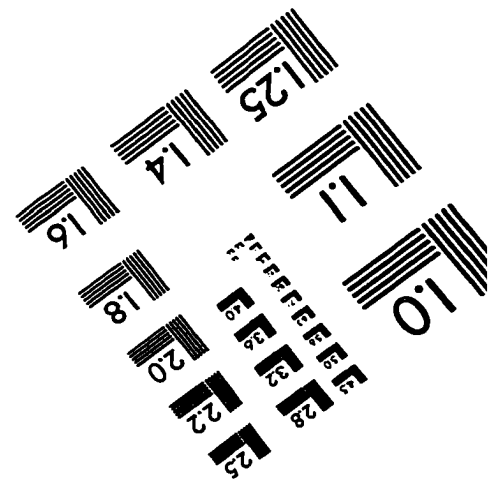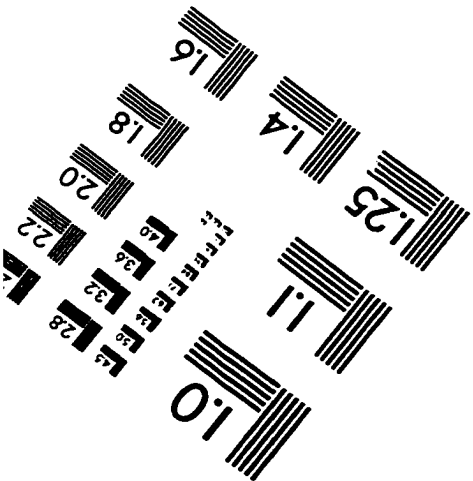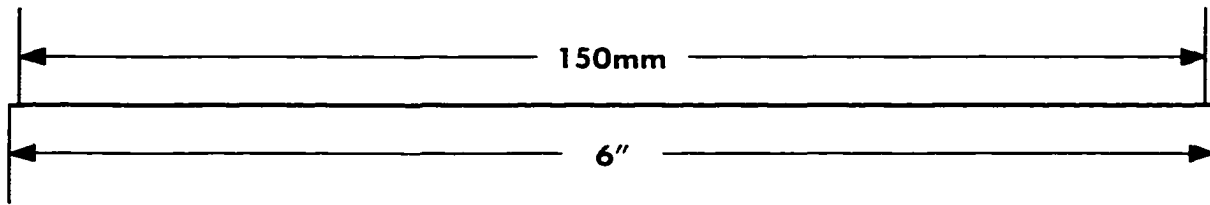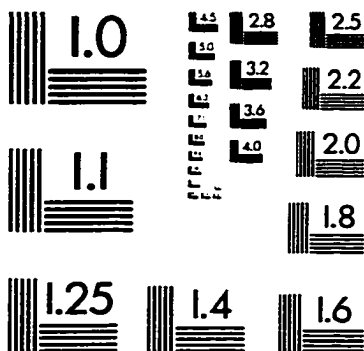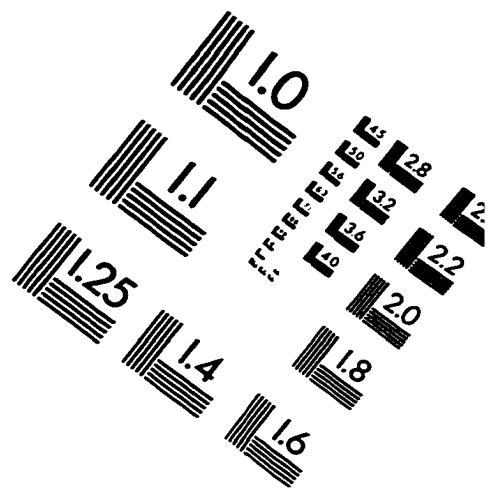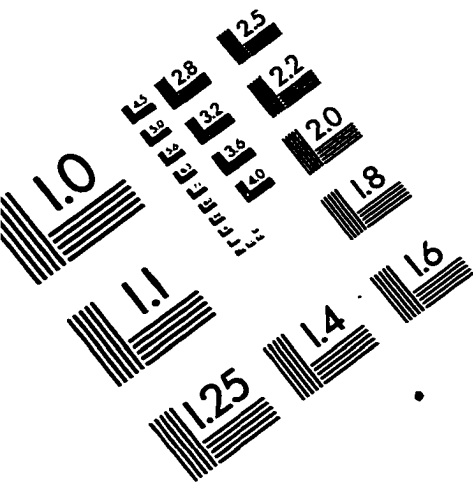
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