AN EXAMINATION OF AN INTEGRATIVE EXPECTANCY MODEL
FOR AUDITORS' PERFORMANCE BEHAVIORS
UNDER TIME BUDGET PRESSURE

DISSERTATION

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by

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In recent years there has been a growing use of expectancy theory to study motivation and performance in accounting environments. Such research efforts have resulted in reporting some inconsistent findings and low explanatory power for the expectancy model. In an attempt to increase the explanatory power of the model, several researchers have suggested the inclusion of nonexpectancy components in the model. This research was undertaken to develop an integrative expectancy model by incorporating some elements of goal setting theory and attribution theory into the expectancy formulation. The study was also designed to provide empirical evidence on the validity of a within-subject design of the proposed model through an empirical investigation of auditors' performance behaviors to meet budgeted time in public accounting firms.

Alternative performance behaviors to meet budgeted time were modeled in three choice processes. The first deals with auditors' choice to report unfiltered time (i.e., report actual time worked) as opposed to filtered time worked (i.e., underreporting and sign-off behaviors). The second process deals with auditors' choice to engage in underreporting as opposed to sign-off behaviors. The third process deals with auditors' choice to reduce or overrule some audit procedures based on professional judgment.
Data were collected using an anonymous questionnaire from a sample of auditors at the staff, senior, and supervisory staff levels of fifty-three national, regional and local accounting firms in the Dallas-Fort Worth area. Data received from 671 participants were analyzed using the Automatic Interaction Detector (AID3) and multiple regression techniques.

The findings of this research support the expectancy formulation and its relevancy to the accounting environments. However, five nonexpectancy variables were found to have significant relationships with auditors' choice processes to meet budgeted time. These five variables were supervision, budget feasibility, length of experience, organizational level and firm size classification.
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CHAPTER I

INTRODUCTION

Budgets and budgetary processes occupy a central position in management control systems. Accounting firms, like other organizations, use budgets and budgetary systems to plan and control their activities. In fact, generally accepted auditing standards (standards of field work) require, among other things, that the audit work be adequately planned. As a part of the planning process for any audit engagement, each accounting firm prepares an audit program (or a set of audit programs) which specifies or outlines the work activities deemed necessary to achieve the audit objectives. Of particular importance to the audit program formulation is the assignment of individual tasks to auditors and the estimation of time requirements for each audit task. It is assumed, as Jiambalvo and Pratt (23, p. 735) pointed out, that task assignments and time budgets are determined in light of the planners' (audit partners and managers) perception of the degree of task complexity (e.g., professional judgment) and the experience of each individual auditor. Therefore, it is the planners' expectation that each individual auditor will carry out the assigned task(s) within the limitation of the budgeted time.

To monitor and control audit engagements, accounting firms usually establish their own management control systems. A major element of such systems is the budgetary control process built around time budgets. This
Budgetary control process requires each individual auditor to submit on a biweekly or semi-monthly basis a detailed time report that states the actual time spent on performing task assignments. Figure 1 depicts such a budgetary control process.

As shown in Figure 1, once a time budget is set, it is considered as a performance goal that is to be achieved in conjunction with the task assignment. This means that each individual auditor is required not only to carry out the task assignment but also to meet budgeted time for that task assignment. However, for one reason or another, an auditor may spend more or less time than what is budgeted to carry out a specific task assignment. The budgetary control system should be able to depict such a deviation through the comparison of budgeted time with
the actual reported time by the auditor. Measuring the size of such time deviation and analyzing the situation will provide feedback for both audit planners and the individual auditor. For audit planners, the produced feedback will be used for such ongoing purposes as determining an auditor's pay, evaluating performance, and billing of clients. Also, this feedback will be used in subsequent periods for budgetary planning and control purposes. For the individual auditor, the produced feedback will constitute a learning device for upcoming task assignments. This feedback will also provide indications about the audit planners' reactions toward meeting the time budget and its importance to performance evaluation.

Statement of the Problem

Recent studies (e.g., 5; 6; 26; 32; 33; 50) have shown that an undue emphasis on meeting budgeted time (as a performance goal) in audit settings induces pressure on auditors in performing their work. This induced time budget pressure, in turn, produces a tendency among auditors to override the budgetary control system in order to meet the budgeted time. Such a tendency may take several forms. Some auditors tend to reduce the extent of their audit work. That is, they tend to sign-off an audit program without performing one or more required audit steps. Alderman and Deitrick (5) and Kelly and Seiler (26) reported that over thirty-two per cent of their sample respondents indicated the occurrence of such a behavior. Some other auditors tend to underreport their chargeable time; that is, they tend to perform some of the audit work on their personal time and do not report such effort on their time reports. Rohde (50) and Lightner, Adams, and Lightner (33) reported
that over fifty per cent of their sample respondents indicated the occurrence of such a behavior. Discussions with some practicing auditors revealed, however, that some auditors may tend to meet time budgets simply by not following up or overlooking some exceptions or adverse conditions in the audit population. Such a behavior may affect the audit quality.

In fact, time budget pressure in audit settings has become a subject of concern as a result of the findings of the Commission on Auditors' Responsibilities (6). The Commission reported that the "... evidence seems significant to conclude that present time-budget pressures reduce the quality of audits" (6, p. 117). The Commission expressed its belief that some induced time budget behaviors are inconsistent with professional auditing standards and the goals of budgeting systems. It states:

When a budgeting system induces behavior such as signing off for work not performed or performing work but not recording the time for billing purposes, that budgeting system is producing conduct that is the opposite of the goals of a budgeting system and is inconsistent with professional auditing standards (6, pp. 117-118).

This research examines auditors' behaviors to meet budgeted time as a performance goal of audit task assignments in public accounting firms. The specific problem addressed in this research is how auditors choose one behavior rather than another to meet budgeted time and what variables affect such a choice process.

The Need For Research

Accounting research on budgetary control systems has spanned more than three decades in an attempt to provide understanding of how budgets
are actually formulated, how they are used, and how they influence organizational participants' attitudes and behaviors. For example, Argyris (8), Becker and Green (11), and Benston (12) investigated the behavioral effects of budgets on motivation and consequently on performance. With many of such fundamental issues remaining unsettled, accounting researchers continue to investigate behavioral antecedents and consequences of budgetary control systems. Stedry and Kay (55), Milani (39), and Kenis (27), among others, investigated the relationship between some perceived characteristics of the budget (e.g., accuracy, clarity, difficulty, and extent of participation) and job performance and satisfaction. But, as Ronen and Livingstone (51, p. 672) pointed out, "mostly, these [previous studies] were launched in terms of specific principles taken from various areas of psychology such as aspiration level, participation, and attitude change."

As a matter of fact, most of these previous studies have attempted to investigate the behavioral linkage between budgets and organizational participants' performance in terms of motivational effects. However, psychologists and other behavioral scientists generally agree that performance is influenced mostly by physical as well as psychological factors related to the organizational participant and the organizational environment. That is, performance is the result of not only the budgetary system but also human activities. Furthermore, according to Porter and Lawler (46), performance is a function of several variables which include ability, motivation, and organizational role perceptions. Thus, there is a need for a better approach that would integrate more linkages between budgets and performance in order to
better understand the influence of budgets on performance. Figure 2 presents such possible linkages between budgets and performance.

![Fig. 2--Possible linkages between budgets and performance](image)

As shown in Figure 2, the relationship between budgets and performance is mediated not only by motivation but also by ability, perception, and field work activities. The importance of incorporating field work activities lies in the fact that performance reports usually emphasize the results, not how these results are achieved. The budgetary process in audit settings tends to emphasize the importance of meeting time budgets as a performance goal rather than how time budgets are met. Such a built-in tendency of the budgetary process may produce some detrimental effects on the audit, the individual auditor and the accounting firm. Therefore, there is a need to study auditors' behaviors to achieve the performance goal of time budgets or what can be called "performance behaviors" in order to understand how auditors choose one behavior rather than another to meet budgeted time and identify the variables that affect such a choice process.

**Usefulness of the Research**

This research utilizes the expectancy theory formulation as the primary frame of reference as discussed in the next section. Therefore,
its results should be of interest to researchers and parties interested in expectancy theory.

For practitioners the implications point toward time budget preparation and its role in the process of performance evaluation. If results support to the research hypotheses discussed in Chapter IV could be shown, accounting firms could use such information to revise their existing policies regarding time budgets in a way that would strengthen their control systems. It is believed that some of the auditors' performance behaviors result in feeding invalid data into the firm's control system. Such invalid data may affect audit costs, audit risk, and planning for recurring engagements.

Theoretical Framework

There are numerous explanations of why people behave as they do in organizational settings, each with varying amounts of supporting and conflicting research evidence. These different explanations for human behavior are documented in the industrial psychology and organizational behavior literatures and are normally referred to as theories of motivation. These theories range from the familiar concept of the need hierarchy to the attribution theory and locus of control. Luthans (37, p. 176), among others, provided a useful classification of these theories into two groups: content theories and process theories. The content theories focus on the substantive nature of those variables which motivate people at work. The process theories, on the other hand, are basically concerned with identification of the variables influencing motivation and how these variables relate to one another.
In order to develop a sound behavioral model, the choice of an appropriate theoretical framework is an essential first step. The appropriate framework is the one that seems to capture best the essence of the problem and will lead to meaningful results. Since the current research is concerned with how auditors choose one performance behavior rather than another to meet budgeted time and the variables that affect such a choice, process theories seem to provide a more appropriate theoretical framework as a starting point for this research.

Five alternative process theories of motivation can be identified. They are equity theory, operant theory, goal setting theory, expectancy theory, and attribution theory. A brief review of these major process theories is in order.

**Equity Theory**

Equity theory is an exchange-like theory which is concerned with the impact of social changes on human behavior. The theory suggests that motivation is basically a social comparison process where an individual compares what he gets for his effort with what other individuals get for their efforts. If such an individual perceives an equity situation between himself and the others, he will be motivated to exert his effort.

The roots of equity theory go back to the cognitive dissonance and exchange theory (37, p. 197). However, it was Adams' work (2, 3) that established the comprehensive formulation of the theory. He argued that a person assesses his inputs (all factors perceived by an individual to be relevant for getting some type of returns) to the work situation and his outcomes (all factors perceived by an individual as returns on his
inputs), and then expresses all these factors as a ratio (outcomes/inputs). This ratio is then compared to ratios perceived, by the person, to be held by other relevant co-workers. These other relevant co-workers are called "comparison others." If the person believes that his ratio, compared to that of others, is better or worse, then a state of inequity exists. In such a case, the person will strive to restore the ratio to equity. This "striving" process to restore equity is used as the explanation of work motivation. Adams suggested that such "striving" may take several forms, among which are changing cognitions about the inputs or outcomes or leaving the field.

One of the interesting aspects of the theory is that the existence of a perceived state of inequity due to overpayment may cause a person to provide more inputs, even though he could avoid doing so without penalty. However, Adams hypothesized that the threshold for perceived inequity in the case of overpayment is higher than that of perceived inequity in the case of underpayment (2, p. 282).

The research findings of Adams (3) and Adams and Jacobsen (4) provided support for the theory under conditions of inequity with regard to both underpayment and overpayment. However, Andrews (7) and Pritchard (47) reported little support for the theory.

Goodman (20), in a comprehensive literature review, pointed out some of the problems associated with equity theory research. He discussed four problems. First, little is known about how individuals decide on the choice among co-workers to select what is called "comparison others." Secondly, the operational definition of inputs and outputs is not clear. Thirdly, little is known about how combinations of
inputs and outputs are derived. Finally, it is difficult to determine how and when these input and output factors change over time.

Mitchell (41) pointed out one other potential problem concerning equity theory. Even though most people believe that a sense of justice is an important factor in affecting work motivation, little is known about how justice is defined or its actual impact on performance.

**Operant Conditioning Theory**

Operant conditioning theory concerns learning that occurs as a consequence of behavior. The theory assumes that an individual learns by producing changes in (operating on) the environment. Thus, an individual's effort on any given work task is mainly determined by environmental processes.

Skinner (53, 54) provided the initial impetus for the theory. In questioning the ability of the classical theory of learning to explain the learning process, he proposed the "reinforcement theory" as a device to explain the learning process. He argued that the classical theory of learning explains only respondent behavior; that is, an individual responds or behaves according to an existing stimulus, which is called "conditioned stimulus." Thus, if there is no stimulus, there will be no response. Skinner felt that more complex human behavior tends to affect, or operate on, the environment. This latter type of behavior is learned and guided by some "reinforcers." That is to say, an individual will perform well on a given task not because of, for example, pay or recognition, but simply because of a desire to reinforce higher pay or more recognition. Thus, behavior is guided by such reinforcers.
Nord (45), among others, pointed out that reinforcement theory by Skinner has been extended into a general theory of motivation known as "operant conditioning theory." It postulates that an individual (operant) behaves to change the conditions of the environment. Thus, behavior can be explained through environmental processes rather than psychological ones.

Several researchers have attempted to provide evidence concerning the validity of the operant theory. For example, Yukl, Wesley, and Seymour (60) investigated the effect of several types of reinforcement schedules, where the frequency of a reinforcer was made contingent upon specific response. Adam (1) investigated the general proposition of the theory where he hypothesized that reinforcement increases performance. He employed feedback as a reinforcement procedure and reported supportive results for the hypothesis.

As one would expect, however, operant theory is not without its problems. Mawhinney (38) discussed some empirical research studying operant propositions and pointed out some of the problems associated with this type of research. He argued that the interpretation of the results are not warranted because of the use of different reinforcement schedules (continuous, fixed ratio, and variable ratio) which impedes comparisons. Furthermore, there were several definitional inconsistencies of schedules and reinforcers.

Locke (34) presented a review of the methodological problems concerning operant theory research and provided his justification for the need of some other theoretical framework for future research. He suggested that in the studies using operant procedures, various other
confounding factors could conceivably cause the reported supportive results. He argued that reinforcement probably affects actions through expectations, goals, and other cognitive processes.

Duncan (17) pointed out that there is a danger in restricting our attention completely to the individual worker and not systematically considering all the contingencies of the job. Workers are part of the total work environment, which includes other workers, the foreman, union officials, and so on.

**Goal Setting Theory**

Goal setting theory is a cognitive theory which is concerned with the perceived role of task goals on human behavior. In his initial proposal of the theory, Locke (35) argued that people's intentions to work toward a specific goal are the primary motivating forces of work behavior and effort on a given task. Goals provide a directional nature to people's behavior and guide their thoughts and actions to one outcome rather than another. Therefore, it is important to consider the motivational aspects of goals in the setting process.

Locke's theory has generated a considerable amount of research concerning the effects of different goal settings on performance. In particular, a series of laboratory studies and field work has been carried out to test the linkage between goal setting and performance. Locke (35) and Latham and Yukl (29) reported the results of most of these studies which showed that different goal settings have affected performance. They found that subjects in lab experiments and actual employees in field settings performed better when goals were specified than those who operated under some generalized goal conditions such as
"do your best." Furthermore, these studies have demonstrated that those individuals who operated under difficult goals performed better than those who operated under relatively easy goals.

Despite these supportive research findings, there still appear to be some contradictory research findings, and many important variables in the relationship between goal setting and performance. Latham, Mitchell and Dossette (28) investigated the effect of participation in the goal setting on employees performance. They found that employee participation led to higher goals being set, which in turn led to higher performance, but there was no significant difference between the performance of the participative-goal group and the assigned-goal group.

**Expectancy Theory**

Expectancy theory is a cognitive process theory which is concerned with work motivation and performance. The common thread of the theory is a central expectancy core, the essence of which holds that motivation to perform a work task is a joint function of the estimated probabilities to achieve certain outcomes and the perceived desirability to be associated with these outcomes. Thus, the theory in general postulates that a person will select the behavior to engage in and the level of effort to be exerted on the basis of subjective estimation of the probability that effort will lead to a set of outcomes and the values that he places on these outcomes.

According to Luthans (37, p. 186), the origin of expectancy theory can be traced back to the cognitive concepts of psychologists and to the choice behavior and utility concepts of the classical economic theory. However, it was Vroom's work (58) that established the first version of
the expectancy theory formulation that dealt specifically with work motivation. Although Vroom did not give any particular title for his formulation, the general schematic representation that he proposed has been the basic popular reference for expectancy theory research and has been referred to as "Vroom Model" or "Valence-Instrumentality-Expectancy" theory (37, p. 186). Vroom has stated his model concisely in two propositions. The first states:

The valence of an outcome to a person is a monotonically increasing function of the algebraic sum of the products of the valences of all other outcomes and his conceptions of its instrumentality for the attainment of these outcomes (58, p. 17).

The second proposition states:

The force on a person to perform an act is a monotonically increasing function of the algebraic sum of the products of the valences of all outcomes and the strength of his expectancy that the act will be followed by these outcomes (58, p. 18).

Vroom (58, p. 203) also extended the expectancy model to express job performance. He proposed that job performance is a joint function of ability and motivational force. Ability was conceived to have three components: (1) the probability that the individual will differentiate between stimuli that require different responses; (2) the individual's knowledge of the correct response to each stimulus; and (3) the individual's capacity to execute the correct responses.

In an application of the theory, Vroom (57) conducted a study to predict the organizational choice of graduating college students on basis of their instrumentality-goal scores. These scores reflected the extent to which membership in an organization was perceived by the students as being related to the acquisition of desired goals. The results of the study showed that students chose the organization with
the highest instrumentality goal index score, thus strongly supporting the theory.

Since the introduction of Vroom's formulation, the number of research efforts that have investigated expectancy theory has grown significantly (40). Although not all studies directly tested the Vroom model, some conclusions have been drawn concerning its validity and predictability. For example, the research findings of Lawler (30) and Galbraith and Cummings (19) provided supportive evidence for the expectancy formulation. However, Campbell and Pritchard (14) and Mitchell (40) reported in their literature reviews that expectancy theory research has reported some inconsistent findings. Furthermore, several refinements and modifications to the Vroom formulation were suggested to improve the explanatory power of the expectancy formulation. These refinements and modifications will be discussed in some detail in Chapter II.

**Attribution Theory**

Attribution theory is basically a theory of perception. People usually seek to infer the traits of others and the causes of their behavior. This process is known as attribution (10, p. 58). Thus the theory of attribution becomes a theory of the relationship between person perception and interpersonal behavior where the main concern is the cognitive processes by which individuals interpret behavior as being attributed to (or caused by) certain elements of the surrounding environment.

Attribution theory has its roots in all pioneering cognitive theorists' work. However, the credit for initiating the theory goes to
Fritz Heider (27). He postulated that both internal (personal) attributes, such as ability and effort, and external (environmental) attributes, such as rules and procedures, combine additively to determine behavior. However, he stressed that it is the perceived, not the actual attributes, that are important in explaining behavior. The reason is that an individual's perceptions of others' actions will contribute to his behavioral responses to those actions, but such behavioral responses will be different if he perceives internal attributes than if he perceives external attributes. Therefore, Heider (27) suggested that when observing an individual's behavior, an attempt should be made to determine whether it was internally or externally caused. That distinction between internal and external attributes has been known since as "locus of control" which has important implications for work motivation and performance (37, p. 199). The reason is that internally caused behaviors are those that are believed to be under the personal control of the individual, while externally caused behaviors are seen as a result of outside causes; that is, the person is seen as forced into behavior by the situation. The problem is how people do decide whether others' behavior stems from internal or external causes.

Kelly (24, 25) proposed his causal attribution theory in an attempt to determine whether another person's behavior stems from internal or external causes. He postulated that such determination depends on three factors: (1) consistency, (2) distinctiveness, and (3) consensus. Consistency refers to the extent to which an individual behaves in the same manner in the same situation. Distinctiveness refers to the extent to which an individual's behavior is different from other behaviors he
demonstrates. Consensus refers to the extent to which other individuals, facing the same situation behave in the same manner. Kelly's theory suggests that an individual's behavior is most likely to be attributed to internal causes (e.g., lack of ability or effort) under conditions of low consensus, high consistency, and low distinctiveness. In contrast, an individual's behavior is most likely to be attributed to external causes (e.g., the existing system or procedures) under conditions of high consensus, high consistency, and high distinctiveness.

In recent years, a number of studies have been conducted to test the attribution propositions. In some studies, researchers were concerned with employee's perceptions of leadership and the effect on their performance and satisfaction. For example, Mitchell, Smyser, and Weed (43) investigated the effect of control perception on performance and satisfaction. They found that internally controlled employees were more satisfied with a participatory management style than employees who perceived external control. Some other researchers were concerned with the accuracy of causal attribution. They investigated the accuracy of Kelly's propositions about causal attribution. For example, Ruble and Feldman (52) and Wells and Harvey (59) provided supportive evidence from their experiments to the three factors outlined by Kelly.

Although the causal attribution propositions have received wide support, the research findings of Arkin and Duval (9), Monson and Snyder (44), and Eisen (18) suggest that there are some potential sources of bias in the process of attribution. There is a tendency to perceive our own behavior as stemming largely from external factors, if such behavior is not acceptable, but that of others as primarily stemming from
internal factors. This tendency is usually known as "actor-observer differences in attribution."

Theory Selection

The five process theories of work motivation and performance, outlined above, represent the most widely discussed and developed theories in the literature of industrial psychology and organizational behavior. However, the choice of a specific theory as a frame of reference is not an easy task, mainly for two reasons. First, each theory has received some degree of acceptance and support. And secondly, human behavior has been recognized as a complex phenomenon and each theory addresses some relevant aspects of that complexity. Therefore, a choice of one theory rather than another should not imply that other theories are irrelevant frameworks for research.

This researcher prefers expectancy theory as a frame of reference to study auditors' performance behaviors under time budget pressure. Several important considerations underlie such a preference. First, expectancy theory has been a very popular paradigm for an extensive research effort to study work motivation and performance in a wide variety of literatures, including the accounting literature. Secondly, expectancy theory has been tested and received some support in different research settings. For example, Graen (21) tested the theory in a field experiment, Rockness (49) tested the theory in a laboratory experiment, and Pritchard and Sanders (48) used the theory in a field study. Also, expectancy theory has been tested on a wide variety of behaviors. For example, Mitchell and Nebeker (42) studied effort and behavior in an academic environment; Lawler (31) studied management attitude and job
performance; Berger, Cummings, and Heneman (13) studied performance under repetitive tasks; Rockness (49) studied performance and satisfaction with respect to budgets; Turney (56) studied behavior in a research and development environment; and Dillard (16) studied the applicability of the theory to occupational choice decisions. Thirdly, the problem of auditors' performance behaviors under time budget pressure has to do with a choice process among alternative behaviors, and expectancy theory formulation, essentially, was designed to deal with a choice process among alternative behavioral actions.

Finally, expectancy theory has a flexible formulation which allows researchers to incorporate several of the major premises of the other theories. For example, Collins (15) presented an expectancy model which incorporated task goal clarity as a variable representing one of the major premises of goal setting theory. Also, Porter and Lawler (46) presented their model, which showed how the equity theory elements can be incorporated in an expectancy formulation. Furthermore, as operant conditioning theory emphasizes learning and advocates the need for performance contingent rewards, expectancy theory allows for such elements in the formulation of its constructs: expectancies and valences. Such a degree of flexibility would also seem to favor the use of expectancy theory.

However, the use of expectancy theory will not be devoid of some problems. For example, there are some questions concerning the best form of the model (i.e., multiplicative versus additive), the degree of complexity of the model (e.g., expectancy variables and nonexpectancy variables), the best method for analysis (e.g., within- versus
between-subjects analysis), and finally, the problem of operationalizing some variables.

Research Objectives and Contributions

One objective of the present research is to contribute to the existing body of behavioral literature directed toward accounting issues, particularly that of budgetary control systems' influence on accountants' behavior. The research is devoted to an empirical study of auditors' performance behaviors under time budget pressure in public accounting firms. It is believed that the evidence generated from such research will contribute toward enhancing our understanding of auditors' behavior in response to the constraints of time budgets.

Another objective of the present research is to generate additional evidence bearing on the validity of the expectancy theory and its ability to explain auditors' behaviors under time budget pressure. This particular theory is of interest to the present research because it is used as a frame of reference for the measurement of motivation as one of the major variables affecting performance behaviors. The fact that there is no single theory of motivation which currently possesses overwhelming support makes it desirable to generate additional evidence concerning the validity of the theory employed in the present research.

Finally, the present research attempts to lay down the foundations for the advancement of an integrative expectancy model that can be used in studying behavioral issues in accounting and validate such a model by examining auditors' performance behaviors under time budget pressure in public accounting firms.
Summary

Chapter I introduces the research study, presents the problem to be studied, and emphasizes the importance of the problem. The chapter also presents the theoretical framework and the arguments for the choice of the expectancy model and its potential usefulness for different groups of users.

Chapter II reviews the historical development of the expectancy model and presents the several refinements and modifications of the expectancy model. The chapter also presents the proposed integrative expectancy model that is used in this research. Chapter III reviews the prior research studies in the accounting literature where the expectancy formulation was used.

Chapter IV discusses the research methodology used in this study, including descriptions of the explanatory variables that are employed in the regression models and the survey instrument that was used to collect the data required for the analyses of the models. The chapter also describes data collection and sampling procedures, the general design of the data analysis, and the regression models tested in the study. Finally, the chapter presents the possible limitations and constraints of the study.

Chapter V reports the findings of the study and presents the results in three sections. The first deals with survey responses, while the second deals with the preliminary results of the analyses. The third section presents the results of the regression models. Chapter VI summarizes the study, presents the conclusions drawn from the findings
in Chapter V, and suggests possible implications and future research avenues that could evolve from this study.


CHAPTER II

THE EXPECTANCY MODEL

Historical Development of The Expectancy Model

The development of the expectancy model, as known today with its several versions, has taken place gradually over the years. Although its roots can be traced back to the seventeenth century or even earlier (3), it was Tolman's work (27) which first introduced the role of beliefs and expectations as a major factor in studying behavior. Tolman was discontented with the prevailing theory of motivation of the 1920's—the drive theory. The drive theory of motivation asserts that motivation to perform a given act is a function of habit strength (the learned relationship between a stimulus and a response) and drive strength (the energizing influence of some needs). Thus the drive theory of motivation can be expressed as:

\[
M = f(D \times H)
\]

where,

\[M\] = the motivational force to exert effort to perform an act,

\[D\] = the deprivation of some needs,

\[H\] = the strength of a learned relationship between a stimulus and an act.

Tolman (27) criticized the drive theory on the basis that it makes no provisions for conscious or cognitive responses for the consequences of alternative possible acts and argued for a more cognitively oriented
approach to motivation and behavior. Tolman conducted a series of laboratory experiments and found that animals learned to expect that certain events will follow one another. He concluded that behavior is purposive; it is directed toward goals. As such, Tolman argued that the choice to act in one way or another will depend on the expectancy that a particular act will lead to a particular consequence. This cognitive concept of expectancy implies that the organism is thinking about or conscious of the goals. Thus, Tolman's theory of motivation can be expressed as:

\[ M = f(E) \]

where,

- \( M \) = the motivational force to perform an act,
- \( E \) = the expectancy that the act will lead to desired consequences.

A few years later, Lewin (17, 18) capitalized on Tolman's idea of expectancy and proposed a cognitively oriented theory of behavior where he introduced the terms "valence" and "force." He argued (17) that an individual's behavior is directed toward the attainment of certain goals, and the attainment of these goals is typically perceived as possible only by engaging in certain activities or actions. Those activities that an individual perceives as making possible the attainment of a goal will attract him; they will have positive valence for him, and he will experience a force moving him to engage in these activities. However, certain other activities may have the opposite effect. They are said to have a negative valence and generate repulsive force. Thus, the resulting behavior is assumed to be determined by some
sort of psychological summation of these different forces. Finally, Lewin stressed the idea that the chosen action or activity to be engaged in is a type of intermediary activity, each of which may hold a valence itself. Thus, from a motivational point of view, Lewin's theory states that the motivational force to perform an act depends on the act's strength (perceived expectancy that the act will lead to a goal or outcome) and its valence, with valence being the degree of attractiveness of an outcome. Symbolically, this conceptualization can be expressed as:

\[ F = f(S \times A) + I \]

where,

- \( F \) = the motivational force to perform an act,
- \( S \) = the strength of the act leading to an outcome,
- \( A \) = the degree of attractiveness of the outcome,
- \( I \) = the degree of attractiveness of the act.

Tolman (26) expanded his idea of expectancy to explain the magnitude of performance, where performance was defined as "a generalized way of behavior to be discovered..." (26, p. 325). He asserted that the magnitude of performance is to be explained according to some variables which include expectancies, drives, and valences. Tolman argued (26, p. 320) that the existence of a need (or goal) will induce some type of force (drives) to be engaged in certain activities or actions to attain such goal, and the connection between the goal and the chosen action will be activated according to the perceived expectancy that the resulting performance will lead to the attainment of the goal. He formulated a model for performance magnitude that consists
of two functions. The first function represents the outcome of performance, while the second function represents the expected work to be performed.

Although Tolman did not specify the exact form of the two functions, he stated that "in any event, it is assumed for both of these functions that the component variables all operate in a positive direction such that the increase in any one of these component variables tends to increase the value of the function" (26, p. 320).

Atkinson and Reitman (2) pushed the expectancy theory a step further by the explicit introduction of the "instrumentality" idea implied in Tolman's formulation of the performance magnitude model. They argued that an individual will strive to achieve a particular goal-state or aim (e.g., achievement, affiliation, or power) as long as he has the motives for this goal-state (i.e., valence of goal) and he perceives that performance is instrumental to the achievement of the goal. They stated that "the goal-directed action tendency is a joint function of the strength of the motive and of the expectancy aroused by situation cues that performance is instrumental to attainment of the goal of the motive" (2, p. 361). Further delination of variables was made in another study by Atkinson (1). In this study, Atkinson formulated a multiplicative function to represent motivation. His formulation can be expressed as:

\[
\text{Motivation} = f (M \times E \times I)
\]

where,

\(M\) = the motive associated with a certain goal,

\(E\) = the perceived expectancy that an action will lead to the goal,
I = the particular incentive desired (e.g., power) as a goal initiating motive.

Finally, Atkinson (1, p. 360) discussed the effect of positive and negative valences of actions on motivation using what he called motivation to "approach" and motivation to "avoid." He argued that motivation to act is determined by the outcome of a conflict between two opposing tendencies. First there is a tendency to approach the task with motive and with the intent of performing well. This is the tendency to achieve success. The second is a tendency to avoid undertaking the task in so far as it is expected to result in failure. This is the tendency to avoid failure. Atkinson stated that "when both motivation to approach and motivation to avoid are simultaneously aroused, the resultant motivation is the algebraic summation of approach and avoidance" (1, p. 360).

Georgopoulos, Mahoney, and Jones (10) presented the first attempt to utilize expectancy theory in an industrial setting. They were concerned with factors that determine high productivity. They viewed workers' productivity as a resultant phenomenon of a complex of factors related to both individual workers and situational influences. They proposed a path-goal approach to productivity in which behavior was viewed as a function of needs, expectations, and situations. They justified this proposed approach by stating:

Beginning with the notion that individuals in the work situation have certain goals in common, the achievement of which would satisfy certain corresponding needs, and that behavior is in part a function of rational calculability, or decision making in terms of goal-directedness, we arrive at a path-goal approach (10, p. 345).
Georgopoulos, Mahoney, and Jones hypothesized that workers will tend to be high producers if they perceive high productivity as a path leading to the attainment of desired goals. Thus, productivity, which is an end result of effort or motivation, depends on the subjective probability that high productivity will be instrumental in attaining certain goals and the personal values attached to these goals (valences). Georgopoulos, Mahoney, and Jones tested their hypothesis in a household appliances company and found support for their hypothesis. They also identified three particular goals which might explain variations in productivity among workers. These goals are good work relations, more pay in the long run and promotion to a higher base rate.

**Vroom’s Model**

Building on the work of Georgopoulos, Mahoney, and Jones (10), Vroom (29) made the first explicit theoretical formulation of expectancy theory in an organizational context. He presented three models. The first has to do with the prediction of valences of outcomes, the second has to do with the prediction of force (effort) toward behavior, and the third has to do with the prediction of performance. An outcome is viewed as anything a person might want to attain. The valence of an outcome for a person is defined conceptually as the strength of his attitude or his affective orientation toward the outcome. Thus, valence refers to the anticipated satisfaction associated with an outcome and it differs from the value of the outcome which has to do with the actual degree of satisfaction resulting from the attainment of the outcome.

The valence model states that the valence of an outcome to an individual is a function of the products of the valences of all other
outcomes and the individual's conceptions that this specific outcome will lead to the attainment of the other outcomes (29, p. 17). Thus, the valence model establishes an "outcome-outcome" association which is termed "instrumentality." This instrumentality is simply the perceived correlation between two outcomes which may range from minus one to plus one. The valence model can be expressed symbolically as:

\[ V_j = f \left( \sum_{k=1}^{n} (V_k I_{jk}) \right) \]

where,

- \( V_j \) = the valence of outcome \( j \),
- \( V_k \) = the valence of outcome \( k \),
- \( I_{jk} \) = the instrumentality of outcome \( j \) to attain outcome \( k \),
- \( n \) = the number of outcomes.

The second model, proposed by Vroom, predicts the force toward behavior. Vroom (29, p. 18) conceptualized that the force on an individual to perform an act is a function of the valence of all outcomes and the strength of the individual's expectancy that such an act will lead to the attainment of these outcomes. Expectancy is defined as the individual's belief concerning the probability that a particular act will lead to the attainment of the desired outcomes. Thus, the force model establishes, in terms of expectancy, an "action-outcome" association whose strength may range from zero to plus one. The force model can be expressed symbolically as:

\[ F_i = f \left( \sum_{j=1}^{n} E_{ij} V_j \right) \]

where,

- \( F_i \) = the force on the individual to perform act \( i \),
$E_{ij} =$ the expectancy that act $i$ will lead to outcome $j$,
$V_j =$ the valence of outcome $j$,
$n =$ the number of outcomes.

Vroom suggested that the force model be used to predict choice of occupation, choice to remain on the job, and effort. However, Mitchell (21, p. 1054) reported that the most frequently tested example of the model was job effort and, as such, he preferred to refer to it as the "behavioral choice model." The reason for such a more general terminology is that an individual will choose among different effort levels according to the greatest force resulting from the expectation that a given level of effort will lead to various outcomes and the valences of those outcomes.

In practice, however, the force model has been used to predict performance also, although Vroom was careful enough to distinguish between effort and performance and he did not suggest that his force model could be used to predict performance. He considered effort as a behavior while performance was viewed as an outcome. Vroom states:

The force on a person to exert a given amount of effort in performance of his job is a monotonically increasing function of the algebraic sum of the products of the valences of different levels of performance and his expectations that this amount of effort will be followed by their attainment (29, p. 284).

This distinction between effort and performance gave rise to Vroom's third model to predict performance. He postulated that performance ($P$) is a joint function of ability ($A$) and force ($F$). Hence,

$$P = f(A \times F)$$

Although Vroom has formulated three expectancy models, the force (effort) model has been regarded as the major model and it has been
subjected to intensive studies and further refinements and developments (21, pp. 1054-1055). A discussion of these developments is in order.

Subsequent Developments of The Expectancy Model

Since 1964, a number of researchers have attempted to modify Vroom's basic expectancy formulation. Most of these modifications have taken place in the force (effort) model and performance model while the valence model has remained essentially the same. According to Wahba and House (30, p. 127), Vroom's original formulation has undergone four developments in the years since 1964. These developments include the distinction between first level and second level outcomes, the distinction between intrinsic and extrinsic outcomes, the distinction between expectancy one and expectancy two and the effect of given additional variables in the work situation (e.g., role perceptions). These developments are discussed in the following subsections in the order of their appearance in the literature.

Galbraith and Cummings' Model

Galbraith and Cummings (9) combined the effort (or force) and valence models in one model in order to test empirically a distinction between first and second level outcomes. A first level outcome was conceived as an outcome that has its own valence, while a second level outcome was conceived as an event to which the first level outcome was expected to lead. In their modified model, Galbraith and Cummings included performance as the only first level outcome of a behavioral action, while second level outcomes expected to result from performance included money, promotion, fringe benefits, supportive supervision, and
accepting work group. Although Galbraith and Cummings tested their model by looking at the relationship between separate second level outcomes and performance, their modified model can be expressed symbolically as:

\[ W = E \left( \sum_{i=1}^{n} I_i V_i \right) \]

where,

\[ W = \text{predicted effort}, \]
\[ E = \text{the perceived probability that effort leads to performance}, \]
\[ I_i = \text{the instrumentality of performance to attain a second level outcome} \]
\[ V_i = \text{the valence of the second level outcome} \]

Although this modified model is simply a combination of the force and valence models proposed by Vroom, it differs from Vroom's formulation in the way it restricts the first level outcome to performance. Thus, if an individual perceives that his effort will not lead to good performance, the model predicts a zero level of effort.

**Porter and Lawler's Model**

Porter and Lawler (25) presented a multivariable model to explain the relationships that exist among effort, performance and satisfaction. Figure 3, presents Porter and Lawler's modeling of these relationships. The figure shows that the model is built on the premise that effort does not directly lead to performance. It is mediated by abilities and role perceptions. Thus, Porter and Lawler's model postulates that an individual's job performance (P) is a joint function of the ability to perform the job (A), the role perception with respect to the job (R) and the motivational force (effort) to perform (M). Hence,

\[ P = f (A, R, M) \]
The inclusion of role perception as an additional variable affecting job performance was based on the proposition that the accuracy of each individual's perception of his role is very important if effort is directed toward the level of performance that results in rewards. If an individual misinterprets his role, his effort could be directed toward a performance level that will not lead to rewards, resulting in loss to the individual and the firm he is working for as well.

Fig. 3—Porter and Lawler's expectancy model

Porter and Lawler's model has been well received in the literature because of its totality (23). This totality characteristic refers to the inclusion of several components of previous work in one model. While the model maintains the original conceptualization of the force model proposed by Vroom (29), it makes a distinction between intrinsic and extrinsic rewards and it includes the equity idea to represent a third type of rewards. On the other hand, the model maintains the distinction
between first level outcome and second level outcome. The idea is that effort will lead to a task accomplishment (e.g., performance as a first level outcome and such a first level outcome will be instrumental to the attainment of second level outcome (e.g., some type of rewards). Finally, Porter and Lawler's model suggests that performance leads to satisfaction, which is a significant departure from traditional thinking where previous researchers have assumed that satisfaction is a factor affecting performance and not the other way around.

**Graen's Model**

Graen (11) proposed an expectancy model that incorporates the notion of maximum utility of effort, as opposed to maximum force in Vroom's formulation. He postulated that an individual will engage in an act to attain a work role, with the work role being a set of expected behaviors by the organization, according to the maximum utility to be derived from such a work role. This model can be expressed symbolically as:

\[ U_i = f \left( \sum_{j=1}^{n} E_{ij} A_j \right) \]

where,

- \( U_i \) = the individual's utility to engage in act i to attain a work role,
- \( E_{ij} \) = the perceived expectancy that performing act i will lead to the attainment of work role j,
- \( A_j \) = the degree of attraction for work role j.

Although Graen's utility model is quite similar to the force model of Vroom, Graen formulated a quite different performance model. Unlike Vroom's model, which states that performance is a multiplicative
function of force and ability, Graen's model of performance incorporates two additional variables to the basic utility model in an additive form to predict performance. The first variable is a measure of external pressure toward effort, while the second variable is a measure of internal pressure toward effort. This model of performance can be expressed symbolically as:

\[ P = U + EP + IP \]

where,

- \( P \) = performance,
- \( U \) = the individual's utility of attaining work role,
- \( EP \) = external pressure toward effort,
- \( IP \) = internal pressure toward effort.

**Campbell and Others' Model**

Building on Graen's idea of work role, Campbell, Dunnette, Lawler, and Weick (4) modified Vroom's force model to incorporate the nature of task goals for which the individual is seen as striving to attain. Figure 4 shows a schematic representation of their model.

As shown in Figure 4, Campbell, Dunnette, Lawler, and Weick divided task goals into external task goals and internal task goals. External task goals are goals set by the organization, while internal task goals are goals set by the individual for himself. They also conceptualized a distinction between two types of expectancies (Expectancy I and Expectancy II). Expectancy I refers to the perceived probability of task goal accomplishment, given a particular individual and situation, while Expectancy II refers to the perceived probability of receiving first level outcome, given achievement of the task goal.
Fig. 4—Campbell and Others model of work motivation
Thus, Expectancy II is concerned with whether achievement of task goals will be instrumental in bringing about first level outcomes.

Although Expectancy II appears to be conceptually quite similar to Vroom's instrumentality, they are not identical. Expectancy is defined as a subjective probability which may range from zero to one, while instrumentality may range from minus one to plus one. Thus, instrumentality may include negative value, but expectancy does not.

While Campbell, Dunette, Lawler, and Weick (4) did not propose a specific form of the function for their model to explain the interrelationships of their model variables, Expectancy I and Expectancy II have generally been combined in a multiplicative form (21, p. 1056). Thus, this modified model can be expressed symbolically as:

\[ M = f \left[ E_I E_{II} (E I V) \right] \]

where,

\( M \) = an individual's motivation,

\( E_I \) = expectancy that task goal will be accomplished,

\( E_{II} \) = expectancy that task goal accomplishment will lead to first level outcome,

\( I \) = instrumentality of first level outcome for the attainment of second level outcomes.

\( V \) = the valence of outcomes.

**House's Model**

House (14) formulated a modified model that explicitly makes the distinction between intrinsic and extrinsic outcomes (rewards). This model was derived basically from the work of Georgopulos, Mahoney, and Jones (10) which asserts that an individual will choose a work path
toward a work goal that is to be considered instrumental to the
achievement of desired outcomes. The House model can be expressed
symbolically as:

\[ M = IV_b + P_1 \left[ IV_a + \sum_{i=1}^{n} \left( P_{2i} \cdot EV_i \right) \right] \]

where,

- \( M \) = motivation to work,
- \( IV_b \) = intrinsic valence associated with work goal directed
  behavior,
- \( IV_a \) = intrinsic valence associated with work goal accomplishment,
- \( EV_i \) = extrinsic valence associated with work goal accomplishment,
- \( P_1 \) = path goal instrumentality of behavior for work goal
  accomplishment,
- \( P_{2i} \) = path instrumentality of work goal for extrinsic valences,
- \( n \) = number of work goals.

In his model formulation, House assumed that all intrinsic rewards
are mediated with certainty because they are controlled by the
individual. Therefore, they were treated as separate outcomes without
any corresponding instrumentalities. However, the major difference
between House formulation and that of Vroom is that House measures
instrumentality in terms of probabilities. This means that the House
model does not produce any negative values in the measurement of
instrumentality.

**Lawler's Model**

Lawler (16) proposed an expectancy model that incorporates two
types of expectancies as input into effort or motivation. He postulated
that effort is a joint function of the perceived likelihood
(probability) that effort toward behavior action or task goal will lead to a successful accomplishment of goal (effort → performance) and the perceived likelihood that the successful accomplishment of the behavior goal will result in certain outcomes or rewards (performance → outcomes) which have desired valences (V). Figure 5 depicts Lawler's expectancy model.

As shown in Figure 5, Lawler followed Campbell and Others (4) in maintaining the distinction between Expectancy I (E → P) and Expectancy II (P → O). However, he dropped out the instrumentality construct, proposed by Vroom (29), to ease the measurement of the model's variables. Thus, Lawler's model can be expressed symbolically as:

$$\text{Effort} = [(E \rightarrow P) \times (P \rightarrow O)]$$

Unlike most previous researchers, Lawler attempted to describe how individuals develop their expectancies about the consequences of behaving in a certain manner and suggested some possible determinants of these expectancies (16, pp. 55-58). Possible determinants of (E → P)
expectancy include self-esteem, past experiences in similar situations, actual situation and communications from others. On the other hand, possible determinants of \((P \rightarrow 0)\) expectancy include past experiences in similar situation, attractiveness of outcomes, belief in internal versus external control, \((E \rightarrow P)\) expectancy, actual situation and communication from others.

The Proposed Expectancy Model

In their literature reviews, Heneman and Schwab (13), Campbell and Pritchard (5), Mitchell (21), and Kaplan (15) pointed out that expectancy theory research has reported some inconsistent findings and low explanatory power. Such low explanatory power and the inconsistency of some of the findings suggest that the expectancy model is incomplete. In an attempt to increase the explanatory power of the expectancy model, several researchers (e.g., 22; 24; 28) have included some nonexpectancy components in the expectancy model. Theoretical justification for the inclusion of such nonexpectancy components was derived from the works of Fishbein (8) and Dulany (6). These theoreticians have argued that behavior is partially determined by an individual's surrounding environment. For example, an individual may behave in a certain manner not only because it will lead to some payoffs but also because he feels pressure to fulfill the expectations of those around him.

Further theoretical justification for the inclusion of nonexpectancy components in the expectancy model can be derived from attribution theory. Heider (12) argued that internal attributes and external attributes combine additively to determine behavior. This means that behavior is a result of the combined effects of individual
difference variables and situational variables. While an expectancy model by itself predicts intentions to behave, which usually reflect individual difference variables (16), it does not explain the actual behavior. In fact, whether such intentions will be translated into actual behavior seem to depend on additional situational variables. Therefore, an expectancy model should include situational variables to gain more understanding of behavior. However, there is no general agreement to which nonexpectancy variables should be included in the model and how they should be included.

In accounting, some researchers have utilized the idea of incorporating nonexpectancy variables in the expectancy model to study accountants' behavior and performance. For example, Lightner (19) and Lightner, Adams, and Lightner (20) used an expanded expectancy model to examine accountants' behavior of underreporting their chargeable time in public accounting firms. The nonexpectancy variables included supervisors' request, feasibility of meeting budgets, organizational level, service area, and individual's approval for such behavior. However, the research was of an exploratory nature and it did not estimate the partial contribution of each variable and its level of significance.

Ferris and Larcker (7) used an expectancy model that incorporated organizational commitment, as a nonexpectancy variable, to study accountants' performance in public accounting firms. They found that the inclusion of such a nonexpectancy variable improved the explanatory power of the model. Thus, there is some supportive evidence for the inclusion of nonexpectancy variables in the expectancy model.
However, the expanded expectancy models in the previously mentioned studies do not possess the characteristic of a general model. That is, each model was expanded to fit the study of a specific behavioral issue. Thus, their degrees of usefulness in studying other behavioral issues are limited.

This researcher contends that a general expanded expectancy model can be developed by borrowing from other behavioral theories, especially goal setting theory and attribution theory. As discussed in Chapter I, the expectancy theory formulation has a degree of flexibility that allows researchers to incorporate some of the major premises of other behavioral theories. Such a developed model would be useful not only to study effort and performance but also to study different performance behaviors toward achieving the established performance goals. Figure 6 depicts such a proposed general model.

The proposed model integrates the components of expectancy theory with components of attribution theory and goal setting theory. However, the proposed model, intentionally, does not specify the contents of its components. That is, the model proposes only the general categories of the variables and their relationships. Thus, the model is broad enough to accommodate any set of specific variables that seem to be related to the study of a specific behavioral issue.

Since this current research is concerned with auditors' performance behaviors under time budget pressure, further delineation of the specific variables of the model components and their measurement are addressed in Chapter IV, research methodology.
Fig. 6—A proposed integrative expectancy model
Summary

This chapter discusses, in three sections, the development of the expectancy model and presents a general schematic representation of the proposed integrative expectancy model. The first section of the chapter provides a general review of the historical development of the expectancy idea before its basic formulation in 1964.

The second section of this chapter, provides a general review of the subsequent developments and refinements of the basic expectancy formulation that have taken place after 1964.

The chapter ends, in the third section, with an attempt to integrate some elements of task goal and attribution theories in the expectancy formulation to represent a general behavioral model. However, specification of the exact variables is deferred to Chapter IV.
CHAPTER BIBLIOGRAPHY


CHAPTER III

EXPECTANCY THEORY RESEARCH IN THE ACCOUNTING LITERATURE

In recent years there has been a growing use of expectancy theory to study motivation and performance in an accounting environment. A review of literature reveals that the usefulness of the theory in accounting research was first advocated by Ross and Bomeli (22). In questioning the validity of Maslow's need hierarchy theory of motivation and research based on it, Ross and Bomeli suggested expectancy theory as a useful framework to study motivation. They asserted that expectancy theory is a "... theory which incorporates many of the complexities of human motivation and attitudes ..." (22, p. 384). They formulated a simplified expectancy model, similar to the one advanced by Atkinson (1), which expresses motivation as a joint function of three elements: motive, incentive and expectancy. While the first element of the model, motive, is similar to the term need proposed by Maslow (18), the second element, incentive, is similar to the concept of valence as used by the expectancy theorists. They also suggested that further research be performed to determine what accountants need from their jobs at the various organizational levels within the firm, and the effect of compensation as a motivational factor, particularly in public accounting firms.
Since the time of Ross and Bomeli's advocacy of expectancy theory in an accounting environment, several studies have appeared in the accounting literature concerning the validity and potentialities of the theory for accounting issues. A review of these studies is in order.

Ronen and Livingstone Study

Ronen and Livingstone (21) provided one of the first attempts to utilize the expectancy theory as a cohesive framework to study the implications of budgets for human motivation and behavior. They built their study on their own conclusion that prior research in the accounting literature on budgets and budgetary behavior provided somewhat contradictory findings and expectancy theory can help reconcile such contradictory findings. They stated that "... propositions from expectancy theory can be used to integrate and accommodate the fragmented research findings on budget and behavior in the accounting literature" (21, p. 671).

Ronen and Livingstone used a model advanced by House (12), which was outlined in Chapter II of this research. They chose House's model of expectancy because of its formulation which makes the distinction between valences that are intrinsic to behavior itself (such as feeling of competence) and those that are the extrinsic consequences of behavior (such as pay). Ronen and Livingstone identified five behavioral assumptions underlying the budgetary process from prior research. These five assumptions were as follows:

1. The success of the budget depends on the degree or level of its attainability;
2. Participation in the development of the budget leads to better performance;

3. Management by exception leads to effective performance;

4. An individual should be held responsible for items within his control;

5. Budgetary accounting should be restricted to monetary criteria.

Ronen and Livingstone discussed and analyzed these assumptions in terms of the expectancy formulation as a cognitive process. They showed how the expectancy framework provides more insights about the motivational process through its ability to depict the interrelations between the variables on one hand, and the relationships between the model variables and the behavioral assumptions on the other hand. Table I illustrates the established relationships between the expectancy model and the behavioral assumptions underlying budgets.

**TABLE I**

**THE EXPECTANCY MODEL AND ASSUMPTIONS OF BUDGETS**

<table>
<thead>
<tr>
<th>Behavioral assumptions</th>
<th>Expectancy Model Variables*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards</td>
<td>$P_1, P_2$</td>
</tr>
<tr>
<td>Participation</td>
<td>$IV_a, IV_b, EV_1$</td>
</tr>
<tr>
<td>Exception Management</td>
<td>$P_2$</td>
</tr>
<tr>
<td>Controllability</td>
<td>$P_1, IV_a$</td>
</tr>
<tr>
<td>Monetary Criteria</td>
<td>$P_2, EV_1$</td>
</tr>
</tbody>
</table>

*These variables are outlined on page 43.

Ronen and Livingstone suggested future research to address the issue of the effect of situational variables on the relation between budget and motivation. They also suggested that future research be concerned with the derivation of testable hypotheses that apply the
expectancy framework to the budgeting process as well as with further improving the predictive validity of the expectancy model.

Although the Ronen and Livingstone study provides a useful application of expectancy theory in an accounting context, their proposals are analytic and deductively derived providing neither empirical research nor hypotheses testing.

Rockness Study

Rockness (19) modified the budgetary behavior version of the expectancy model proposed by Ronen and Livingstone (21) to incorporate a multi-goal, multiple-outcome setting. Rockness allowed, in his model, for alternative budget levels, reward structures, and performance feedback. He established the basis for such modification by arguing that there is a trade-off between expected rewards and the cost of effort. Thus, greater rewards should result in higher performance, holding other variables constant. On the other hand, given a reward structure, performance would increase as budget level increased to a point where the expected rewards do not justify budget attainment. However, Rockness postulated that the degree of satisfaction would tend to decrease as budget level difficulty increased. Finally, Rockness argued that performance feedback will remove the uncertainty regarding actual performance level attained and this would affect the individual's assessment of the model's parameters. Thus, Rockness established three variables as the independent variables to be used in testing the descriptive validity of the model in his laboratory experiment.

Rockness used ninety-six subjects from undergraduate courses in business administration for the experimental purposes. He designed the
experiment in a way that the independent variables, budget level, reward structure, and feedback, were combined into a standard $2 \times 2 \times 3$ ANOVA fixed effects design composed of twelve cells with several dependent variables where eight subjects were randomly assigned to each cell.

Rockness formulated five hypotheses. The first two hypotheses dealt with the relationship between performance and reward structure, on one hand, and budget level on the other hand. He hypothesized that performance would increase if rewards or budget difficulty level increased. The third hypothesis dealt with the behavior of planned performance variables and the actual performance variables. He hypothesized that the behavior of both types of variables would be similar. The other two hypotheses dealt with satisfaction where satisfaction would increase as expected rewards increased but it would decrease as budget difficulty increased.

Rockness found that the results of the experiment generally support the relationships expressed in the expectancy model and he concluded that the model is useful in predicting effort.

Dillard and Jiambalvo (6) criticized Rockness' study on some theoretical and methodological points. The first of which has to do with the model employed in the study. They stated that there is a "lack of correspondence between the formal model . . . and the author's [Rockness] discussion of the model" (6, p. 630). They argued that while Rockness discussed a behavioral choice model where individuals select the level of effort with the highest expected value from different effort levels, he developed and tested a job effort model which does not allow for different levels of effort. The second criticism has to do
with testing the model's validity. Dillard and Jiambalvo argued that Rockness was not able to establish the validity of the complete model because he never measured or systematically manipulated two of the model variables, the intrinsic value of effort and the intrinsic value of performance outcomes. The third criticism has to do with hypotheses formulation. They argued that some of Rockness hypotheses (especially those of performance and satisfaction) were formulated in a way that is inconsistent with his model specification and other numerous expectancy theory studies. Finally, Dillard and Jiambalvo questioned the design of Rockness' experiment. They suggested that in fact Rockness was performing an ANOVA nested design versus the standard 2x2x3 ANOVA fixed effects design.

Rockness (20) responded to his critics by stating that "Dillard and Jiambalvo have provided a useful clarification of my ... model. However their discussion ... fails to apply the model correctly ..." (20, p. 636).

Ferris Studies

Ferris (9) tested four versions of the expectancy theory with job performance as the primary dependent variable. He used two models of the form that performance is a joint function of motivation, ability and role perception \( P = M \times A \times R \). The other two models were of the form that performance is an additive function of motivation, ability and role perception \( P = M + A + R \). Model one hypothesized that an individual will select the level of effort and the type of behavior to be engaged in depending on his probability estimate that effort will lead to certain outcomes \( E \rightarrow 0 \). Model two, on the other hand,
introduced a linkage between effort and outcome \( (E \rightarrow (P) \rightarrow 0) \). It was based on two levels of outcome: task performance and consequences of that performance (e.g., salary increases). Therefore, the second model incorporates the concepts of Expectancy I and Expectancy II.

To test these four versions of expectancy theory, Ferris used fifty-one audit staff personnel from two "Big Eight" midwestern public accounting firms. The selection criteria were that each auditor had been employed at least six months with the firm and had completed an audit assignment with a team of at least three staff accountants within the past three months. In measuring his variables, Ferris used instruments that were previously developed and tested with the exception of performance, the dependent variable. Performance was measured by an instrument which was developed from an internal evaluation form used by a participating firm. A "peer" was defined as another staff accountant on the audit team of the most recent assignment and from three to five peers rated a given subject on ten performance criteria. Then performance score was obtained by averaging peer ratings.

Ferris found the expectancy models to be generally weak predictors of audit staff performance, while providing significant prediction of employee job satisfaction, especially in the additive model. He concluded that the ability of expectancy theory to explain productivity variations among accountants is questionable. However, he indicated that the measurement of performance by averaging peer ratings may have been inadequate. He stated that "the results may reflect upon the adequacy of performance measurement by peer rating..." (9, p. 613).
Johnson (14) criticized certain aspects of Ferris' methodology and the interpretation of his own findings, suggesting that the results compare favorably with previous tests of the expectancy models. Johnson stated two points:

1. The correlation of current expectancy-valence scores which represent indicators of future work behavior with current performance measures, and

2. Using a between-subjects research design on a model of individual choice behavior which would indicate a within-subjects design (14, p. 410).

Johnson contends that "a within-subjects design will be required to properly test the descriptive validity of expectancy theory" (14, p. 410).

Ferris (10) responded to Johnson's comments by stating that "... his [Johnson's] position is based upon illogical reasoning, inconsistent arguments, and in one instance, misquotation" (10, p. 412). Ferris remarked that if a theory did not perform well with "weak" test conditions, it would not follow that it would do better with more strict test conditions (10, p. 413).

Ferris (7, 8) also published his findings relative to the effect of the existence of some boundary conditions on the predictive ability of expectancy measures. He hypothesized that the greater the perceived uncertainty in an accounting environment the greater will be the uncertainty regarding expectancy estimates. He found statistically significant results indicating that as the level of perceived uncertainty increased the level of job satisfaction decreased. He also found that environmental uncertainty has affected both the magnitude and variance of effort-performance linkage estimates. These findings led him
to conclude that the perceived uncertainty may be a causal factor of diminished employee performance (8, p. 28).

Jiambalvo Study

Jiambalvo (13) presented a modified expectancy model which provides linkages for the evaluation process in public accounting firms. The basic idea is that evaluation process in public accounting firms is sequential in nature. Thus, the effort-performance-outcome linkages of the expectancy model need to be expanded to reflect the nature of the evaluation process. The importance of such focusing on the linkages lies in the model's ability to identify where the process may break down. This, in turn, will enable investigators to attribute the breakdown of the process to perceptions related to specific linkage(s).

The proposed model includes four linkages: the expectancy that effort leads to effective performance \(E_{1i}\), the expectancy that being effective will be judged as such \(E_{2i}\), the expectancy that being judged effective on a particular evaluation dimension contributes to a high overall performance evaluation \(E_{3i}\), and the instrumentality of high overall performance evaluation for the attainment of desired outcomes \(I_{1j}V_{j}\). The model also employs intrinsic outcomes \(IAV_{i}\).

Jiambalvo formulated and tested three hypotheses. They are as follows:

1. The model can predict the amount of effort exerted on activities related to an evaluation dimension.
2. The model can predict job effort better than performance on a single dimension.
3. A multiplicative form of the model can predict effort better than an additive form of the model.
Effort (as a dependent variable) was measured in terms of absolute amount of time (TA) and relative amount of time (TR) directed toward each evaluation dimension for each subject. Performance, on the other hand, was measured in terms of self-rated performance (SP) and manager-rated-performance (MP). Data was obtained from thirty-three audit seniors and twenty-five audit managers from four offices of a "Big Eight" CPA firm. Using multiple regression techniques, Jiambalvo found the model useful in predicting effort and performance. He also found that the additive model outperformed the multiplicative model in every case with the exception of performance rated by managers. Table II presents the correlation coefficients reported in Jiambalvo study (13, p. 449).

**TABLE II**

**COMPARATIVE RESULTS OF JIAMBALVO STUDY**

<table>
<thead>
<tr>
<th></th>
<th>(R*) Multiplicative</th>
<th>(R*) Additive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effort:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA</td>
<td>.54</td>
<td>.57</td>
</tr>
<tr>
<td>TR</td>
<td>.50</td>
<td>.51</td>
</tr>
<tr>
<td><strong>Performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP</td>
<td>.48</td>
<td>.53</td>
</tr>
<tr>
<td>MP</td>
<td>.31</td>
<td>.30</td>
</tr>
</tbody>
</table>

*p .01

Jiambalvo concluded that his model has the ability to predict the amount of accountants' effort directed toward various aspects of their job and their performance.
Although Jiambalvo obtained support for his model, one should notice that the study was restricted to an analysis of data obtained from one "Big Eight" public accounting firm. In addition, the sample was rather small.

**Collins Study**

Collins (2) was concerned about the manner in which management accounting systems motivate organizational participants. He offered the expectancy theory as a frame of reference to explain motivational variables in relation to management accounting systems. Although Collins recognized the fact that accountants have recently considered the motivational aspects of their work, he called for more attention to the variables affecting motivation. He suggested that practicing accountants should be aware of motivational theory because the elements of management accounting system have different effects on people. He states that "... budgets are important to managers' work aspirations, that the level of cost standard difficulty affects the motivation of persons to achieve these standards, and that the manner in which budgetary goals and standard costs are set affects motivation" (2, p. 22).

Based on his review of expectancy theory, Collins formulated his model where motivation to perform was expressed as a function of the addition of three variables: intrinsic rewards, extrinsic rewards, and path-goal clarity. This view of motivation to perform has much to do with the work of Georgopoulos, Mahoney, and Jones (11). However, Collins made two propositions concerning the ways that management accounting system can be designed to affect motivation to perform task goals and to measure performance and communicate feedback about performance. The
first proposition states:

For the managerial accounting system to be useful in providing and communicating performance goals and achievement results, it must be perceived as legitimate and fair by those subject to these goals (2, p. 23).

The second proposition states:

For the managerial accounting system to be useful in providing and communicating performance goals and achievement results, it must be perceived to be accurate (2, p. 25).

Collins concluded that the accounting systems must be objective and designed to install trust. On the other hand, since the management accounting system represents a social process which operates in a social environment, there is a great need for participation in the goal-setting process (2, p. 26).

Although Collins' study provides some useful insights on the relevancy of expectancy theory regarding management accounting systems, he did not provide either empirical research or hypotheses testing.

Dillard Studies

Dillard (5) applied the Valence-Instrumentality-Expectancy model (VIE) to employee migration intentions in public accounting firms in an attempt to validate such a model. He was concerned, mainly, with two aspects of validity. The first was the model's ability to predict the migration phenomenon, while the second was the model construct validity.

Dillard gathered his data via a questionnaire from 216 CPA firm employees from ten southeastern offices of five national CPA firms. He distinguished between two groups of employees on the basis of those who planned to remain with their present firms over the next five years, and those who planned to leave the firm for a position not involving the
accounting function. Therefore, two groups were included, the audit group and the dropout group.

Dillard formulated and tested two hypotheses to come up with some evidence regarding the points of concern mentioned above. The first hypothesis dealt with the applicability of the expectancy model to migration decisions of public accountants where Dillard hypothesized that the model would not distinguish between the two groups. The second hypothesis dealt with the construct validity of the model where it was hypothesized that the predictive ability of the model would not be different from the ability of any component of the model (valence, instrumentality, expectancy, or utility).

To test these hypotheses, Dillard employed linear multiple discriminant analysis in analyzing the data where subjects were classified into migrator and nonmigrator based on their position choice index value. The results of the analysis did not support the first hypothesis where the classification rate approached eighty two percent at a level of significance five percent. Therefore, Dillard concluded that the expectancy model appeared to be applicable to migration decisions of public accountants. The results, also, did not support the second hypothesis with the exception of the model's component valence at a level of significance of five per cent. Therefore, Dillard was unable to reject the second hypothesis and suggested future research as a way to find out the causes for the problem of migration in public accounting firms.

Dillard (4) employed a goal choice model to study the occupational choice decision process in public accounting firms. The model
incorporates goal and expectancy constructs and it was adopted from the work of Dachler and Mobley (3). Dillard tested the model using 136 professional staff accountants in two national CPA firms. Using within-subjects analysis and both parametric (correlation and linear multiple discriminant analysis) and nonparametric (Spearman rank correlation coefficients) statistical techniques, Dillard found the model to be useful in describing the choice decision process of accountants. However, one should notice that Dillard did not allow his subjects to generate their own outcomes.

Lightner Study

Lightner (17) provided the first attempt to investigate the motivational aspects of an induced time budget behavior of accountants (underreporting chargeable time) in public accounting firms within the context of an expectancy theory formulation. The purpose of the study was to provide information related to the specific behavior examined and to gain insight into some problems concerning the expectancy theory of motivation.

Lightner used Lawler's (16) expectancy model to assess accountants' motivational force to engage in underreporting behavior. However, she attempted to expand the expectancy model by incorporating some additional variables as antecedents of underreporting behavior. In addition to the motivational force, the proposed antecedents included individual's approval of the behavior examined, group norms, supervisor's request, feasibility of meeting budgets, peer competition, actual situation, n achievement, and n autonomy.
Lightner gathered her data via an anonymous questionnaire from 1,016 CPA firm employees from eighteen offices of three national CPA firms. The sample population consisted of audit and tax department accountants from all organizational levels in the firm offices.

To measure the dependent variable (underreporting time), Lightner asked her subjects to provide an estimation of unchargeable time as a percentage of total time worked during the previous year. The proposed antecedents, on the other hand, were measured in terms of subjects' perceptions of the effect of these antecedents on the underreporting behavior.

Lightner used the Automatic Interaction Detector (AID) algorithm for the purpose of data analysis. The AID analysis suggested that individual's approval of the behavior, feasibility of meeting the budgets, supervisor's request and motivational force possess significant explanatory power. However, the analysis indicated the existence of interaction between motivational force and the other three variables mentioned above.

Lightner's study differs from the current study in three respects. First, Lightner's study examined the underreporting behavior of accountants in public accounting firms, but did not examine alternative behaviors. An intent of this study is to examine alternative performance behaviors to meet time budgets. Second, Lightner's study used respondents employed in the audit and tax departments of three national CPA firms. This study used respondents employed in the audit departments of national, regional and local CPA firms. Third, Lightner's study used the AID algorithm as the only statistical technique for analyzing the
The current study extended the analysis by incorporating multiple regression and correlation techniques.

**Kaplan Study**

Kaplan (15) presented an excellent evaluation of research on expectancy theory predictions with regard to auditor effort judgment. Although this evaluation dealt mainly with the work of Ferris (9) and Jiambalvo (13), Kaplan pointed out some aspects of the deficiencies in such research and provided some useful suggestions to be considered in future research.

Kaplan found that the above mentioned studies reported sizeable variance that remained unexplained in auditor effort judgments, and he attributed such unexplained variance to two factors. The first has to do with the expectancy model specification where the models used did not account for the unique characteristics of the audit settings (e.g., several tasks to be performed under the supervision of different supervisors). The second factor has to do with variables' operationalization where Kaplan asserted that most of the variables in the audit settings were poorly operationalized. To elaborate on these two factors, Kaplan presented his discussion in a frame similar to that of Jiambalvo (13) where the expectancy model was divided into three links: effort-performance link, performance-performance evaluation link, and performance evaluation-reward link.

With respect to the first link, the effort-performance link, Kaplan pointed out two issues. One has to do with the assessment of expectancy that effort will lead to effective performance. He argued that a general measure to assess effort-performance expectancy is unsuitable because it
ignores the factors which influence such assessment. These factors include task difficulty, task goals, and abilities related to task accomplishment (15, pp. 6-7). The second issue has to do with the assumed relationship between effort exerted and performance. Kaplan argued that previous studies implicitly assumed a positive relationship between effort and expectancy that effort will lead to effective performance, which means that an individual auditor will tend to increase his effort as the effort expectancy increases. This assumption may not hold depending on the audit task and goal. Thus, other forms of relationships (i.e., negative or inverted U-shape relationships) need to be investigated.

With regard to the second link, the performance-performance evaluation link, Kaplan pointed out that performance evaluation in audit settings tends to be affected mainly by three variables: supervisor characteristics, feedback bias, and organizational distance. He argued that the overall performance evaluation is determined by partners while the immediate evaluation of an individual auditor performance is likely to be evaluated by several immediate supervisors. In addition, such partial evaluation by immediate supervisors may generate some type of feedback which usually affects the auditor's work and performance on the next task. Therefore, there is a need for controlling the effects of supervisors' characteristics, feedback bias, and organizational distance.

With respect to the third link, the performance evaluation-reward link, Kaplan pointed out three factors affecting such a link: causal attribution, organizational policy, and valence of rewards. He argued
that the existence of a clear organizational policy with respect to
evaluation criteria and reward structure will eliminate the uncertainty
associated with auditors belief about the instrumentality of performance
evaluation toward rewards. However, the situational variables (e.g.,
span of control, situational stress) will affect the results of such
link. In addition, the number of outcomes to be included in an
expectancy model is questionable. Kaplan suggested a few number of
outcomes with different levels of desirability (valence).

Summary

This chapter presents a review of past research that used or
advocated the use of an expectancy theory formulation to study
accounting problems and motivational aspects of accounting environments.
The empirical results provided some supportive evidence for the
expectancy formulation while suggesting the need for additional research
and further improvements. This research incorporates some of the
suggested improvements identified in this and the preceding chapter. The
research methodology employed in this research is presented in the
following chapter.


CHAPTER IV

RESEARCH METHODOLOGY

The current research examines empirically auditors' performance behaviors to meet budgeted time for their task assignments in order to understand how auditors choose one behavior rather than another and identify the variables that affect such a choice process. To accomplish this task, an integrative expectancy model is proposed and tested through the accumulation and analysis of a set of data collected from a sample of practicing auditors in public accounting firms in the Dallas-Fort Worth area. The methodology involved in this research process is explained in some detail in the succeeding sections of this chapter.

Data Collection and Sampling Procedure

Data for the current research were collected using an anonymous questionnaire sent to a sample of accountants at the staff, senior, and supervisory staff levels in the audit services departments of national, regional, and local public accounting firms located in the Dallas-Fort Worth area. The inclusion of regional and local firms would insure a sample population diversity as advocated by Campbell and Pritchard (4). Audit services are defined for the purpose of this study as opinion audits and reviews meeting the requirements of Statement on Standards for Accounting and Review Services Number 1 (1). The Dallas-Fort Worth area is defined as counties included in the Dallas and Fort Worth
chapters of the Texas Society of CPA's. However, accounting firms are defined for this research as professional corporations and partnerships.

The membership directories of the Texas State Board of Public Accountancy (28) and the Dallas (6) and Fort Worth (10) Chapters of the Texas Society of CPA's were used to compile a listing of the prospective accounting firms for this research. The compiled listing included all the fifteen national firms that have offices in the Dallas-Fort Worth area in addition to forty-eight local or regional firms. The inclusion of a local or regional firm on the compiled listing was based on firm size estimation using information provided in the above mentioned directories. A subjective decision that a firm should have at least five members listed in any of these directories was used. The rationale for that subjective decision is to exclude those firms that do not have enough potential subjects for this research.

In order to have an idea about the sample population and get enough responses for the purposes of analysis, the following strategy was used. For each firm on the compiled listing, a partner or a manager in charge was contacted to explain the nature and the purpose of the study and to ask about the possibility of participation in such a study. Contacted partners or managers of a total of fifty-three firms, of which thirteen are national firms, agreed to cooperate in administering the research questionnaire.

Although discussions with contacted partners and managers revealed that the sample population consists of more than 2000 subjects working for the audit services departments, the criteria used to select the research subjects limited the sample population to about 1400 subjects.
These selection criteria were as follows:

1. a participant should have at least nine months of experience with the firm;
2. a participant should be working in an audit service area;
3. a participant should be at the staff, senior, or supervisory staff level;
4. a participant should have completed audit task assignments involving an audit team.

The necessity of imposing these selection criteria was dictated by the fact that questionnaires were to be left with the contacted partners and managers to be distributed later with an internally prepared memo. That memo was prepared upon the researcher's request to signal to the research participants the firm's interest in the study and instruct them to return completed questionnaires directly to the research supervisor at North Texas State using an enclosed self-addressed envelope. Thus, controlling the selection process would reduce sampling errors attributable to the selection process.

A total of 1400 questionnaires were handed in to the contacted partners and managers with the same number of stamped self-addressed envelopes. However, one of the national firms returned fifteen questionnaires which were not distributed. Thus, the final number of distributed questionnaires went down to 1385.

Questionnaire participants were given about five weeks to complete and return the questionnaire. The extended period for subjects to respond was based on the fact that many accounting firm auditors spend most of their time in clients' offices and they are not in their firm's
offices frequently enough to complete the questionnaire. However, at the end of the five week period, contacted partners and managers were asked to issue a second memo as a follow-up procedure. This second memo was distributed to all participants requesting those who have not completed and returned the questionnaire to do so by January 10th, 1985. By that date, a total of 767 completed questionnaires was received.

Research Design

Most of the previous studies of work effort and job performance, using an expectancy-type formulation, have been correlational studies using what is known as across-subjects design. That is, subjects' perceptions of expectancy and valence constructs (EV) are assessed via questionnaires and the resulting scores are then multiplied or added, depending on the model in use, and correlated with measures of effort or job performance (the criterion measures). Although the correlations have been statistically significant, Kopelman (17), among others, pointed out a serious conceptual problem associated with such design. Expectancy theory formulation, as proposed by Vroom (29), represents a model of choice behavior where individuals choose the acts they engage in on the basis of expectancy-valence type considerations. The greater an individual's expectancy that a particular type of behavior will lead to various outcomes, and the more valent these various expected outcomes, the greater the motivational force to choose that particular type of behavior. Thus, expectancy theory clearly requires a within-subjects design rather than between-subjects design. That is, comparisons should be made across behavioral choices for each subject, rather than across subjects for one type of behavior. Such a conceptual problem associated
with between-subjects design has led some researchers to advocate abandoning such design. For example, Wolf and Connolly state that:

Such designs [between-subjects designs] are inherently unsuited to advancing our understanding of the phenomena commonly addressed by expectancy-type formulations, and they should be abandoned by researchers (30, p. 39).

Furthermore, as discussed in Chapter II, several researchers have suggested the inclusion of nonexpectancy variables in the expectancy model to increase its explanatory power. However, it was their conclusion that a change in research design will be required. For example, Parker and Dyer (25, p. 115) stated that "if additional nonexpectancy variables are required to achieve satisfactory levels of accuracy, a return to a regression-based paradigm will be necessary to determine how expectancy and nonexpectancy components should be combined." This means that correlation techniques are no longer enough for expectancy theory research.

The current research utilizes a within-subjects design where motivational forces for each auditor in the sample are measured for the alternative performance behaviors to meet budgeted time. In addition, multiple regression techniques are used to determine the effect of expectancy and nonexpectancy variables on auditors' choice among the alternative performance behaviors under consideration.

However, the use of regression techniques usually raises some questions. Regression models permit multiple predictors to be handled and their levels of significance and partial contribution to be estimated. But, as Doyle and Fenwick (7, p. 409) pointed out, "this gain is made at the expense of more restrictions as to the form of the model. Frequently, this means assuming that the effects of the independent
variables are linear and additive." In fact, most of the previous studies using regression models have assumed that their data conform to a linear and additive model and these assumptions have been justified frequently. However, as Lewis-Beck (20) pointed out, such assumptions are not necessary assumptions. Regression models can handle nonlinearity and interactions, but it is necessary that these nonlinearities and interactions be specified as a priori.

Although Ashton (2) indicated that auditor judgments could be modeled effectively with linear models (i.e., main effects account for the variance in judgment), there is no a priori knowledge to support completely the assumptions of linearity and additiveness of variables' relationships of the proposed integrative model for auditors' performance behaviors under time budget pressure.

In an attempt to overcome such a problem with regression and gain additional insights into the nature of the relationships among the proposed integrative expectancy model's components (expectancy and non-expectancy variables, and auditors' performance behaviors), the Automatic Interaction Detector (AID) algorithm is used as a preliminary analysis to a regression formulation. This algorithm was formally proposed by Morgan and Sonquist (24) and developed later by Sonquist (27) specifically to handle survey data. It frees researchers from making the usual assumptions of a linear model, additive independent variables and a data set which is at least intervally scaled. In fact, the AID algorithm helps delineate the structure of the research model by specifying the nature of the relationships among the variables and whether such relationships are additive or interactive, and reduce the
noise in the model by identifying the variables to be included in and
the variables to be excluded from the regression model. However, the AID
algorithm is used in this research mainly to uncover interaction
effects.

**Development of The Questionnaire**

The development of the final form of the questionnaire was
accomplished in two steps: pretest and refinement step. In the initial
step, questionnaire items regarding suggested research model variables
were developed using, mainly, a Likert type scaling. This preliminary
form of the questionnaire was examined and reviewed by selected faculty
members and consultants at North Texas State University. Using comments
and suggestions from such a review, a pretest questionnaire was
developed and administered to seven selected accountants who are
currently in practice or were recently in practice. The responses to
this pretest type questionnaire were examined and individual items were
deleted, added or modified accordingly to come up with the final form of
the questionnaire (as in Appendix).

**Reliability and Validity of the Questionnaire**

One of the major methodological issues related to expectancy theory
research is reliability and validity of the measurement instrument (the
questionnaire). In fact, the use of a questionnaire as a measurement
instrument raises such an issue in all behavioral research. One of the
factors that contributes to the issue of reliability and validity of
questionnaires as measurement instruments is the fact that there is a
wide variety of questionnaires that have been used to measure behavioral
models' variables. However, as Mitchell (22, p. 1063) suggested, this
variety may add some degree of external validity to research results.

Reliability of a measurement instrument, by definition, has to do
with the degree to which the same results can be reproduced from
repeated measurement of the same objects. That is, a questionnaire will
be considered reliable if the same scores are obtained from repeated
measures of the same or comparable phenomenon. Because of time and cost
considerations, it is very difficult to have a strict adherence to such
a definition. However, researchers have developed some measures or
procedures to test statistically the degree of measurement reliability
of an instrument. These measures or procedures have to do with three
aspects of reliability: the consistency of measurement results for all
items or groups of items, the consistency of subjects' responses to
similar items, and the discriminating ability of the measurement
instrument (12, p. 524).

Consistency of measurement results can be tested statistically by
splitting the sample responses into halves and correlating the responses
of one half to the other. Consistency of subjects' responses can be
tested through test-retest correlations where a separate and different
worded question or a statement is to be included in the questionnaire
for the same item. Discriminating ability of a measurement instrument
can be tested by examining the pattern of responses to each item. If
there is a degree of consensus about a particular item or items, then
the discriminating ability is absent.

In this research, the first two procedures (split-half and test-
retest) were used as the main procedures for testing the instrument's
reliability. By splitting the sample responses into halves (odd-even) and correlating the responses of one half to the other, a reliability coefficient of .69 was obtained. This coefficient of reliability was significant at a level greater than 99 per cent.

In order to keep the length of the questionnaire at a manageable level, a decision was made to employ the test-retest procedure for some items representing three variables that are considered critical for this research. These variables are role of budgets in performance evaluation, supervisor's influence, and budget feasibility. Reliability coefficients of the sample responses to the questionnaire items measuring these three variables ranged from .47 to .64. However, their levels of significance were greater than 95 per cent.

With respect to instrument validity, it refers to the measurement of the objects' properties that are intended to be measured. That is, a questionnaire will be considered valid if the type of measures used are measuring what they are designed to measure.

There are three types of instrument validity that are usually of concern in behavioral research. The first is content validity which has to do with how well the measurement scales reflect the properties of the object being measured. The second is construct validity which has to do with the factors or constructs to be reflected in the measurement. The third type of validity is concurrent or criterion-related validity which has to do with the ability of the measures of independent variables to predict the dependent variable(s).

Although the evidence on the validity aspects of questionnaires' measures is relatively scarce, Mitchell and Nebeker (23) and Dachler
and Mobley (5) provided some evidence to support the validity of instruments that have been used in expectancy theory research. Thus, to the extent that the final questionnaire measures resemble those that have been used in previous studies, such a questionnaire can be considered as valid as others.

Variables Selection and Measurement

The proposed integrative expectancy model, outlined in Chapter II, classifies its components in terms of general categories. After reviewing prior studies and holding some discussions with several practitioners, the following variables have been identified as potentially significant for the purpose of this research and are presented under each of the general categories outlined in the proposed model. The first category, performance behaviors, represents the dependent variables, while the other categories represent the independent variables.

Performance behaviors.—These behaviors refer to auditors' actions to meet budgeted time as a performance goal. This research identifies four types of behavior: (1) reporting time worked over the budget; (2) underreporting time worked; (3) overruling some procedures; and (4) cutting down on some audit procedures. Although the third and fourth types of behavior can be combined together to represent one type of behavior (sign-off behavior), that separation is necessary in order to make a distinction between authorized and unauthorized sign-offs. In such a case, the fourth behavior represents unauthorized sign-off behavior. These four performance behaviors are measured in terms of an
Motivational attributes.—These attributes refer to the elements that form the psychological force on an auditor to engage in a specific performance behavior to accomplish the work task (e.g., meeting time budget). The basic expectancy theory formulation, proposed by Vroom (29), postulates that such force depends on the individual's expectancy (E) that his action will lead to desired outcomes, and the degree of anticipated satisfaction (V) of these outcomes. That is, expectancies and valences associated with each performance behavior must be present before an individual auditor will be motivated to engage in a specific behavior.

To measure the expectancy element of motivational attributes in an audit setting, Jiambalvo (14) suggested that such an expectancy element be broken down into a number of expectancies to reflect the sequential nature of the evaluation process in public accounting firms. He proposed three types of expectancies: the expectancy that effort leads to effective performance; the expectancy that effective performance will be judged as such; and the expectancy that performance judged as effective will contribute to the overall performance evaluation.

Although theoretically appealing, some elements of Jiambalvo's model need to be reconsidered for the purpose of this research. First, effective performance with respect to time budgets, from an organizational point of view, means that an auditor has met the budgeted time as indicated by his performance report. Since an individual auditor
can meet budgeted time in different ways, the expectancy that effort leads to meeting budgeted time would not have a differential effect on such performance dimension. Secondly, there is no reason to believe that meeting time budget, as a performance goal, will be judged differently among auditors as long as the specific behavior to meet the budgeted time does not create negative impressions on immediate performance evaluators. Thus, the first two expectancies of Jiambalvo's model can be combined, for the purpose of this research, in one expectancy. The expectancy that a specific performance behavior (PB) will lead to meeting time budget, which represents a performance goal (P), without creating negative impressions on performance evaluators. However, the third expectancy element of Jiambalvo's model is used as an expectancy for the first level outcome. That is, the expectancy that meeting time budget (P) without creating negative impressions will contribute to the overall performance evaluation \( (O_1) \) of the auditor.

To measure the second element of motivational attributes which is valences of second level outcomes, three issues were addressed and decided upon before the measurement took place. These three issues include instrumentality of first level outcome \( (O_1) \) to achieve second level outcomes \( (O_2) \), the number of second level outcomes and their selection and the distinction between intrinsic and extrinsic outcomes.

Instrumentality of first level outcome was measured in terms of expectancy as recommended by Lawler (19) to ease the measurement process. That is, the expectancy that overall performance evaluation \( (O_1) \) will lead to second level outcomes \( (O_2) \).
With respect to the number of second level outcomes, Heneman and Schwab (13) suggest that a large number of outcomes is required for expectancy theory research. Theoretically, one should include all outcomes that are related to subjects' choice processes. However, Kaplan (15) suggested that further expectancy theory research, especially in audit settings, should include a relatively small number of important outcomes. But the problem is how to select these important outcomes. Ferris (8), among others, generated his own list of outcomes. Mitchell (22), among others, recommended that outcomes be generated by research subjects. Parker and Dyer (25) recommended a middle-ground approach for selection. This middle-ground approach was followed in this research. Subjects in the pretest sample were provided with a list of outcomes that represent the most frequent items used by previous researchers. They were asked to determine which items are important or attractive to them and which are not. Furthermore, they were asked to add any item that seems important to them but not listed. However, no distinction between intrinsic and extrinsic outcomes was made. Thus, the final number of second level outcomes was determined at the end of the second step of the questionnaire development.

Once all items of second level outcomes were finalized, the valences of these outcomes are measured by multiplying the expectancy that overall performance evaluation will lead to second level outcomes \((0_1 \rightarrow 0_2)\) times the score to be indicated on a five-point Likert format scaled from one to five.

Four models of Lawler-type formulation are used in this research to measure motivational attributes of auditors to engage in alternative
performance behaviors to meet time budgets. The first measures the motivational attributes to report time worked over the budget ($M_a$). The second model measures the motivational attributes to underreport time worked ($M_u$). The third model measures the motivational attributes to overrule some audit procedures ($M_o$). The fourth model measures the motivational attributes to meet budgeted time by cutting down on some audit procedures ($M_c$). These four models can be expressed symbolically as:

$$M_a = (PB \rightarrow P) \ (P \rightarrow O_1) \ ((O_1 \rightarrow O_2) \ (V))$$
$$M_u = (PB \rightarrow P) \ (P \rightarrow O_1) \ ((O_1 \rightarrow O_2) \ (V))$$
$$M_o = (PB \rightarrow P) \ (P \rightarrow O_1) \ ((O_1 \rightarrow O_2) \ (V))$$
$$M_c = (PB \rightarrow P) \ (? \rightarrow O_1) \ ((O_1 \rightarrow O_2) \ (V))$$

where,

$M_a$ = motivational attributes to report time worked over the budget,

$M_u$ = motivational attributes to underreport time worked,

$M_o$ = motivational attributes to overrule some audit procedures,

$M_c$ = motivational attributes to cut down on some audit procedures,

$PB \rightarrow P$ = the expectancy that a specific behavior will lead to meeting time budget without creating any negative impressions on performance evaluators,

$P \rightarrow O_1$ = the expectancy that meeting time budget will contribute to the overall performance evaluation,

$O_1 \rightarrow O_2$ = the expectancy that overall performance evaluation will lead to second level outcomes,

$V$ = the valences of second level outcomes.
Employing a within-subject design requires that $M_a$, $M_u$, $M_o$ and $M_c$ scores be computed for each individual auditor. A within-subject analysis assumes that a subject will choose from among alternative behaviors the one with the highest score. However, as Kopelman (17, p. 655) pointed out, "yet this conception [highest score] runs counter to the decision algorithms found in a variety of other contexts—e.g., the notions of marginal gain and comparative advantage in Economics, the iterative search rules in Linear Programming, and the idea of return on investment (ROI) in Finance. All of these latter decision rules are incremental maximization algorithms." Therefore, this research utilizes that idea of incremental analysis, which is also known in the accounting literature, so that a marginal motivational score, $MS$, is computed for each auditor in the sample.

In order to compute that marginal score, $MS$, for each auditor in the sample, alternative performance behaviors to meet budgeted time are classified into three choice processes. The first deals with auditors' choice to report unfiltered (or undistorted) information (i.e., reporting actual time worked over the budget) or report filtered or distorted information (i.e., underreporting time worked and sign-off behaviors). Since reporting filtered time incorporates more than one type of behavior, each of which has a motivational attributes score, an average score is computed for this group of performance behaviors to be compared with the motivational attributes score for reporting unfiltered time. Theoretical justification for that averaging process is provided by Behling, Schreisheim, and Tolliver (3). They suggest that individuals compare the expected payoffs of an act to the average payoffs of
alternative acts. Thus, the marginal motivational score, MS, for auditors' choice to engage in filtering or unfiltering behaviors is computed as:

$$MS = M_a - ((M_u + M_o + M_c)/3)$$

The second choice process deals with auditors' choice to underreport actual time worked or engage in sign-off behaviors. This dichotomy for the second choice process is based on potential effects of auditors behaviors to meet budgeted time on audit quality. It is assumed that underreporting behavior has no negative effects on audit quality while sign-off behaviors may have potential negative effects on audit quality. Therefore, the marginal motivational score, MS, for auditors' choice to underreport time or engage in sign-off behaviors is computed as:

$$MS = M_u - ((M_o + M_c)/2)$$

The last choice process deals with auditors' choice to employ professional judgment to overrule some audit procedures or to cut down on some audit procedures to meet budgeted time. The dichotomy for this choice process is based on the fact that an auditor's authority to employ professional judgment differs from one organizational level to another. Therefore, the marginal motivational score for that third choice process is calculated as the difference between $M_o$ and $M_c$.

**Ability attributes.**—These attributes refer to an individual's job-related characteristics that are rather long-term and stable ones. Previous expectancy studies have used different methods and surrogates to measure these attributes. For example, Lawler (18) used supervisory rankings of subordinates on overall qualifications, Mitchell and Nebeker
(23) used college entrance examinations, Galbraith and Cummings (11) used the length of time period on the job, and Ferris (8) used supervisors' ratings.

Although supervisory rankings of subordinates may seem a reasonable measure for auditors' ability attributes with respect to the degree of competency, there was a potential problem associated with the use of that measure for the current research. The use of an anonymous questionnaire makes it difficult to have a proper matching of supervisory rankings with each respondent in the sample. Furthermore, as Vroom (29) suggested, ability attributes have to do also with the learned relationships between behavioral actions and desired outcomes. Thus, the length of an auditor's experience in public accounting firms seems to be an important aspect of ability. Following Galbraith and Cummings (11) and Ferris and Larcker (9), the current research utilizes the length of an auditor's experience in public accounting firms as a surrogate measure of ability attributes. Subjects were asked to furnish such information on item two of the questionnaire.

Task goal attributes.—These attributes refer to time budget characteristics and the associated audit tests. Kaplan (15) pointed out that one of the major weaknesses of prior expectancy theory research in audit settings is that researchers have not accounted for the effect of audit tests. Since time budgets are established in conjunction with audit tests, the present research accounts for these audit tests. Subjects were asked to indicate the audit test area where the specific performance behavior took place. These audit test areas are included in terms of compliance tests and substantive tests on item forty-one of the
questionnaire. Previous research on budgets in different organizational settings, other than auditing, has investigated the effect of budget characteristics on motivation and performance. Among these characteristics were level of difficulty, clarity, and extent of participation. Time budgets in audit settings, however, are usually characterized as imposed budgets which means that extent of participation may not be a typical variable for this research. Furthermore, clarity seems to be a character of audit programs associated with time budgets. These audit programs are usually detailed to the extent that clarity can be assumed. Therefore, the degree of tightness is considered the major characteristic of time budgets. Subjects were asked to indicate their perception with respect to time budget feasibility using item thirty-five of the questionnaire.

Situational attributes.—These attributes refer to the organizational and field work characteristics. Each accounting firm has its own policies to carry out its activities. To the extent that these policies differ from one firm to another, performance behaviors to meet time budgets may also differ. Therefore, the present research attempts to account for these differences in terms of firm size, time budget preparation and administration, and field work supervisors' characteristics.

Kaplan (15) pointed out the need for controlling supervisors' characteristics since audit engagements are usually performed under different supervisors. This simply means that auditors may be influenced in their choice among alternative actions to meet budgeted time by their supervisors' behavior. Kaplan recommended that subjects be told to
assume, for example, the best supervisor they had. This research employs, however, a measure of supervisors' influence on the auditor's chosen action to meet budgeted time. Subjects were asked to indicate how many supervisors they had during the last year and how many of them indicated what to do if budgeted time was not enough to carry out the task assignment. These two numbers were obtained by questionnaire items 36 and 37. A ratio was calculated between these two numbers and used as the final measure for supervisors' influence on auditor's chosen action to meet budgeted time.

Kaplan (15) also pointed out that organizational policies represent a confounding factor in previous expectancy research. Organizational policies are included in this research using two surrogate measures. These measures are related to time budget preparation and administration. Discussions with some practitioners revealed that many auditors have a perception that there is some degree of inconsistency in preparing time budgets, not only among different engagements, but also among different parts of the same audit engagement. Furthermore, the role of meeting time budgets in performance evaluation may differ among firms. Therefore, subjects were asked to indicate their perceptions with respect to the degree of consistency in preparing time budgets and their role in performance evaluation. Although the perceived role of meeting time budgets has been incorporated in a form of expectancy as a motivational attribute, its inclusion here as a situational factor serves two purposes. First, it serves as a validity measure for the expectancy element. Secondly, it is used to identify the partial
contribution of such an element to the explanatory power of the model since the research is devoted to time budgets.

Interrelations attributes.—These attributes refer to the personal and informal relationships among audit team members and organization members in general. This category of variables is excluded from this research because of definition and measurement problems.

Research Hypotheses

In line with the research objectives, the following hypotheses are formulated and tested.

$H_1$ There is no significant relationship between marginal motivational score and auditors' choice to filter or unfilter actual time worked.

$H_2$ There is no significant relationship between marginal motivational score and auditors' choice to underreport actual time worked or sign-off audit program to meet budgeted time.

$H_3$ There is no significant relationship between marginal motivational score and auditors' choice to overrule some audit procedures based on professional judgment or cut down on some audit procedures to meet time budgets.

$H_4$ There is no significant increase in the explanatory power of the expectancy model by incorporating ability, task goal and situational attributes.

$H_5$ There is no significant relationship between the perceived role of time budgets in performance evaluation on auditors' choice
among alternative actions to meet time budgets.

H₆ There is no significant relationship between supervisors' influence and auditors' choice among alternative actions to meet budgeted time.

H₇ There is no significant relationship between firm size classification and auditors' choice among different alternative actions to meet budgeted time.

Data Analysis

The data collected from the participants' responses to the questionnaire were analyzed through the use of the AID algorithm and multiple regression techniques. The AID algorithm was used as a preliminary step for the regression to identify interaction effects among the explanatory variables. The multiple regression technique was used for the task of statistically controlling the effect of interrelated variables and revealing the partial contribution of each independent variable to the explanatory power of the model. Data analyses were performed by computer using the regression procedure of Statistical Analysis System (SAS) (26, pp. 39-85) and a hierarchical strategy. The hierarchical strategy is similar to the known step-wise strategy, except that the researcher determines the order in which the independent variables are entered into the regression process.

Regression Model

The regression model was developed using the selected variables for the expectancy and nonexpectancy components of the proposed integrative model, described previously, as independent variables. Auditors'
performance behaviors to meet budgeted time, in the form of three choice processes, were used as dependent variables. Thus, the dependent relationship to be explained by the regression model is a trichotomous condition where multiple dependent variables are associated with the multiple independent variables representing expectancy and nonexpectancy variables for auditors' choice to engage in alternative performance behaviors to meet budgeted time. Accordingly, the regression model appears as a multivariate model of the following form:

$$Y_A, Y_U, \text{ and } Y_Q = \alpha + B_{MS}MS + B_{LE}LE + B_{AT}AT + B_{BF}BF + B_{FC}FC + B_{OS}OS + B_{BC}BC + B_{SE}SE + B_{RB}RB + B_{OL}OL + B_{LE}LE + \varepsilon$$

where,

- $Y_A = \text{the condition of auditors' choice to engage in filtering or unfiltering reporting behavior},$
- $Y_U = \text{the condition of auditors' choice to engage in underreporting or sign-off behaviors},$
- $Y_Q = \text{the condition of auditors' choice to exercise professional judgment to overrule some procedures or cut down on some audit procedures},$
- $MS = \text{marginal motivational score},$
- $LE = \text{length of experience},$
- $AT = \text{audit test area},$
- $BF = \text{budget feasibility},$
- $FC = \text{firm size classification},$
- $OS = \text{office size},$
- $BC = \text{budget consistency},$
SE = supervisors' effect or influence,

RB = role of budgets in performance evaluation,

IE = interaction effect(s) detected by the AID algorithm,

B = the raw-score partial regression coefficient for each independent variable,

A = autonomous auditors' choice that could not be explained by the independent variables or residual error,

e = the randomly distributed residual error or variance in Y not explained by the independent variables in the regression model.

Using multivariate techniques of analysis, this regression model can be treated as a multiple discriminant analysis. However, since this research is concerned with isolating the effects of nonexpectancy variables from the effects of the expectancy variables, it would be difficult to interpret the statistical results of the multiple discriminant analysis. Therefore, the multivariate model is treated as three multiple regression equations of the following form:

\[ Y_A = A + B_{MS}MS + \ldots + B_{IE}IE + e \]
\[ Y_U = A + B_{MS}MS + \ldots + B_{IE}IE + e \]
\[ Y_0 = A + B_{MS}MS + \ldots + B_{IE}IE + e \]

For the purposes of the following description and later analyses of the above three regression equations, the equations are referred to as the first, the second, and the third regression model, respectively.

The first regression model deals with auditors' choice to unfilter time reported as opposed to filtering time reported. The second regression model deals with auditors' choice to underreport time worked
as opposed to signing off audit programs. However, the third regression model concerns auditors' choice to cut down on some audit procedures to meet time budgets or overrule some audit procedures based on professional judgment.

**Significance Testing**

The significance of the explanatory or the independent variables in the models was determined by the use of $F$ and $T$ tests. The specific use of these statistical tests is explained in Chapter V with the discussion of data analysis results. However, for the purposes of rejecting the research hypotheses stated in the previous section of this chapter, a 95 per cent level of significance is used as a decision level.

**Treatment of Missing Data**

In social research, most collections of data include missing values. In this study, some missing values were expected as a result of respondents' failure to answer a given question or respond to a given statement on the survey instrument (the questionnaire). To deal with this problem, a decision was made to exclude the missing data items for a subject when they were encountered. This decision was made as a result of screening the data where missing values on some questionnaire items were identified for only twenty respondents.

**Limitations of The Study**

Kerlinger (16) pointed out that limitations and trade-offs occur in the selection of one of several potential research designs. This study is no exception. There are some limitations that confront the present study.
First, like most of other studies of the same type, the use of questionnaires has several drawbacks. Two of these inherent in this study are inability to check the responses given for all items and inability to assess the effect of potential non-response bias. Furthermore, the use of the questionnaire as the only method to collect the data for both dependent and independent variables raises the issue of common variance. However, results of previous research studying separate behaviors of auditors to meet time budgets (e.g., 21; 22) provided supportive evidence regarding convergent and discriminate validity for the dependent variables.

Secondly, although accounting firms were selected using a minimum estimated size criterion to capture a wide population for the research sample, such a criterion was based on a subjective decision which may affect the representation of local firms in the sample. However, discussions with some practicing auditors revealed that the large number of local and regional firms used would provide a reasonable cross-sectional representation of these local and regional firms in the chosen area.

Thirdly, restricting the study to the Dallas-Fort Worth area may limit the degree of generalizing the results beyond that particular area. Furthermore, the use of cross-sectional data limits the degree of generalizing the results beyond the existing conditions at the time of data collection. However, the increased sample size may weaken these limitations.

Finally, there are some limitations concerning the assumptions of the study. It is assumed that the four alternatives of performance
behaviors to meet time budgets are mutually exclusive alternatives. Such an assumption was based on discussions with some practicing auditors which revealed that choice among different alternatives to meet budgeted time is usually under the auditor's control. Also, to apply a within-subject design, it is assumed that each individual auditor combines desired outcomes and expectancies of each performance behavior to meet budgeted time by the same rule. Furthermore, each performance behavior to meet budgeted time may have a degree of magnitude with respect to audit quality and efficiency. However, since the current study is concerned mainly with the type of behavior, it is assumed that each behavior has an important impact on audit quality and/or audit efficiency regardless of its magnitude.
CHAPTER BIBLIOGRAPHY


CHAPTER V

DATA ANALYSIS AND FINDINGS

The present chapter reports the findings of this research study that arise from analyses of the data collected by the survey instrument. The data presentations are divided into three major sections: (1) survey responses, (2) application of the AID technique, and (3) regression analysis results.

Survey Responses

As noted in the preceding chapter, questionnaires were distributed to practicing auditors in fifty-three CPA firms (professional corporations and partnerships) in the Dallas-Fort Worth area. The initial distribution of the questionnaire was followed by a second memo, issued as a follow-up procedure, by each firm requesting its participants to respond by a stated date. A total of 767 questionnaires were received by January 10, 1985, (the deadline). Only six questionnaires were received after that date and were not included in the analysis. A summary of the response rates by firm size classification is shown in Table III. The table shows that the overall response rate was about 55 per cent. The use of an anonymous questionnaire precluded any analysis concerning the time reporting behaviors and attitudes of the nonrespondents—the remaining 45% of the sample.
TABLE III
A SUMMARY OF ACCOUNTING FIRM RESPONSE RATES

<table>
<thead>
<tr>
<th>Firm Category</th>
<th>Questionnaires Distributed</th>
<th>Number of Respondents</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Eight</td>
<td>680</td>
<td>442</td>
<td>65%</td>
</tr>
<tr>
<td>Smaller National</td>
<td>320</td>
<td>186</td>
<td>58%</td>
</tr>
<tr>
<td>Local or Regional</td>
<td>385</td>
<td>139</td>
<td>36%</td>
</tr>
<tr>
<td>Total</td>
<td>1385</td>
<td>767</td>
<td>55%</td>
</tr>
</tbody>
</table>

Table III shows that there were more nonrespondents from local or regional firms than national firms (Big Eight and smaller national firms). This may imply a response bias for the Big Eight and smaller national firm classifications. However, the large sample size used and the models' specification for the research purposes should mitigate this potential bias.

Although a total of 767 questionnaires were received as shown in Table III, not all of these questionnaires were usable for the analyses. Based on the selection criteria discussed in the preceding chapter, ninety-six questionnaires were excluded from the analyses because they failed to meet one or more of these criteria. Thus, the final number of questionnaires (cases) that were usable for this research reached 671 cases representing 48% of the original sample. Table IV summarizes the distribution of these usable responses among firms and by organizational levels.
TABLE IV
A SUMMARY OF ACCOUNTING FIRM USABLE RESPONSES
BY ORGANIZATIONAL LEVEL

<table>
<thead>
<tr>
<th>Firm Category</th>
<th>Staff Member</th>
<th>Senior Staff</th>
<th>Supervisory Staff</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Big Eight</td>
<td>179</td>
<td>45.20</td>
<td>137</td>
<td>34.60</td>
</tr>
<tr>
<td>Smaller National</td>
<td>71</td>
<td>47.65</td>
<td>43</td>
<td>28.86</td>
</tr>
<tr>
<td>Local or Regional</td>
<td>63</td>
<td>50.00</td>
<td>49</td>
<td>38.88</td>
</tr>
<tr>
<td>Total</td>
<td>313</td>
<td>46.65</td>
<td>229</td>
<td>34.14</td>
</tr>
</tbody>
</table>

Table IV shows that the percentage of usable responses of Big Eight firms' participants was much higher than that of both smaller national and local or regional firms' participants. Almost one-half of the total usable responses came from participants who occupy an entry-level position, staff member, in their firms. However, the percentage of usable responses from participants of that organizational level is about the same for the three firm categories.

Time Performance Reporting Behaviors

Examination of the total usable responses revealed that 71.83% engaged in unfiltered time reporting behavior. That is, more than two-thirds of the respondents have reported actual time worked even when it exceeded the budget. On the other hand, 28.17% engaged in filtered time reporting behaviors. That is, less than one-third of the respondents
have engaged in one of three behaviors: underreporting actual time worked, overruling some audit procedures or cutting down on audit procedures in order to meet budgeted time for their task assignments. Table V shows the frequency distribution of time reporting behaviors grouped in two general categories for the first research model.

**TABLE V**

**FREQUENCY DISTRIBUTION OF TIME REPORTING BEHAVIORS**

<table>
<thead>
<tr>
<th>Type of Behavior</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unfiltered Time reported</td>
<td>482</td>
<td>71.83</td>
</tr>
<tr>
<td>Filtered Time Reported</td>
<td>189</td>
<td>28.17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>671</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Although Table V presents the frequency distribution of time reporting behaviors as two general categories, examination of the second category, filtered time reported, revealed that 57.67% of those who engaged in filtering time behaviors underreported their actual time worked. This means that only 42.33% of those who filtered the time reported engaged in sign-off behaviors. Table VI presents the frequency distribution of filtered time reporting behaviors broken down into categories for the purpose of the second and third research models. The table shows that only 13.23% of those who filtered the time reported cut down on audit procedures to meet budgeted time. This means that 87.77% of the respondents who filtered time reported have directed their
TABLE VI

FREQUENCY DISTRIBUTION OF FILTERED TIME REPORTING BEHAVIORS

<table>
<thead>
<tr>
<th>Type of Behavior</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overrule Some Audit Procedures</td>
<td>55</td>
<td>29.10</td>
</tr>
<tr>
<td>Cut Down on Audit Procedures</td>
<td>25</td>
<td>13.23</td>
</tr>
<tr>
<td>Subtotal</td>
<td>80</td>
<td>42.33</td>
</tr>
<tr>
<td>Underreporting Time Worked</td>
<td>109</td>
<td>57.67</td>
</tr>
<tr>
<td>Total</td>
<td>189</td>
<td>100.00</td>
</tr>
</tbody>
</table>

efforts to maintain audit quality either by underreporting their actual time worked or exercising their authority to overrule some audit procedures based on professional judgment.

Although studying the pattern of a specific time reporting behavior among different firm size classifications (Big Eight firms, small national firms, and local or regional firms) is not one of the main objectives of this research, it may be useful to provide some of the results obtained in this regard. Table VII shows the frequency distribution of time reporting behaviors by firm classification. The table shows that the percentage of respondents who reported their actual time worked is relatively higher in both local or regional firms and small national firms than the corresponding percentage of respondents from Big Eight firms. However, the percentages of respondents who underreported their actual time and those who exercised their authority to
<table>
<thead>
<tr>
<th>Firm Category</th>
<th>Report Over</th>
<th>Under-report</th>
<th>Overrule Procedures</th>
<th>Cut Down Procedures</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Big Eight</td>
<td>263</td>
<td>66.41</td>
<td>84</td>
<td>21.21</td>
<td>37</td>
</tr>
<tr>
<td>Small National</td>
<td>111</td>
<td>74.50</td>
<td>22</td>
<td>14.77</td>
<td>10</td>
</tr>
<tr>
<td>Local or Regional</td>
<td>108</td>
<td>85.71</td>
<td>3</td>
<td>2.38</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>482</td>
<td>71.83</td>
<td>109</td>
<td>16.24</td>
<td>55</td>
</tr>
</tbody>
</table>
overrule some audit procedures based on professional judgment are lower in both small national firms and local or regional firms than the corresponding percentages of respondents from Big Eight firms. On the other hand, the percentage of those who underreported their actual time worked in local or regional firms is low compared with the corresponding percentage for both Big Eight and small national firms. Finally, the percentage of those respondents who cut down on some audit procedures to meet budgeted time was higher for local or regional firms than the corresponding percentages for both Big Eight and small national firms.

These reported results suggest that auditors in local and regional accounting firms perform their task assignments under lower time budget pressures than those of national firms. These findings may have occurred because of two related reasons. The first has to do with the role of meeting time budgets in performance evaluation. It seems that meeting time budgets is not a critical factor in the performance evaluation process in local and regional firms to the degree that it is in national firms. The second reason has to do with the organizational distance between auditors and their performance evaluators. It seems that there is a short organizational distance in local and regional firms as a result of the close relation with performance evaluators.

Since the role of meeting time budgets in the performance evaluation process is one of the independent variables for the research models, further discussion of this particular variable is addressed in the third section of this chapter.

The next section provides the results of the AID technique as a preliminary step for the regression analysis.
Application of the AID Technique

The main purpose of the AID technique is to help researchers uncover the structure of a set of data. The general principle of the technique simulates the procedures of a researcher in search for those predictors that account for the variance of the dependent variable. The technique is simply a multivariate analysis algorithm which uses a simultaneous one-way analysis of variance to explain the variance of a dependent variable. Thus, the basic principle of least squares is followed, and the focus of the algorithm is on power in reducing error.

In operation, the AID technique performs numerous iterations. The first iteration divides the total sample into two subgroups which provide the largest reduction in the total sum of squares of the dependent variable. As Sonquist, Baker, and Morgan explain:

The program divides the sample, through a series of binary splits, into a mutually exclusive series of subgroups. Every observation is a member of exactly one of these subgroups. They are chosen so that at each step in the procedure, the two new means account for more of the total sum of squares (reduce the predictive error more) than the means of any other pair of subgroups (2, P. 2).

One of the unique characteristics of the AID technique is that the results of the program can be shown in a tree form. Careful examination of such a tree helps researchers uncover the existence of interaction among the independent variables. For the purpose of this research, the AID technique is used mainly to identify those predictors that interact with each other.

The AID algorithm assumes that the dependent variable is either a continuous or dichotomous variable. Also, the algorithm requires a well-behaved dependent variable. According to Sonquist, Baker, and Morgan (2),
a dichotomous dependent variable is considered well-behaved if it takes one of its values more than twenty per cent and less than eighty per cent of the time. Examination of the frequency distribution of alternative time performance reporting behaviors, as shown in Tables V and VII in the preceding section of this chapter, revealed that the dependent variable (as a dichotomous one) met such a criterion in the two applications of the AID technique. In the first one, filtered and unfiltered time reported represented the dependent variable where the occurrence of filtered time reported was coded zero and the occurrence of unfiltered time reported was coded one. Thus, the mean of the dependent variable represents the proportion of auditors who do not filter time reported.

The second application of the AID technique considered the three forms of behavior for filtering time reported as the dependent variable where underreporting behavior was considered as one choice and filtering time reported through overruling or cutting down on some audit procedures as the alternative behavior. As a dichotomous dependent variable, the occurrence of underreporting behavior was coded zero while the occurrence of filtering time reported through cutting down or overruling some procedures was coded one. Thus, the mean of the dependent variable represents the proportion of auditors who do not underreport their actual time worked.

With respect to the independent variables, the AID program requires that independent variables be entered in a form of categories or intervals. However, the program sets a limit of thirty-one categories as a maximum per variable. Thus, if an independent variable has more than
thirty one categories, it is necessary to recode such a variable to be usable for the program. In this study, three of the independent variables needed recoding because of the program requirements. These variables are supervision, office size and motivational scores. Each variable was coded so that it was represented by three classes. Class one included the lower third of the scores while the second class included the middle third of the scores. The third class included the upper third of the scores.

Although the remaining independent variables in this study did not require any recoding, two particular independent variables were recoded to facilitate the interpretation of the results. These two independent variables are feasibility of the budget and the perceived role of meeting time budgets in performance evaluation. Each one of these two variables was recoded in three classes. Those who responded by strongly agree or agree were coded as class one and those who responded with strongly disagree or disagree were coded as class three, while those who did not agree or disagree were coded as class two. The remaining independent variables retained their original coded scores.

Despite the recoding capabilities of the AID algorithm, all recoding procedures were performed by OSIRIS Recoding Subroutine (1). This subroutine is capable of not only performing recoding for the AID algorithm, but also capable of handling arithmetic operations. Since one of the independent variables of this study, motivational scores, required some arithmetic operations to calculate the final score for each individual auditor in the sample, the decision was made to use that
particular subroutine rather than the recoding facilities of the AID algorithm.

Operation and Outcome of the AID Algorithm

As mentioned previously, the AID algorithm performs numerous iterations to arrive at the final output. To illustrate the operation of the algorithm performed on the sample of this study, the first application using filtered and unfiltered time reported as a dependent variable is used.

In this application, the first iteration of the AID algorithm examined all possible dichotomous splits of all independent variables searching for the split that would provide the largest reduction of total sum of squares (TSS) of the dependent variable. To find such a split, the algorithm started by looking at each independent variable separately to find that split which maximizes the sum of squares between the two resulting subgroups (BSS). Such a split would be considered as the best split for that independent variable. The algorithm then calculated a ratio between the sum of squares between the two subgroups and the total sum of squares of the dependent variable (BSS/TSS) for the best split of each independent variable. Once these ratios are calculated for each independent variable, the algorithm selected the variable with the highest ratio of explained variation and split the parent group into two subgroups on that particular variable. Table VIII presents these calculated ratios (BSS/TSS) for each independent variable for the first application of the algorithm. The table shows that the algorithm went through several iterations which resulted in seven groups.
Examination of Table VIII indicates that the variable with the highest ratio of explained variation of the dependent variable for the first iteration is the perceived role of meeting time budgets in performance evaluation where its calculated ratio (BSS/TSS) is 37.2% of explained variation in the dependent variable. Therefore, the parent group (group 1 or the total sample) was split on that variable to produce subgroups 2 and 3. Subgroup 2 represents those respondents who strongly agree or agree that meeting time budgets is an important factor in performance evaluation. Subgroup 3, on the other hand, represents
those respondents who perceived a less important role of meeting budgeted time in performance evaluation.

Once the split on the parent group (group 1) has taken place, the algorithm started the second iteration by selecting one of the resultant two groups (group 2 and group 3) which has the largest portion of the remaining unexplained variation. Thus, the algorithm examined the total sum of squares of the dependent variable that is still attached to each of these two groups (TSS₂ and TSS₃). Since group 2 had a larger portion of the remaining unexplained variation than group 3 (TSS₂ > TSS₃), the algorithm chose that group as the next parent group and examined all possible dichotomous splits of all independent variables searching for the second split that would provide the largest reduction of total sum of squares (TSS₂). To find such a split (second split), the algorithm went again through the same process of calculating a ratio of explained variation of the dependent variable for each of the independent variables for group 2.

Examination of Table VIII reveals that the variable with the highest ratio of explained variation of the dependent variable for group 2 was audit test area where its calculated ratio (BSS₂/TSS₃) is 4.5% of explained variation in the dependent variable. Therefore, group 2 was split on that variable to produce subgroups 4 and 5. Subgroup 4 represents those respondents who strongly agree or agree that meeting time budgets is an important factor in performance evaluation and their actions to meet time budgets were exercised in performing internal control tests. Subgroup 5, on the other hand, represents those respondents who perceived an important role of budgets in performance
evaluation but they exercised their actions to meet time budgets in performing both internal control tests and substantive tests.

The AID algorithm continued to perform its iterations until one of the stopping rules was invoked. In such a case, the sample group under consideration becomes a final group and is usually marked with an asterisk. In this study, all the default stopping rules of the AID algorithm were used with the exception of the minimum number of cases for a resultant group. A minimum of 40 cases rather than the default option of 25 was used for the first application. One of the reasons for such a decision was to avoid further splitting into smaller groups and facilitate the interpretation of the results with respect to the existence of interaction effects among the independent variables. However, since the sample size was not large enough for the second application (189 cases), a minimum of 20 cases was used in order to generate enough splits for the detection of interaction effects.

As previously mentioned, the final output of the AID algorithm can be easily shown in a tree form. An analysis of the structure of the tree can help in assessing the relationships among the independent variables. Furthermore, the tree provides a series of profiles of sample respondents with regard to the dependent variable under consideration. Since the dependent variable of this study, time performance reporting behavior, was subject to two major classifications, the AID outcome is presented and discussed in a tree form for each one of these classifications.

Figure 7 presents the output of the AID algorithm of the first application where the dependent variable represented a choice between
filtered and unfiltered time worked. The figure provides information concerning the number of respondents in each group, the proportion of respondents in each group who did not filter time worked, and the unexplained sum of squares of each group (TSS).

As shown in Figure 7, a total of 651 usable cases was used as the parent group (group 1) and it was subjected to further splitting on three independent variables. These variables are role of budgets in performance evaluation, audit test areas and feasibility of budgets. Although ten independent variables were specified for the AID algorithm, only these three independent variables were used in the splitting process which resulted in four final groups explaining 46.4% of the total variance of the dependent variable.

An examination of the structure of the resulting tree indicates that it is nonsymmetric. This implies that the predictive power of some of the independent variables after partialling out the effects of the others are nonsymmetric. Sonquist, Baker, and Morgan stated that "if a variable is used on one of the trunks, and if it shows no actual or potential utility in reducing predictive error in another trunk, then there is clear evidence of an interaction effect between that variable and those used in the preceding splits" (2, p. 77). Using this criterion and the information provided in both Table VIII and the tree diagram, three interaction effects were uncovered and decided upon.

The first interaction effect implied by the tree diagram was between role of budgets in performance evaluation and audit test area. The tree diagram shows that audit test area had explanatory power for those respondents who perceived an important role of budgets in
Fig. 7--The AID output of the first application
performance evaluation. An examination of Table VIII, however, reveals that in parent group 1, audit test area explained 6.1% of the variance in the dependent variable. After the effects of role of budgets were partially removed in splitting group 1, the variance explained by audit test area decreased to 4.5% for group 2 (respondents who perceived an important role of budgets in performance evaluation) and decreased to .4% for group 3 (respondents who perceived a less important role of budgets in performance evaluation). Although the drop in explanatory power of audit test area was probably unrelated to the intercorrelation between the two variables (.2 for the aggregate sample), the directional effect of audit test area for both group 2 and group 3 may not support the suggested interaction between role of budgets and audit test area. Apparently, group 3 was not split on audit test area because the explained variance by audit test area for this group (.4%) was less than the required amount of variance used as the default by the AID algorithm (.8%). Had the split occurred, the tree would have been symmetrical for the first two splits. Therefore, a decision was made not to include this first interaction effect in the first research model.

The second interaction effect implied by the tree was between audit test area and budget feasibility. The tree shows that budget feasibility had explanatory power only for those respondents who exercised their action (filter or unfilter reported time) in both internal control tests and substantive tests. Examination of Table VIII reveals that the explanatory power of budget feasibility increased from only .7% for group 1 to 4.7% for group 5 after the effects of role of budgets and audit test area were partially removed. However, the explanatory power of
budget feasibility for group 4 was diminished. Since the effects of budget feasibility are in opposite directions from groups 4 and 5 and the results indicate a low magnitude of the correlation between the two variables (.05 for the aggregate sample), the data appear to support the suggested interaction between audit test area and budget feasibility. Therefore, a decision was made to include this interaction effect in the first research model.

The last interaction effect implied in the tree is among role of budgets, audit test area and budget feasibility. Since a decision was made to exclude the interaction effect between role of budgets and audit test area as explained above, it seems reasonable to exclude also this last interaction effect accordingly. Therefore, the first regression model of this study would include only one additional independent variable to represent the interaction effect between audit test area and budget feasibility.

The second application of the AID algorithm considered the choice between underreporting behavior and filtering reported time through overruling or cutting down on audit procedures as the dependent variable. The occurrence of underreporting behavior was coded zero while the alternative action was coded one. Thus, the mean of the dependent variable represented those respondents who did not underreport their time.

Figure 8 depicts the tree diagram obtained from applying the AID algorithm to the sample respondents who engaged in filtering behaviors. The figure indicates that the splitting process resulted in four final groups using only two of the ten independent variables of this study. These two variables are audit test area and experience.
Fig. 8—The AID output of the second application
Examination of the structure of the tree shown in Figure 8 reveals that the tree is symmetric. This means that no interaction effects are implied in the tree. Therefore, the second regression model of this study is used without any specifications for additional independent variables to represent interaction effects.

Regression Analysis Results

As indicated in Chapter IV, a hierarchical regression strategy was used for analyzing the data collected in this study. A hierarchical regression strategy allows the regression model to be studied incrementally, thus overcoming some of the analytical problems associated with multicollinearity. However, to arrive at the final regression equation for purposes of prediction, it was necessary to examine, in addition to the incremental analysis, the final step simultaneous model which isolated the independent effects of each explanatory variable and fully showed the final effects of any suppression encountered.

In reporting the findings of the regression analysis, an incremental analysis table is presented, followed by a simultaneous analysis table for each of the three regression models. The results of the first regression model concerns auditors choice to unfilter time reported as opposed to filtering reported time. The results of the second regression model concerns auditors choice to underreport time worked as opposed to signing off audit programs. The results of the third regression model, however, concerns auditors choice to cut down on audit procedures to meet time budgets or overrule some audit procedures based on professional judgment.
Results of the First Regression Model

As indicated above, the first regression model deals with auditors' choice to report actual time worked as opposed to report filtered time. Thus, the dependent variable for the first regression model is a dichotomous condition of reporting filtered or unfiltered time where the occurrence of a filtering behavior was coded zero and the occurrence of reporting actual time worked was coded one.

Incremental analysis results.—The incremental analysis of auditors' choice to unfilter reported time (report actual time worked) shows the statistical effect of each explanatory variable at the step the variable was entered into the regression process. At the step a new variable enters the model, only the independent variables that have entered the regression in previous steps are partialled out from the new variable. The effects of the variables that have not yet been added to the regression model are not removed from the new variable. Thus, the incremental analysis considers only the incremental effect of the added variable in the regression model. Table IX presents the incremental analysis results of auditors' choice to unfilter reported time. A brief discussion of the meaning of the columns in the table follows.

Columns in Table IX.—The left hand column indicates the explanatory variables that entered the regression model one at a time. Definitions of these explanatory variables were presented in Chapter IV.

The B column specifies the raw-score partial regression coefficient determined for each variable in the step the variable first entered the regression model. Since the dependent variable is treated as nominal
TABLE IX
INCREMENTAL ANALYSIS RESULTS OF AUDITORS CHOICE TO UNFILTER TIME REPORTED

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>B</th>
<th>Incremental R Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal Motivational Score (MS)</td>
<td>.0003</td>
<td>.1842</td>
<td>12.106</td>
<td>.0001</td>
</tr>
<tr>
<td>Length of Experience (LE)</td>
<td>-.0541</td>
<td>.0277</td>
<td>-4.771</td>
<td>.0001</td>
</tr>
<tr>
<td>Audit Test Area (AT)</td>
<td>.1582</td>
<td>.0648</td>
<td>7.614</td>
<td>.0001</td>
</tr>
<tr>
<td>Budget Feasibility (BF)</td>
<td>-.0041</td>
<td>.0001</td>
<td>0.270</td>
<td>NSF</td>
</tr>
<tr>
<td>Firm Classification (FC)</td>
<td>.0827</td>
<td>.0191</td>
<td>4.180</td>
<td>.0001</td>
</tr>
<tr>
<td>Office Size (OS)</td>
<td>.0000</td>
<td>.0000</td>
<td>0.187</td>
<td>NSF</td>
</tr>
<tr>
<td>Budget Consistency (BC)</td>
<td>-.0247</td>
<td>.0015</td>
<td>1.168</td>
<td>NSF</td>
</tr>
<tr>
<td>Supervision (SE)</td>
<td>-.0019</td>
<td>.0220</td>
<td>4.556</td>
<td>.0001</td>
</tr>
<tr>
<td>Role of Budgets (RB)</td>
<td>-.1893</td>
<td>.1498</td>
<td>-13.449</td>
<td>.0001</td>
</tr>
<tr>
<td>Organizational Level (OL)</td>
<td>.0256</td>
<td>.0010</td>
<td>1.094</td>
<td>NSF</td>
</tr>
<tr>
<td>Interaction Effect (IE)</td>
<td>.0977</td>
<td>.0237</td>
<td>5.466</td>
<td>.0001</td>
</tr>
</tbody>
</table>

Total \( R^2 \) for final regression model .4939.
F value for final regression model 56.680.
Significance of F value for model .0001.
level dummy-coded variable (1 for unfiltered time reported, 0 for filtered time reported), a B for a variable is interpreted as a probability of change in the mean probability of the nonreference group (those who report actual time worked) that is associated with a change in the explanatory variable.

In multiple regression analysis, multiple $R^2$ represents multiple coefficient of determination. It is the percentage of the variance of the dependent variable (and consequently the regression model) that is explained by the independent variables presently in the model. Therefore, the incremental $R^2$ column represents the increase in $MR^2$ or the explanatory power that is achieved by entering a variable in the model. Thus, by looking at the incremental $R^2$ square for a variable one would have an idea about its explanatory power.

The $t$ column presents the $t$ score achieved for the variable's B. This score is used to determine whether the B is significantly different from zero for the variable. Related to the $t$ column is the right hand column, which indicates the level of significance obtained by the explanatory variable in the regression model. The obtained level of significance was recorded after a comparison between the variable's $t$ score and a table of $t$ scores by level of significance. The notation NSF means that the variable was not significant at the 95 per cent decision level used for this study.

Comments on the incremental analysis.—Only four of the explanatory variables are not significant at the 95 per cent decision level used for this study. These variables are budget feasibility (BF), office size
(OS), budget consistency (BC) and organizational level (OL). The remaining explanatory variables are significant in the analysis. However, three of these significant explanatory variables show negative B coefficients. These negative B coefficients indicate indirect relationships with auditors choice to report actual time worked. As an example, the variable length of experience shows a negative B coefficient of .0541. This negative B coefficient means that if an auditor has a long period of experience in public accounting firms, such an auditor is less likely to report actual time worked over the budget.

The largest variable in terms of significance and incremental R square in the incremental analysis is MS, Marginal Motivational Score. It explains about one-fifth of the variance of the dependent variable, auditors choice to report actual time worked as opposed to filtering reported time. The next largest variable in terms of significance and incremental R square is role of budgets (RB). It explains about 15 per cent of the variance of the dependent variable. However, the addition of the other explanatory variables increased the explained variance of the dependent variable to about 50 per cent where the overall model explains 49.39 per cent of the variance of the dependent variable. With an achieved F value of 56.68, the model is significant at greater than 99 per cent level.

Simultaneous analysis results.--Simultaneous analysis of auditors choice to report actual time worked over the budget shows the statistical effect of each explanatory variable with the effects of all other variables in the regression model partialled out. Table X presents the results of simultaneous analysis of the first regression model.
<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>B</th>
<th>t</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal Motivational Score (MS)</td>
<td>.0002</td>
<td>9.984</td>
<td>.0001</td>
</tr>
<tr>
<td>Length of Experience (LE)</td>
<td>-.0527</td>
<td>-4.207</td>
<td>.0001</td>
</tr>
<tr>
<td>Audit Test Area (AT)</td>
<td>-.1467</td>
<td>-2.990</td>
<td>.0029</td>
</tr>
<tr>
<td>Budget Feasibility (BF)</td>
<td>-.0915</td>
<td>-3.763</td>
<td>.0002</td>
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<td>Firm Classification (FC)</td>
<td>-.0052</td>
<td>-0.237</td>
<td>NSF</td>
</tr>
<tr>
<td>Office Size (OS)</td>
<td>-.0001</td>
<td>-0.555</td>
<td>NSF</td>
</tr>
<tr>
<td>Budget Consistency (BC)</td>
<td>-.0295</td>
<td>-1.621</td>
<td>NSF</td>
</tr>
<tr>
<td>Supervision (SE)</td>
<td>-.0004</td>
<td>-1.011</td>
<td>NSF</td>
</tr>
<tr>
<td>Role of Budgets (RB)</td>
<td>-.1876</td>
<td>-13.621</td>
<td>.0001</td>
</tr>
<tr>
<td>Organizational Level (OL)</td>
<td>.0134</td>
<td>0.584</td>
<td>NSF</td>
</tr>
<tr>
<td>Interaction Effect (IE)</td>
<td>.0976</td>
<td>5.466</td>
<td>.0001</td>
</tr>
</tbody>
</table>

Total $R^2$ for final regression model .4939.
F value for final regression model 56.680.
Significance of F value for model .0001.
The interpretation of Table X appears similar to that of Table IX, since the columns are the same for both tables except for the third column, incremental $R^2$ square column in Table IX. The simultaneous analysis is identical to the last step of the incremental analysis, with the $F$ value, significance, and $MR^2$ being the same for both tables. However, the $B$ value for each variable in the simultaneous analysis is a totally partialled or orthogonal $B$ and can be interpreted with more confidence in the final regression model if there is no problem of multicollinearity.

Comments on simultaneous analysis results.—In the simultaneous analysis of auditors' choice to report actual time worked, only six variables are significant at the 95 per cent level of significance or greater. Five of these variables were previously reported as significant for the incremental analysis. The sixth variable that was not reported as significant for the incremental analysis but showed significant effect in simultaneous analysis is budget feasibility (BF). However, the reported $B$s and $t$ scores are different in both tables for the variables that showed significant effects. The reasons for these differences are discussed in the following subsection.

Comparison of Tables IX and X.—As discussed above, five of the seven variables that are significant in the incremental analysis are also significant in the simultaneous analysis. However, the magnitude of the $B$, $t$ score, and level of significance for audit test area (AT) variable changed. Furthermore, the variable BF, budget feasibility,
became statistically significant in the simultaneous analysis even though it was insignificant in the incremental analysis.

The audit test area (AT) variable, although still significant in the final step of the regression model, is partialled by some of the other variables that entered the regression model in later steps. In the incremental analysis, AT entered the regression model in the third step after marginal motivational score (MS) and length of experience (LE). Therefore, only MS and LE were partialled out from it. Examination of the regression steps reveals that there was heavy partialling of AT mainly by role of budget (RB) and organizational level (OL) variables. This partialling out process indicates the existence of redundancy effect between AT variable and both RB and OL variables. However, the $B$ for AT changed sign with the introduction of interaction effect (IE). This sign change indicates the existence of a suppression effect. Therefore, the reported simultaneous $B$ for AT is used for the final regression equation.

The supervision (SE) variable, was significant in the incremental analysis at a level of or greater than 95 per cent. However, this variable became insignificant in the simultaneous analysis. Examination of the regression steps reveals that the SE variable was partialled to a nonsignificant position mainly by the addition of RB and OL variables in the next two steps of the regression model. Therefore, the reported $B$ value of this variable for the incremental analysis is used for the final regression equation.

The MS variable, marginal motivational score, was significant in both incremental analysis and simultaneous analysis at a level of
significance greater than 99 per cent. Since it was the first variable to enter the regression model in the incremental analysis, its B value went down from .0003 to .0002 because of some partialling effects of the other variables entered the model. However, such a decrease in its B does not seem to reflect heavy partialling. Therefore, the reported B for the simultaneous analysis is used for the final regression equation.

The RB variable, role of budgets in performance evaluation, did not change dramatically from the point of entrance into the regression model to the final simultaneous step. Its B value decreased only from .1893 to .1876. This decrease in the B value does not indicate heavy partialling effects of the other two variables entered the model after the RB variable. Therefore, the reported B value of the RB variable for the incremental analysis is used in the final regression equation.

The budget feasibility (BF) variable was insignificant in the incremental analysis. However, this variable showed a significant effect in the final simultaneous regression step. A review of the regression process reveals that this particular variable gained an increase in its B value at each step a new variable was entered the regression model. It seems that the addition of the other explanatory variables suppressed some irrelevant variance to cause the B and the t score for the BF variable to rise. Therefore, the reported B value of the BF variable for the simultaneous analysis is used in the final regression equation.

In summary, the best interpretation of the findings of the regression model of auditors' choice to report actual time worked comes from the incremental analysis for SE and RB variables and from the simultaneous analysis for the remaining variables.
Final regression equation.—The final regression equation for auditors' choice to report actual time worked is constructed from the incremental analysis and the simultaneous analysis of the first regression model. To predict Y, auditors' choice to report actual time worked, the intercept value (A) of the regression model and the Bs of the explanatory variables are reported. However, since the explanatory variables of this research represent a combination of ordinal and cardinal variables, the reported intercept value of the regression model (1.63) does not represent the mean probability of the sample respondents to report actual time worked. Therefore, the intercept value (A) was recalculated by substituting the mean of each explanatory variable in the regression equation. Such recalculations provided an intercept value of .72 which means that the estimated probability for an auditor in the sample to report actual time worked is 72 per cent given no effects of the research variables.

Given that calculated value of the model intercept, the final regression equation for auditors' choice to report actual time worked is expressed as follows:

\[ Y = 0.72 + 0.0002 \text{ MS} - 0.0527 \text{ LE} - 0.1467 \text{ AT} - 0.0915 \text{ BF} \\
- 0.0052 \text{ FC} - 0.0295 \text{ BC} - 0.0019 \text{ SE} - 0.1893 \text{ RB} \\
+ 0.0134 \text{ OL} + 0.0967 \text{ IE} \]

The values reported in the above equation are in terms of probabilities given the sample of auditors participated in the study. These probabilities can be generalized to the population of interest as long as the sample tested is a good representation of the population.
**The Second Regression Model**

The second regression model concerns auditors' choice to underreport time worked as opposed to sign off audit programs whether by cutting down on some audit procedures or employing professional judgment to overrule some audit procedures. Thus, the dependent variable for this second regression model is a dichotomous condition of meeting budgeted time either by underreporting time worked or signing off audit programs. As discussed in Chapter IV, the second regression model deals with those respondents who were originally used as the reference group for the first regression model. That is, the sample used in the second regression model consists of only 189 respondents who filtered reported time either by underreporting time worked or signing off audit programs. The second regression model also does not include the variable IE, interaction effect, even though this variable was included in the model specification in Chapter IV. The reason for that exclusion has to do with the reported results of the second application of the AID algorithm in the previous section of this chapter. These reported results indicated no interaction effects for that sample group of respondents.

Since the reporting of the regression findings for auditors' choice to underreport time worked is identical to that previously presented for the first regression model, no further explanation is presented for the meanings of the columns in Tables XI and XII. Table XI presents the incremental analysis results while Table XII presents the simultaneous analysis results of auditors' choice to underreport time worked.

**Discussion of Table XI.**—Only six variables are statistically significant in the incremental analysis of the second regression model.
### TABLE XI

**INCREMENTAL ANALYSIS RESULTS OF AUDITORS' CHOICE TO UNDERREPORT TIME WORKED**

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>B</th>
<th>Incremental R Square</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal Motivational Score (MS)</td>
<td>.0004</td>
<td>.2773</td>
<td>8.218</td>
<td>.0001</td>
</tr>
<tr>
<td>Length of Experience (LE)</td>
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<td>.0619</td>
<td>-4.047</td>
<td>.0001</td>
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<tr>
<td>Audit Test Area (AT)</td>
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<td>.0006</td>
<td>0.404</td>
<td>NSF</td>
</tr>
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<td>Budget Feasibility (BF)</td>
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<td>.0029</td>
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<td>NSF</td>
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<tr>
<td>Firm Classification (FC)</td>
<td>-.0792</td>
<td>.0100</td>
<td>1.634</td>
<td>NSF</td>
</tr>
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<td>Office Size (OS)</td>
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<td>.0009</td>
<td>0.474</td>
<td>NSF</td>
</tr>
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<td>Budget Consistency (BC)</td>
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<td>.0317</td>
<td>2.959</td>
<td>.0035</td>
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<td>Supervision (SE)</td>
<td>.0018</td>
<td>.0142</td>
<td>2.003</td>
<td>.0468</td>
</tr>
<tr>
<td>Role of Budgets (RB)</td>
<td>-.0925</td>
<td>.0155</td>
<td>-2.113</td>
<td>.0361</td>
</tr>
<tr>
<td>Organizational Level (OL)</td>
<td>-.1830</td>
<td>.0496</td>
<td>-3.931</td>
<td>.0001</td>
</tr>
</tbody>
</table>

Total $R^2$ for final regression model .4646.
F value for final regression model 14.491.
Significance of F value for model .0001.
at a level of significance greater than 95 per cent. However, the explanatory power \( (MR^2) \) of the entire model is 46.46 per cent. Marginal motivational score (MS) is the strongest variable in the incremental analysis where it explains 27.73 per cent of the dependent variable's variance, followed by length of experience (LE) which explains 6.19 per cent of the variance. The negative B value of the LE variable, however, indicates a negative relationship between the length of experience and auditors' choice to engage in underreporting behavior. This means that an auditor with a long period of experience is less likely to engage in underreporting behavior, but more likely to cut down on some audit procedures or employ professional judgment to overrule some audit procedures in order to meet time budgets.

The budget consistency (BC) variable, although it was insignificant in the incremental analysis for auditors' choice to report actual time worked, shows a significant effect on auditors' choice to underreport time worked at a level of significance greater than 99 per cent. The positive B value for the BC variable indicates that an auditor is more likely to engage in underreporting behavior if time budgets were perceived to be prepared on bases that differ from those used in preparing budgets in the previous year.

The supervision (SE) variable, although it explains only 1.42 per cent of the variance, shows a significant positive relationship with auditors' choice to underreport time worked. This means that an auditor is more likely to engage in underreporting behavior if time budgets are not enough to carry out task assignments because of supervisors' pressure to maintain audit quality.
The role of budgets (RB) and organizational level (OL) variables explain together about 6.5 per cent of the variance. However, the analysis shows negative relationships between these two variable and auditors' choice to underreport time worked. For the RB variable, this means that an auditor is more likely to engage in underreporting behavior if estimated time for a task assignment is not perceived to be enough to carry out that assignment. Since the OL variable was coded zero for those respondents who occupy a staff member position in a firm, the negative B value for this variable indicates that an auditor who occupies a higher position in the firm is less likely to engage in underreporting behavior but more likely to cut down on some audit procedures or employ professional judgment to overrule some procedures to meet budgeted time. This result is considerably consistent with the results obtained for the LE variable where auditors with long periods of experience are less likely to engage in underreporting behavior.

Discussion of Table XII.—The simultaneous analysis of the second regression model shows that the same variables with the exception of length of experience (LE) are significant as in the incremental analysis. However, the magnitudes of the Bs and t scores changed in the simultaneous analysis. In order to construct the final equation of the second regression model, a comparison of the incremental and simultaneous analyses is presented.

Comparison of Tables XI and XII.—Although the same variables were significant in both the incremental and simultaneous analyses with the exception of length of experience (LE), a review of the regression
TABLE XII
SIMULTANEOUS ANALYSIS RESULTS OF AUDITORS' CHOICE TO UNDERREPORT TIME WORKED

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>B</th>
<th>t</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal Motivational Score (MS)</td>
<td>.0003</td>
<td>6.815</td>
<td>.0001</td>
</tr>
<tr>
<td>Length of Experience (LE)</td>
<td>-.0072</td>
<td>-0.347</td>
<td>NSF</td>
</tr>
<tr>
<td>Audit Test Area (AT)</td>
<td>-.0722</td>
<td>-1.516</td>
<td>NSF</td>
</tr>
<tr>
<td>Budget Feasibility (BF)</td>
<td>-.0243</td>
<td>-0.767</td>
<td>NSF</td>
</tr>
<tr>
<td>Firm Classification (FC)</td>
<td>-.0540</td>
<td>-1.068</td>
<td>NSF</td>
</tr>
<tr>
<td>Office Size (OS)</td>
<td>.0001</td>
<td>0.703</td>
<td>NSF</td>
</tr>
<tr>
<td>Budget Consistency (BC)</td>
<td>.0797</td>
<td>2.178</td>
<td>.0308</td>
</tr>
<tr>
<td>Supervision (SE)</td>
<td>.0021</td>
<td>2.329</td>
<td>.0211</td>
</tr>
<tr>
<td>Role of Budgets (RB)</td>
<td>-.0906</td>
<td>-2.157</td>
<td>.0325</td>
</tr>
<tr>
<td>Organizational Level (OL)</td>
<td>-.1830</td>
<td>-3.931</td>
<td>.0001</td>
</tr>
</tbody>
</table>

Total $R^2$ for final regression model .4646.
F value for final regression model 14.491.
Significance of F value for model .0001.
process is presented to show the extent of partialling and suppression effects in the second regression model, as can be noted from the comparison of Bs and t scores between Tables XI and XII.

The length of experience (LE) variable was partialled out by several of the variables that followed it in the regression, but the largest partialling came from the OL variable which had a simple correlation coefficient of .326 with the OL variable. All of the other explanatory variables were partialled by the variables that followed them in the regression model. However, there is no obviously heavy partialling with the exception of the BC variable. Its B value decreased from .1112 to .0797 but still significant at a level higher than 95 per cent. This partialling process indicates the existence of redundancy effects.

Since no suppression effects were detected from the examination of the regression process for the second model, all results of the incremental analysis are used to construct the final regression equation for this model.

**Final regression equation.**—The final regression equation for auditors' choice to underreport time worked is constructed from the incremental analysis of the second regression model. The intercept value (A) of the equation was calculated by substituting the mean of each explanatory variable in the regression equation. Such calculation provided an intercept value of .485 which means that the estimated probability of an auditor in the sample to underreport time worked is 48.5 per cent given no effects of the research variables.
Given that calculated values of the model intercept, the final regression equation for auditors' choice to underreport time worked is expressed as follows:

\[ Y = 0.485 + 0.0004 \, MS - 0.0730 \, LE + 0.0183 \, AT - 0.0282 \, BF - 0.0792 \, FC + 0.1112 \, BC + 0.0018 \, SE - 0.0925 \, RB - 0.1830 \, OL \]

The values reported in the above equation are in terms of probabilities given the sample of auditors participated in the study. These probabilities can be generalized to the population of interest as long as the sample tested is a good representation of the population.

**The Third Regression Model**

The third regression model deals with auditors' choice to cut down on some audit procedures as opposed to employing professional judgment to overrule some audit procedures to meet budgeted time for their task assignments. Thus, the dependent variable is a dichotomous condition of meeting time budgets either by overruling some audit procedures based on professional judgment or cutting down on some audit procedures where the occurrence of the first behavior was coded one and the occurrence of the second behavior was coded zero. This third regression model used those respondents who were the reference group for the second regression model. That is, the sample used in the third regression model consists of only 80 respondents who were involved in sign-off behaviors.

Results of the third regression model are presented in Tables XIII and XIV. Table XIII presents the incremental analysis results while Table XIV presents the simultaneous analysis results for auditors' choice to overrule some audit procedures based on professional judgment.
<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>B</th>
<th>Incremental R Square</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal Motivational Score (MS)</td>
<td>.0005</td>
<td>.4839</td>
<td>8.273</td>
<td>.0001</td>
</tr>
<tr>
<td>Length of Experience (LE)</td>
<td>.0229</td>
<td>.0063</td>
<td>0.940</td>
<td>NSF</td>
</tr>
<tr>
<td>Audit Test Area (AT)</td>
<td>-.3005</td>
<td>-.2288</td>
<td>-7.605</td>
<td>.0001</td>
</tr>
<tr>
<td>Budget Feasibility (BF)</td>
<td>.1104</td>
<td>.0458</td>
<td>3.689</td>
<td>.0004</td>
</tr>
<tr>
<td>Firm Classification (FC)</td>
<td>-.0319</td>
<td>.0025</td>
<td>-0.867</td>
<td>NSF</td>
</tr>
<tr>
<td>Office Size (OS)</td>
<td>.0004</td>
<td>.0048</td>
<td>1.200</td>
<td>NSF</td>
</tr>
<tr>
<td>Budget Consistency (BC)</td>
<td>.0088</td>
<td>.0002</td>
<td>0.247</td>
<td>NSF</td>
</tr>
<tr>
<td>Supervision (SE)</td>
<td>-.0003</td>
<td>.0002</td>
<td>-0.228</td>
<td>NSF</td>
</tr>
<tr>
<td>Role of Budget (RB)</td>
<td>-.1533</td>
<td>.0323</td>
<td>-3.277</td>
<td>.0017</td>
</tr>
<tr>
<td>Organizational Level (OL)</td>
<td>.2819</td>
<td>.1068</td>
<td>8.793</td>
<td>.0001</td>
</tr>
</tbody>
</table>

Total MR$^2$ for final regression model .9116.
F value for final regression model 65.982.
Significance level of F value for model .0001.
Discussion of Table XIII.—Only five variables are statistically significant in the incremental analysis of the third regression model at a level of significance greater than 95 per cent. However, the explanatory power ($R^2$) of the entire model is 91.16 per cent. Marginal motivational score (MS) is the strongest variable in the incremental analysis where it explains 48.39 per cent of the dependent variable's variance, followed by audit test area (AT) which explains 22.88 per cent of the variance. The negative B value for the AT variable indicates, however, an inverse relationship with auditors' decision to employ professional judgment to overrule some audit procedures. Since audit test area (AT) was coded zero for internal control tests, one for substantive tests, and two for both tests together, a negative B value for this variable means that an auditor is most likely to employ professional judgment to overrule some audit procedures related to internal control tests. On the other hand, an auditor is less likely to overrule some substantive test procedures.

The budget feasibility (BF) variable explains about 5 per cent of the variance of auditors' choice to overrule some audit procedures. The positive B value of this variable indicates a direct relationship with auditors' choice. This means that an auditor is more likely to overrule some audit procedures through the employment of professional judgment if budgeted time for a task assignment is perceived to be not enough to carry out that assignment.

Although the RB variable, role of budgets in performance evaluation, explains only about 3 per cent of the variance, its negative B value indicates that an auditor is more likely to cut down on some
audit procedures to meet budgeted time given a perceived important role of meeting budgets in performance evaluation.

The organizational level (OL) variable shows a significant contribution to the overall explanatory power of the model. It explains about 11 per cent of the variance. The positive B value for this variable indicates a direct relationship with auditors' decision to overrule some procedures. Since OL variable was coded zero for those respondents who occupy a staff member position in their firms, the positive B value for organizational level (OL) variable means that employing professional judgment to overrule some procedures is most likely to occur at higher organizational levels in the firm.

Discussion of Table XIV.—The simultaneous analysis of the third regression model shows that the same variables are significant as in the incremental analysis. However, the magnitudes of the Bs and t scores changed in the simultaneous analysis. In order to construct the final regression equation of the third regression model, a comparison of the incremental and simultaneous analyses is presented.

Comparison of Tables XIII and XIV.—Although the same variables were significant in both the incremental and simultaneous analyses, a review of the regression process reveals that all variables entered the process in earlier steps were subject to partialling effects of the other variables entered the model at later steps. The fact that there was neither increase in the Bs values nor sign changes indicates that no suppression effects were encountered. Therefore, the best interpretation of the results comes from the incremental analysis.
TABLE XIV

SIMULTANEOUS ANALYSIS RESULTS OF AUDITORS' CHOICE TO OVERRULE SOME PROCEDURES

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>B</th>
<th>t</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal Motivational Score (MS)</td>
<td>.0002</td>
<td>4.946</td>
<td>.0001</td>
</tr>
<tr>
<td>Length of Experience (LE)</td>
<td>.0063</td>
<td>0.564</td>
<td>NSF</td>
</tr>
<tr>
<td>Audit Test Area (AT)</td>
<td>-.0919</td>
<td>-2.962</td>
<td>.0043</td>
</tr>
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<td>Budget Feasibility (BF)</td>
<td>.0638</td>
<td>3.175</td>
<td>.0023</td>
</tr>
<tr>
<td>Firm Classification (FC)</td>
<td>-.0234</td>
<td>-0.711</td>
<td>NSF</td>
</tr>
<tr>
<td>Office Size (OS)</td>
<td>.0002</td>
<td>1.153</td>
<td>NSF</td>
</tr>
<tr>
<td>Budget Consistency</td>
<td>.0196</td>
<td>0.842</td>
<td>NSF</td>
</tr>
<tr>
<td>Supervision (SE)</td>
<td>-.0001</td>
<td>-0.103</td>
<td>NSF</td>
</tr>
<tr>
<td>Role of Budgets (RB)</td>
<td>-.1058</td>
<td>-3.242</td>
<td>.0019</td>
</tr>
<tr>
<td>Organizational Level (OL)</td>
<td>.2819</td>
<td>8.793</td>
<td>.0001</td>
</tr>
</tbody>
</table>

Total $R^2$ for final regression model .9116.
F value for final regression model 65.982.
Significance of F value for model .0001.
Final regression equation.—The final regression equation for auditors' choice to overrule some audit procedures in order to meet budgeted time is constructed from the incremental analysis. By substituting the mean of each explanatory variable in the equation, an intercept value of .545 was obtained. This intercept value \( A \) means that the estimated probability for an auditor in the sample to overrule some audit procedures based on professional judgment to meet budgeted time is 54.5 per cent given no effects of the research variables.

Given that calculated value of the model intercept, the final regression equation for auditors' choice to overrule some audit procedures in order to meet budgeted time is expressed as follows:

\[
Y = .545 + .0005 \text{MS} + .0229 \text{LE} - .3005 \text{AT} + .1104 \text{BF} - .0319 \text{FC} + .0004 \text{OS} + .0088 \text{BC} - .0003 \text{SE} - .1553 \text{RB} + .2819 \text{OL}
\]

The values reported in the above equation are in terms of probabilities given the sample of auditors participated in the study. These probabilities can be generalized to the population of interest as long as the sample tested is a good representation of the population.

Summary

The results of this research are presented in Chapter V in tabular and graphic forms. These results are presented in separate sections for survey responses, application of the AID technique, and regression analysis results.

Survey responses are first reported in terms of the questionnaire response rates in Table III. Tables IV through VII display different
classifications of the dependent variable and demographics for the respondents. Tables VIII and Figures 7 and 8 present the results of the AID applications.

Regression analysis results are reported in Tables IX through XIV. Tables IX and X report the results of the first regression model while Tables XII and XIII report the results of the second regression model. The results of the third regression model are reported in Tables XIII and XIV.

Chapter VI follows where inferences and conclusions to be drawn from the study's results are discussed.
CHAPTER BIBLIOGRAPHY


CHAPTER VI

SUMMARY AND CONCLUSIONS

The primary purpose of this chapter is to summarize the current research, discuss its conclusions and implications, and speculate on possible extensions of the study.

Summary

In recent years there has been a growing use of expectancy theory to study motivation and performance in accounting environments. However, such research efforts have resulted in reporting some inconsistent findings and low explanatory power for the expectancy formulations. Such low explanatory power and the inconsistency of some of the findings suggest that the expectancy model is incomplete. In an attempt to increase the explanatory power of the expectancy model, several researchers (e.g., 3; 5; 6) have suggested the inclusion of nonexpectancy components in the model. This research was undertaken to develop a general expanded expectancy model by incorporating some elements of goal setting theory and attribution theory into the expectancy formulation. Theoretical justification for that integration and its usefulness were presented in Chapters I and II.

The study was also designed to provide empirical evidence on the validity of the integrative expectancy model through an empirical investigation of auditors' performance behaviors to meet budgeted time in public accounting firms. The auditing literature has indicated that
an undue emphasis on meeting time budgets, as a performance goal in
audit settings, induces pressures on auditors in performing their work.
To cope with such pressures, some auditors may tend to perform some of
the audit work on their own personal time without reporting such effort
on their time reports. Other auditors, however, may tend to reduce the
extent of their audit work either by overruling some audit procedures
based on their professional judgment or cutting down on audit procedures
to meet budgeted time. These alternative actions to meet budgeted time
were labeled "performance behaviors" and used as the dependent variables
to be examined in order to gain understanding of how auditors choose one
behavior rather than another and identify the variables associated with
such a choice process. However, since a within-subject design was used
in the measurement process of the expectancy component of the proposed
integrative expectancy model, these alternative performance behaviors to
meet budgeted time were modeled in three choice processes. The first
choice process deals with auditors' choice to report unfiltered (i.e.
report actual time worked) as opposed to filtered time worked (i.e.
underreporting and sign-off behaviors). The second process deals with
auditors' choice to engage in underreporting behavior as opposed to
sign-off behaviors. The third process, however, deals with auditors'
choice to overrule some audit procedures based on professional judgment
or to cut down on audit procedures to meet budgeted time.

After reviewing prior studies and holding some discussions with
several practitioners, the researcher identified the criteria involved
in the modeled choice processes and used them as the research
independent variables. These independent variables were discussed and
presented in Chapter IV as they relate to the general categories of the proposed integrative expectancy model.

The research instrument was developed and pretested with seven individual auditors. After some revisions, it was circulated to a sample of auditors at the staff, senior, and supervisory staff levels in the audit services departments of fifty-three national, regional and local accounting firms in the Dallas-Fort Worth area. Selection of accounting firms and research participants from each firm was done according to established criteria as presented in Chapter IV.

Data received from the responding research participants were analyzed using the AID algorithm and multiple regression techniques based on a hierarchical strategy. Data analysis results for the three regression models were reported in Tables IX through XIII in Chapter V. The partial contribution of each independent variable to the explanatory power of the models is reported in the incremental analysis tables, and the strength of the relationship between each variable and the dependent variable is indicated by the $B$ value and the $t$ score shown for each variable in each table. The significance level achieved for each $t$ score is also reported in the tables. A detailed discussion of major partialling or suppression effects among the explanatory variables is also presented in Chapter V.

Research Conclusions

The following conclusions are based on the results reported in Chapter V. The research hypotheses as presented in Chapter IV are restated in the null form for the purposes of statistical testing. Comparison to previous studies are also made where appropriate.
Research Hypothesis One

The first research hypothesis deals with the relationship between marginal motivational score and auditors' choice to report actual time worked as opposed to filter reporting time worked. It states that:

There is no significant relationship between marginal motivational score and auditors' choice to filter or unfilter actual time worked.

For purposes of statistically testing this hypothesis, it is restated in the null form as:

\[ H_0: \beta_{MS} = 0 \]

Examination of Tables IX and X reveals that the marginal motivational score was significant at a level greater than 99 per cent. This means that the motivational elements in the accounting firms have a significant relationship with auditors' choice to filter or unfilter actual time worked. Therefore, the null hypothesis is rejected.

Research Hypothesis Two

The second research hypothesis deals with the relationship between marginal motivational score and auditors' choice to underreport actual time worked as opposed to engage in sign-off behaviors. It states that:

There is no significant relationship between marginal motivational score and auditors' choice to underreport actual time worked or sign-off audit programs.

For purposes of statistically testing this hypothesis, it is restated in the null form as:

\[ H_0: \beta_{MS} = 0 \]
Examination of Tables XI and XII reveals that the marginal motivational score was significant at a level greater than 99 per cent. This means that the motivational elements in the accounting firms have a significant relationship with auditors' choice between underreporting behavior and sign-off behaviors. Therefore, the null hypothesis is rejected.

**Research Hypothesis Three**

The third research hypothesis deals with the relationship between marginal motivational score and auditors' choice to overrule some audit procedures based on professional judgment or cut down on audit procedures to meet budgeted time. It states:

There is no significant relationship between marginal motivational score and auditors' choice to overrule some audit procedures based on professional judgment or cut down on some audit procedures to meet time budgets.

For purposes of statistically testing this hypothesis, it is restated in the null form as:

\[ H_0 : \beta_{MS} = 0 \]

Examination of Tables XIII and XIV reveals that the marginal motivational score was significant at a level greater than 99 per cent. This means that the motivational elements in the accounting firms have a significant relationship with auditors' choice to overrule some audit procedures based on professional judgment or to cut down on audit procedures to meet budgeted time. Therefore, the null hypothesis is rejected.
Comments on the first three hypotheses.—The statistical results of testing the first three hypotheses indicate that motivational force is a significant factor in auditors' choice processes among alternative actions to meet budgeted time. This finding supports the expectancy formulation and its relevancy to the accounting environments. The importance of this finding has to do with an existing debate among researchers about the relevancy of the theory to accounting environments. While the findings of testing the first three hypotheses are consistent with prior research findings by Jaimbalvo (4) and Lightner (5), the findings do not support Ferris' (2) conclusion that expectancy theory does not perform well in accounting environments.

Although the research findings support the expectancy formulation and are consistent with Jaimbalvo's and Lightner's findings, the explanatory power of the composite expectancy element, the marginal motivational score, varied among the three research models of auditors' choice processes to meet budgeted time. This result may suggest that the components of the composite expectancy element provide auditors with different levels of motivation in their choice processes among alternative actions to meet budgeted time. In other words, an auditor's decision to engage in one behavior rather than another may be influenced by one or more expectancy components rather than the others. As noted in Chapter IV, the expectancy element for each alternative performance behavior, motivational score, was computed using three components. The first component links effort with meeting time budgets ($PB \rightarrow P$). The second component links meeting time budgets, as a performance dimension, with overall performance ($P \rightarrow O_1$). The third component links overall
performance evaluation with desired outcomes \([O_1 \rightarrow O_2 (V)]\).

Therefore, this researcher concludes that the practical relevancey of expectancy theory for motivational issues in accounting environments depends on identification of separate relationships between auditors' performance behaviors and each of the three components of the expectancy element.

Despite the fact that this research used the composite expectancy element to examine the relationship between motivation and auditors' choice processes to meet budgeted time, the research models' specification allowed for a separate examination of the relationship between one of the three expectancy components, expectancy that meeting time budgets will lead to high performance evaluation, and auditors' choice among alternative actions to meet budgeted time. The results of this examination, as presented for the fifth research hypothesis, suggest that the expectancy link between meeting time budgets and performance evaluation is a significant factor in motivating auditors to choose one behavior rather than another.

**Research Hypothesis Four**

The fourth research hypothesis deals with the effect of incorporating ability, task goal, and situational attributes on the overall explanatory power of the expectancy model. It states that:

There is no significant increase in the explanatory power of the expectancy model by incorporating ability, task goal, and situational attributes.

For purposes of statistically testing this hypothesis, it is restated in a null form in terms of \( R \) square for the marginal motivational score and
total $R^2$ square for the proposed integrative expectancy model as follows:

$$H_0: R^2_{MS} = R^2_{total model}$$

Examination of Table IX reveals that marginal motivational score (MS) has a partial $R^2$ square of 18.42 per cent while the total model has $R^2$ square of 49.39 per cent. This means that the addition of ability, task goal, and situational attributes increased the explanatory power of the expectancy model for auditors' choice to report actual time worked by about 30 per cent. Therefore, the null hypothesis is rejected for this choice process.

For the second choice process which deals with auditors' choice to underreport or engage in sign-off behaviors, examination of Table XI reveals that the incremental $R^2$ square for marginal motivational score was 27.73 per cent while $MR^2$ for the total model was 46.46 per cent. This means that the addition of ability, task goal, and situational attributes increased the explanatory power of the expectancy model for auditors' choice between underreporting behavior and sign-off behaviors by about 19 per cent. Therefore, the null hypothesis is rejected for the second choice process.

For the third choice process which deals with auditors' choice to overrule some audit procedures based on professional judgment or to cut down on audit procedures, examination of Table XIII reveals that the incremental $R^2$ square for marginal motivational attributes was 48.39 per cent while total $MR^2$ for the model was 91.16 per cent. Thus the addition of ability, task goal, and situational attributes increased the explanatory power of the expectancy model for this third choice process by about 43 per cent. This means that the inclusion of nonexpectancy
variables in the expectancy model improved the model's ability to explain 43 per cent of the variance in addition to that portion explained by the expectancy variable. Therefore, the null hypothesis is rejected for the third choice process. These findings lead the researcher to conclude that the inclusion of nonexpectancy variables in the expectancy model improves its explanatory power regardless of the choice process under consideration. These findings should be considered important for the purposes of validation of the proposed integrative expectancy model. On the other hand, these findings support the results reported by Parker and Dyer (6) where they found that the inclusion of some nonexpectancy variables improved the explanatory power of the expectancy model for the choice process they examined.

Research Hypothesis Five

The fifth research hypothesis of this research deals with the relationship between the perceived role of time budgets in performance evaluation and auditors' choice among alternative actions to meet budgeted time. It states that:

There is no significant relationship between the perceived role of time budgets in performance evaluation and auditors' choice among alternative actions to meet time budgets.

For purposes of statistically testing this hypothesis, it is restated in the null form as follows:

\[ H_0: B_{RB} = 0 \]

Examination of Tables IX through XIV reveals that role of budgets in performance evaluation was significant in the three choice processes at a level of significance greater than 95 per cent. However, the B
values for the three choice processes were negative. This means, for the first choice process as an example, that auditors who perceive a strong role of meeting time budgets in performance evaluation are less likely to report actual time worked. Therefore, the null hypothesis is rejected.

**Research Hypothesis Six**

The sixth hypothesis deals with the relationship between supervisors' influence (SE) and auditors' choice among alternative actions to meet budgeted time. It states that:

There is no significant relationship between supervisors' influence and auditors' choice among alternative actions to meet time budgets.

For purposes of statistically testing this hypothesis, it is restated in the null form as follows:

\[ H_0 \quad B_{SE} = 0 \]

Examination of Tables IX through XIV reveals that the influence of supervision (SE) was not significant either for auditors' choice to filter or unfilter reported time or for auditors' choice to overrule or cut down on some audit procedures to meet budgeted time. However, this variable was significant for the second choice process which considers underreporting behavior as opposed to sign-off behaviors. The positive B value for this variable indicates that auditors are likely to engage in underreporting behavior rather than sign-off behaviors when supervision influence increased. Therefore, the null hypothesis is rejected for the second choice process while it is not rejected for the first and third choice processes.
Research Hypothesis Seven

The seventh and last hypothesis of this research deals with the relationship between firm size classification (FC) and auditors' choice among alternative actions to meet budgeted time. It states that:

There is no significant relationship between firm size classification and auditors' choice among different alternatives to meet budgeted time.

For purposes of statistically testing this hypothesis, it is restated in the null form as follows:

$$H_0 : B_{FC} = 0$$

Examination of Tables IX through XIV reveals that firm size classification (FC) was significant for the first choice process only at a level of significance greater than 95 per cent. Since this variable was coded zero for Big Eight firms, one for small national firms, and two for local or regional firms, the positive B value for this variable indicates that auditors are more likely to report actual time worked in local or regional firms than in small national or Big Eight firms. On the other hand, auditors are more likely to report actual time worked in small national firms than in Big Eight firms.

Although the FC variable, firm size classification, was insignificant at the decision level of 95 per cent for the other two choice processes, it showed a degree of significance at the 90 per cent level for the second choice process. Had that particular level of significance been used as the decision level, a conclusion would have been reached that underreporting behavior is less likely to take place in local or regional firms when compared with small national or Big
Eight firms. However, the null hypothesis is rejected only for the first choice process.

**Comments on Some Other Significant Variables**

Six of the research hypotheses that were formulated and tested are related to four specific independent variables. However, there were some other significant variables involved in the choice processes. The following discussion considers some of these variables as they relate to each of the three choice processes.

For the first choice process, filter or unfilter time worked, the LE variable, length of experience, was significant at a level greater than 99 per cent. However, the reported $B$ value for this variable indicates a negative relationship with auditors' choice to report actual time worked. This means that the longer the period of experience, the more likely that an auditor engaged in a behavior to filter actual time. This finding leads the researcher to conclude that behaviors to filter time worked are learned on the job. However, since the length of experience in public accounting firms rather than the length of experience with the current firm was used as the research measure this conclusion does not mean that these behaviors are learned in the current firm.

For the second choice process, underreport or sign-off, the BC variable, budget consistency, was significant at a level greater than 95 per cent. The reported $B$ value for this variable, however, indicates that auditors are more likely to engage in sign-off behaviors if they perceive uncommunicated changes in the bases of preparing time budgets from one period to another. This result is also supported for the third
choice process. These findings lead the researcher to conclude that the existing budgetary control systems in accounting firms do not communicate enough feedback to the auditors at the lower organizational levels.

For the third choice process, overrule or cut down on some audit procedures, both the organizational level (OL) and budget feasibility (BF) variables were significant at a level greater than 95 per cent. However, the reported B values for these variables indicate a positive relationship between OL and BF on one hand, and auditors' choice to overrule some audit procedures based on professional judgment on the other hand. Since OL variable was coded zero for those respondents who occupy an entry-level position, the positive B value indicates that an auditor who occupies a supervisory staff position is more likely to employ professional judgment to meet time budgets. However, for the BF variable, the positive relationship indicates that an auditor is more likely to cut down on some audit procedures to meet budgeted time if budgeted time was perceived as not enough to carry out the task assignments. These findings lead the researcher to conclude that the audit quality may be severely reduced under tight budgets where the auditor does not have authority to employ professional judgment to overrule some audit procedures.

Implications and Recommendations

The implications of the research results and findings are presented for the accounting firms first and followed by those which are related to future research efforts.
Implications for CPA Firms

This study examined empirically auditors' choice processes for alternative actions to meet budgeted time and the variables associated with these processes. The finding that about 20 per cent of the total respondents in this study indicated their involvement in some actions to filter time reported suggests that invalid time information are being fed into the firms' control systems. Although such a percentage is lower than the reported percentages in prior studies (1; 5; 7), this researcher believes that it is still high enough to have implications in several areas. These areas include audit costs, audit quality, future planning and the performance evaluation process.

Implications for audit costs.—Theoretically audit costs and fees are based on the actual time worked times the chargeable rate applicable to the audit service rendered. However, although other factors usually influence the determination of audit costs and fees, time reports represent an important factor in this process. Thus, if time reported is filtered, the determination of audit costs and fees will be inaccurate.

Implications for audit quality.—Audit services are usually perceived as personal services which carry with them an obligation to clients and the public as a whole for integrity and high standards of performance. Time estimates for audit assignments usually vary depending on several factors, among which are the auditor's experience and the degree of reliance on the internal control system. However, time budgets are usually established in conjunction with audit programs. These audit programs specify or outline the audit procedures to be
performed. These audit procedures are viewed in many cases as the minimum standards of performance to achieve audit quality. Thus, if some of the audit procedures are not performed without an authority to employ professional judgment, audit quality will be affected.

Implications for future planning.—Planning for recurring engagements is a crucial area that is related to the actual time worked on previous and current engagements. One basis that is usually used to prepare time estimates for a recurring engagement is the actual hours worked on the previous engagements. Thus, failure to report the actual time worked or the actual time that should have been worked if all audit procedures were performed will result in unrealistic time estimates for recurring engagements.

Implications for the performance evaluation process.—Auditors' performance is usually evaluated on several dimensions or criteria. Most accounting firms use standardized forms to ensure that individual auditors are evaluated on the same criteria. One of these criteria is meeting time budgets. Thus, if some auditors filtered their time reported while some other auditors reported actual time worked, the firm's control system can no longer provide valid comparable measures to evaluate performance. Furthermore, if auditors are involved in different actions to meet budgeted time and are evaluated differently on that particular dimension, as a result of different time reported, a case of inequity will be perceived among auditors for that particular performance dimension. Such a perceived case of inequity may motivate some auditors to filter reported time for the upcoming task.
assignment(s) if it proved to lead to better performance evaluation.

**Some Recommended Actions for CPA Firms**

Based on the study findings and their interpretations, the following actions are recommended to reduce time budget pressures and some of their consequences.

The first recommendation concerns communicating the basis for preparing time budgets. The BC variable, budget consistency, was found to have a significant relationship with auditors' choice to filter time reported. It is not uncommon practice for some CPA firms to change the basis for preparing time estimates for a specific engagement as a result of circumstances. Therefore, if a firm is going to change the basis for preparing time estimates, it is recommended that auditors involved in field work be informed about these changes. Such a recommendation would be more effective if engagement supervisors were allowed to report time budget variations for nonevaluation purposes. That is, time budget variations resulting from changes in time estimates to meet special situations should not be used as a part of auditors' performance evaluation.

The second recommendation deals with the perceived role of budgets in performance evaluation. It is recommended that the weighting system for performance evaluation dimensions be known to auditors so that they will not place different value weights on meeting time budgets. Furthermore, if time budgets are to be established in the form of a range rather than a specific number of hours for each task assignment, the likelihood of reporting actual time worked rather than filtering time worked would increase.
The third recommendation deals with policies for hiring new personnel. The LE variable, length of experience, showed a significant relationship with auditors' choice to filter actual time worked. This led the researcher to conclude that underreporting and sign-off behaviors are learned on the job. Therefore, it may be necessary to state the firm policies toward filtering time behaviors as a part of the orientation programs for the newly hired auditors.

**Implications and Recommendations for Future Research**

The findings of this study provide supportive evidence for the relevancy of expectancy theory to accounting environments. The empirical examination was undertaken with regard to auditors' choice among alternative actions to meet budgeted time. However, other research avenues can be recommended.

First, this study reported that the explanatory power of the composite expectancy element, marginal motivational score, varied among auditors' choice processes to meet budgeted time. This result may suggest that the components of the composite expectancy element, as outlined in Chapter IV, provide auditors with different levels of motivation in their choice processes among alternative actions to meet budgeted time. Therefore, identification of separate relationships between auditors' choice processes of performance behaviors to meet budgeted time and the different expectancy components may provide additional useful information for policy makers in CPA firms regarding the performance evaluation process and compensation schemes.
Secondly, this study did not address the magnitude of each alternative action to meet time budgets. That is, the study did not address the size of time budget variation to determine at what size of time variation auditors would change their choice between one behavior and another. Therefore, a possible extension of this study would be to examine at what size of time variation auditors would change from one choice to another. Such an extension would be relevant to this research recommendation to establish time estimates in the form of a range rather than a specific number of hours.

Thirdly, this study addressed four types of performance behaviors to meet time budgets, as dependent variables, classified in three forms of choice processes. Another extension of this study is to replicate the study using different combinations of alternative actions rather than the three modeled processes.

Fourthly, this study was restricted to a specific geographical area where it used subjects from accounting firms in the Dallas-Forth area. Thus, further research may be needed to replicate this study in some other geographical areas to provide further evidence on the validity of the proposed integrative model used in this study.

Finally, the interesting result concerning the LE variable, length of experience, may suggest that future research is needed to examine whether filtering time behaviors are learned on the job in the current firm or have been learned on the job in previous firms where auditors worked before joining the current firm.


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A SURVEY OF TIME BUDGET REPORTING BEHAVIOR

Accounting firms, like other organizations, establish their own management control systems to monitor and control their efforts. A major element of such systems is the use of time budgets prepared in conjunction with audit programs. Recent studies indicate that an undue emphasis on meeting budgeted time, as a performance goal in audit settings, induces pressures on auditors in performing their work. To cope with such pressures, some auditors may tend to perform some of the audit work on their own personal time without reporting such effort on their time reports. Other auditors may simply reduce the extent of their audit work by overruling some audit procedures or cutting down on audit procedures, a phenomenon known as premature sign-offs. This study is an attempt to examine time budget reporting behaviors in order to understand how auditors choose one behavior rather than another and to identify the variables that affect such a choice process. You are cordially requested to respond to this questionnaire. A stamped, self-addressed envelope is enclosed for your convenience.

Please answer all questions. The results of this survey will be kept confidential. No one in the firm will ever see your questionnaire. The questionnaire is not coded on an individual basis for complete anonymity.

1. Please indicate your gender
   _____ Male  _____ Female

2. How many years of experience in public accounting do you have?
   _____ year(s)

3. What is your area of specialty?
   _____ Audit
   _____ Tax
   _____ M.A.S.
   _____ Other, please specify ________________________________

4. Please indicate your educational experience beyond high school:
   _____ Some college
   _____ College degree
   _____ Masters degree
   _____ Doctorate
   _____ Other, please specify ________________________________

5. Do you presently hold a CPA Certificate?
   _____ Yes  _____ No

6. What is your current position in the firm?
   _____ Staff member
   _____ Senior staff
   _____ Supervisory staff
   _____ Manager/Principal
   _____ Partner
   _____ Other, please specify ________________________________

7. How long have you been in your current position?
   _____ year(s)
8. How long have you been working for this firm? ___ year(s)

9. Approximately how many audit staff members are employed in this office? ___ members

10-33. Please indicate the extent of your agreement with the statements below using the following scale:

<table>
<thead>
<tr>
<th>5 Strongly Agree</th>
<th>4 Agree</th>
<th>3 Neither Agree</th>
<th>2 Disagree</th>
<th>1 Strongly Disagree</th>
</tr>
</thead>
</table>

10. High overall performance evaluation would lead to promotion and advancement.

11. Time budget attainment is a major factor in the performance evaluation process.

12. My judgment as an auditor is sufficient to overrule some audit procedures listed on the audit program.

13. High overall performance evaluation would lead to job security.

14. My field work supervisor usually indicates what to do if budgeted time is not enough to carry out my task assignment(s).

15. An accountant could underreport time worked without creating a negative impression on those who will evaluate his/her performance.

16. High overall performance evaluation would lead to assignments which are more challenging.

17. Meeting time budgets contributes to a high overall performance evaluation.

18. Time budgets are prepared on a basis consistent with that of the preceding year.

19. High overall performance evaluation would lead to job satisfaction.

20. I plan at some time in the future, to leave this firm in order to set up my own practice.

21. An accountant could engage in premature sign-offs without creating a negative impression on those who will evaluate his/her performance.
22. High overall performance evaluation generally leads to the receipt of pay raises.

23. An accountant could report time worked over the budget without creating a negative impression on those who will evaluate his/her performance.

24. I plan at some time in the future, to leave this firm for a position in another public accounting firm.

25. High overall performance evaluation would lead to greater chances for independent thoughts and actions.

26. Time budget pressure interferes with the proper conduct of an audit task.

27. High overall performance evaluation would lead to recognition within the firm.

28. I plan to stay and develop my career with this firm.

29. An accountant could meet time budgets by simply not following-up some items in the audit population without creating a negative impression on those who will evaluate his/her performance.

30. Compared with my co-workers at the same level, my overall performance is well above.

31. High overall performance evaluation would lead to feeling of accomplishment.

32. I plan at some time in the future, to leave this firm for a position in Government or industry.

33. An accountant is usually able to meet time budgets for task assignments and still complete all procedures and record the time actually worked.

34. Listed below are a number of items that you can receive from your job. Please indicate the degree of desirability you attach to each one using the following scale:

<table>
<thead>
<tr>
<th>5 Extremely Desirable</th>
<th>4 Very Desirable</th>
<th>3 Moderately Desirable</th>
<th>2 Slightly Desirable</th>
<th>1 Does not Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Receiving a pay raise
* Promotion and advancement
Assignments to tasks which are more challenging
* Job Satisfaction
* Recognition within the firm
* Feeling more secure about the job with the firm
* Greater chances for independent thoughts and actions
* Feeling of accomplishment
* Personal growth and development

35. How many audit engagements have you worked on during the last 12 months?  
   _ None _ One _ Two _ Three _ Four _ Five _ More

36. How many supervisors have you had during the last 12 months?  
   _ One _ Two _ Three _ Four _ Five _ More than five

37. How many of your supervisors have implicitly or explicitly told you what to do if budgeted time was not enough to carry out your assignment(s)?  
   _ None _ One _ Two _ Three _ Four _ Five _ More than 5

38. In performing your work within the last 12 months, which of the following actions would you have been more likely to take in response to time budget pressures. (check one please):
   a) _ Perform task assignments and report actual time worked.
   b) _ Cut down on some follow-up procedures.
   c) _ Perform task assignments on my personal time and do not report that time.
   d) _ Employ my judgment to overrule some audit procedures.
   e) _ Other, please specify

39. If your action checked above is a) or c), please answer this question and go to question 41. But if your action checked above is b) or d) or e), please skip this question and go to question 40.

Using budgeted time for your task assignments within the last 12 months as a base, the approximate time percentage over the budget that was actually worked would be:

0% 1-5% 5-10% 10-15% 15-20% 20-25% 25-30% 30-35% Over 35%

40. Using budgeted time for your task assignments within the last 12 months as a base, the approximate time percentage that was saved through your chosen action would be:

0% 1-5% 5-10% 10-15% 15-20% 20-25% 25-30% 30-35% Over 35%

41. In which of the following areas did you exercise your action checked in 38 above? (please check all that apply)  
   _ Preliminary review of Internal Control System.
   _ Compliance (Transaction) Tests.
   _ Substantive Tests.

THANK YOU FOR YOUR COOPERATION.
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