

The Use of Internal Audit Findings in
Governmental Organizations: An Experimental Study

Gary Spraakman

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of

Commerce and Administration

Presented in Partial Fulfilment of the Requirements
for the Degree of Doctor of Philosophy at
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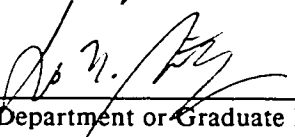

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ABSTRACT

The Use of Internal Audit Findings in Governmental Organizations: An Experimental Study

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Concordia University, 1996

Transaction cost economics (TCE) provides a theory for examining the phenomenon of internal audit. TCE is concerned with economizing or choosing the lowest cost option from buy and make alternatives. With the buy or market alternative, costs are kept low by competition. However, with the make or in-house alternative, costs are controllable because of the ability to direct and monitor production. In this regard, Williamson [1975, 1985] has argued that internal auditors provide managers with useful information for cost economizing.

When in-house production is chosen over market, TCE maintains that there are rational reasons for the choice. These reasons are described by Williamson [1985] as dimensions, namely: asset specificity, uncertainty, and frequency (i.e., size). With the existence of these dimensions, information is needed to direct production activities. Accordingly, the usefulness of internal audit operational information for economizing (the dependent variable) is hypothesized to be positively related to the existence of these dimensions. In addition, based on Penno [1990], the usefulness of internal audit findings

for economizing is hypothesized to be positively related to the hierarchical level to which the director of internal audit reports.

These hypotheses were tested with an experiment administered to 244 senior executives in 29 departments of two large governmental organizations. The response rate was an acceptable 40.6 percent. A split-plot general linear model was used for the statistical analyses. This entailed a full factorial, repeated measures model for the within-subjects variables, asset specificity, uncertainty, and size. The hierarchical level to which the director of internal audit reports was analyzed as a between-subjects variable.

The hypotheses for the positive relation of asset specificity and size to usefulness were supported at the 0.01 level, while there was some support for the positive relation for the hierarchical level to which the director of internal audit reports. There was no support for a positive relation for uncertainty.

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THE USE OF INTERNAL AUDIT FINDINGS IN
GOVERNMENTAL ORGANIZATIONS: AN EXPERIMENTAL STUDY

CHAPTER I
INTRODUCTION

Overview to the Research Questions

The professional audit literature¹ is a strong proponent for the use of audit committees. An important responsibility of the audit committee is to supervise the internal audit unit, which reports on the effectiveness of the organization's system of internal controls. The committee uses the information provided by internal audit, together with information from external audit, to judge the condition of the organization's system of internal controls. Accordingly, the importance of internal audit is due to its reporting on an organization's internal controls.² As the external auditor has a legal

¹ The increasing importance placed on audit committees by accounting professional groups around the world was recently documented by Price Waterhouse [1993, p. 1].

² Internal auditing will be defined as an independent appraisal function established within an organization to examine and evaluate its activities as a service to the organization. The objective of internal auditing is to assist members of the organization in the effective discharge of their responsibilities. To this end, internal auditing furnishes them with analyses, appraisals, recommendations, counsel, and information concerning the activities reviewed. The audit objective includes promoting effective control at reasonable cost. This definition comes from the Institute of Internal Auditors [1995, p. 1].

requirement to examine internal controls relating to financial statements, the mandate of internal audit is to examine the system of internal controls generally described as operational.³ This separation of responsibilities is accepted, with internal auditors assisting external auditors if deemed cost effective [Wallace, 1984, p. 16].

Despite the strong acceptance of internal audit in professional practice, academic researchers have largely ignored internal audit as an organizational control function. The lack of research interest has prevented the establishment of a collective theory for the use of internal audit as an organizational control [Boyle, 1993, pp. 228-230]. As a result, there are no theoretical explanations of how managers use the findings of internal audit, which may be used to guide research and practice. The general research question being asked in this thesis is, can the usefulness of internal audit be explained, and empirically validated, with a framework derived from transaction cost economics (TCE) theory?

Organization of the Thesis

The following chapters refine and answer the general research question. Chapter two is a review of the recent internal audit literature. Chapter three presents a theoretical framework drawn from transaction cost economics, a theory of the economics of internal organization. The fourth chapter discusses the research questions and the testable hypotheses. Chapter five details the research method which includes an experiment. Chapter six and seven present and discuss the findings, while chapter eight contains the

³ Operational auditing is considered synonymous with management auditing and comprehensive auditing. See Sawyer [1988, p. 9].

conclusions, contributions, future research, and limitations.

CHAPTER 2

LITERATURE REVIEW

Recent Academic Research

The academic literature on internal audit is limited. Boyle [1993] reached that conclusion recently, when he examined six major accounting academic journals from 1975 to 1990 to find only 21 articles that dealt with internal auditing. These 21 articles can be divided into five perspectives on internal audit:

1. Internal audit as a support for external audit [eight articles: Abdel-khalik et al. 1983; Brown, 1983; Buchman, 1983; Margheim, 1986; Schneider, 1984; 1985a, 1985b; and Whittington and Adams, 1982],
2. Internal auditors as subjects for behavioural research [five articles: Harrell et al 1986, 1989; Pei and Davis, 1989; Plumlee, 1985; and Uecker et al. 1981],
3. Education and the profession [four articles: Chambers, 1978, 1980; Sawyer, 1975; and Stettler, 1975],
4. Planning and scheduling internal audit [three articles: Anderson and Young, 1988; Boritz and Broca, 1986; and Hughes, 1977], and
5. Internal audit as a control [one article: San Miguel and Govindarajan, 1984].

The first perspective, with the largest number of articles, examines internal audit as it facilitates the external audit. The external audit is concerned with financial accounting internal control, which is only a small part of internal audit responsibilities for

evaluating internal controls. For the second perspective, internal auditors are examined as an organizational employee collective, but internal audit per se is largely irrelevant. These articles use internal auditors as research subjects. The third perspective consists of educational articles and not academic research dealing with control, the primary function of internal audit. Perspective four is concerned with planning and scheduling the application of internal audit as a control-oriented activity. However, the emphasis is not on control, the primary function of internal audit.

Only the single article in the fifth perspective - San Miguel and Govindarajan [1984] - deals with control, the essential function of internal audit. These authors examined internal audit and controller functions as alternatives within divisional firms. They used principal-agent theory as a theoretical framework for formulating hypotheses, which were supported by evidence from a survey of 50 large multi-divisional firms. In concluding, they said controllers and internal auditors are two means of providing reliable and timely information on a division's financial performance as well as for the corporation as a whole. The authors added that if a firm had a tight rein on divisional controllers through the corporate controller then there may have been less need for financial internal audits.

San Miguel and Govindarajan [1984] did not develop a theory of internal audit. Nevertheless, they did use principal-agent theory - or more specifically its assumptions of moral hazard because of differences in motivation and information between principals and agents - to argue for the use of internal audit.

In concluding this section, the academic literature on internal audit has been

limited. The research in the major journals has addressed internal auditing only tangentially in regard to its primary, control function. Consequently, there has not developed a theory for the use of internal audit as an organizational control.

Internal Control Practices

In the literature, there has been a problem in defining the realm for internal audit. This has, possibly, reduced academic research. The internal auditor has the responsibility for evaluating all internal controls, but this would overlap with the legal requirements of the external auditor. Consequently, internal control has been divided into two parts: (1) internal control for financial accounting which is primarily the responsibility of the external auditor, and (2) internal control for all other parts of the organization - i.e. operational audit - which is the prime responsibility of the internal auditor.

Concern with internal controls and the responsibilities of auditors led the Financial Executives Research Foundation to commission a study by Professor R.K. Mautz and some of his colleagues at the University of Michigan. Mautz et al. [1980] were to report on the state of the art of internal control in U.S. corporations. Their major findings were as noted below [Mautz et al., pp. 6-9]:

1. Internal control was seen by most executives as an integral part of the management process, and a key management responsibility which they accepted.
2. While many executives contended that there were legitimate conceptual distinctions among internal accounting control, internal control, and management control, most were hard pressed to define (in operational terms) just what those

distinctions were.

3. Great diversity existed among companies of all sizes in a number of characteristics that related to the adequacy and effectiveness of internal control practices. These differences explained the absence of any "typical pattern" of internal control practices and suggested the difficulty of establishing a set of criteria that described an "adequate" system of internal controls with a high degree of specificity.
4. Based on their experience and other considerations, many companies believed their present system of internal controls constituted a rational balancing of the risk of error or irregularity against the cost of additional controls.
5. Opportunities for the improvement of internal control existed in most companies; opportunities for substantial improvement existed in many companies.
6. Some executives appeared to hold a narrowly defined concept of internal control, while others viewed it in much broader terms. Frequently, those that subscribed to a narrow view saw establishment and maintenance of effective internal control as the responsibility of the controller's department while the internal audit staff played a monitoring role. Those that held a broader view of the concept typically saw internal control as a shared management responsibility, with the controller and internal audit having shared well-defined lead roles.

In this exhaustive survey, Mautz et al. [pp. 84-85] defined financial accounting internal control as being procedurally concerned with the accuracy of financial records. Operational internal control was defined as being concerned with the good management of organizational resources.

Mautz et al. [p. 14] compiled a list of the important and generally recommended internal controls that would be applicable to a wide variety of companies and industries. This list combined financial accounting with operational internal controls. See Table 1. The individual internal controls were classified as financial and/or operational by using classifications suggested by Mautz and Winjum [1981, chapter 2].

(Table 1 about here)

Mautz and Winjum [1981, p. 11] had drawn from the accounting profession and had defined financial accounting internal control as [p. 11]:

the plan of organization and the procedures and records that are concerned with the safeguarding of assets and the reliability of financial records and consequently are designed to provide reasonable assurance that:

- a. Transactions are executed in accordance with management's general or specific authorization.
- b. Transactions are recorded as necessary (1) to permit preparation of financial statements in conformity with generally accepted accounting principles or any other criteria applicable to such statements and (2) to maintain accountability for assets.
- c. Access to assets is permitted only in accordance with management's authorization.
- d. The recorded accountability for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences

In effect, Mautz and Winjum [1981, p. 14] defined operational internal control as management control less financial accounting internal control. They developed their broader definition - management control - from consultation with managers. Management control contained the following features:

Management control integrates with other management responsibilities and with management goals and purposes.

Management control is a broad concept including both positive goal directed activities and error and irregularity reduction measures. It subsumes internal

(financial) accounting control.

Management control is personnel oriented, directed at facilitating their success in attaining company goals within company policy.

Financial accounting internal control was identified first, while the remainder was deemed to be operational internal control. They noted that some of the internal controls apply to both financial accounting and operations.

In a comparable and more recent study of internal control in Canadian corporations for the Canadian Institute of Chartered Accountants (CICA) and the Society of Management Accountants of Canada, Etherington and Gordon [1985, p. 27] used similar definitions. However, they [pp. 114] were more explicit in separately describing the objectives of financial accounting and operational internal controls. These are shown in Table 2.

(Table 2 about here)

The purpose of the study was the same as the Mautz et al. study except for the Canadian context. Etherington and Gordon [pp. 2-3] found the following:

1. Managers had little difficulty in defining internal control as a broad concept. From that perspective, internal control encompassed accounting, management and operational controls, including such factors as organizational structure, quality of personnel and management, delegation of responsibility commensurate with authority, and effective and efficient management.
2. Internal control was viewed as important and significant by corporate management, with activities at all managerial levels seen as the domain of internal control. Responsibility for internal control was widely shared among managerial

levels, which required communication and cooperation from many to ensure effective operations.

3. There was great diversity within companies. Although major trends were identifiable, widely differing practices were found, even within size and industry groupings. It was, therefore, difficult to establish a set of uniform criteria for testing the adequacy of internal control in a specific company.
4. There appeared to be a need for a more formal examination of internal control risks in companies.
5. Internal audit was viewed as a major component of internal control by the 80 percent of the firms having an internal audit function. The role of the external auditor was less important by comparison, although external audit played a major role in reporting on internal control to the board of directors.

These two studies provide evidence that internal control is recognized as important for managing organizations, and managers understand internal controls. Although managers may not always agree on the dividing line between financial and operational internal controls, they know that both exist and the focus of each. In addition, the studies provide examples of the two types of internal controls, financial and operational. Internal auditors are seen as the organizational members who evaluate those internal controls and report to the respective managers and the audit committee. These studies do not, however, offer a theory for how internal audit is used in an organizational setting.

Canadian external auditors adhere to the division of internal controls into financial accounting and operational. They define internal control, in general, as "policies and

procedures established and maintained by management to assist in achieving its objectives of ensuring, as far as practical, the orderly and efficient conduct of the entity's business" [CICA Handbook, para. 5200.03]. From the system of internal controls, they separate out the financial accounting part which is applicable to the external audit, i.e.,

Those policies and procedures established and maintained by management that affect control risk relating to specific financial statement assertions at the account balance or class of transaction level. These policies and procedures pertain to the entity's ability to achieve its objective of preparing financial information consistent with financial statement assertions, or pertain to other data the auditor uses in applying auditing procedures to verify financial statement assertions (CICA Handbook, para. 5200.07-.08).

The system of internal controls less the financial accounting internal controls would equal the operational internal controls. The word operational is not mentioned per se, but the CICA refers to internal control being a management responsibility.

Summary of the Literature Review

Internal audit's control function, its main function, has been largely ignored by academic journals. The importance of internal audit for control is well established in practice. The focus of internal audit practice is on the evaluation of organizational internal controls, which is also well understood by the profession.

Boyle [1993] has suggested that internal audit has been ignored by academic researchers because of the lack of a theory. A theory is needed to provide a framework to ask questions and to systematically test hypotheses. The next chapter offers a theory for internal audit.

CHAPTER 3

THEORETICAL FRAMEWORK

The theory of transaction cost economics (TCE) offers a framework for the use of internal audit. More specifically, Williamson [1975, pp. 29-30, 146-147; 1985, pp. 154-156] argues from this theory that internal audit provides managers with more useful information for cost economizing than the financial accounting information provided by external auditors to owners and creditors. Williamson's argument is based on the premise that internal auditors can pursue operational information and not just financial accounting information.

An overriding concern of TCE is with the replacement of market purchases with in-house production, and vice versa. This occurs in the first instance, for example, if in-house production of a good or service is cheaper than its market purchase. Choosing the least expensive option - from these make or buy alternatives - is called economizing.

To provide a comprehensive perspective for economizing, TCE conceptualizes intra-organization production as a series of activities linked by transactions [Williamson, 1975, p. 8]. An activity is the partial production of a good or service. A transaction occurs when a finished or more likely a partially finished good or service is "transferred across a technologically separable interface," i.e., one stage of activity ends and another begins [Williamson, 1985, p. 1].

Economizing is the motivation behind TCE. With the buy or market alternative, costs are kept low by competition among sellers. Competition puts downward pressure on the price that can be charged or the cost of activities. Buyers prefer low prices to high prices, and sellers compete among themselves for buyers with low prices.

When the market is excluded to the preference of in-house production, internal organization must be developed to replace market forces [Williamson, 1985, p. 29]. Internal organization or in-house production consists of directing mechanisms for contracting, planning, coordinating, and setting standards for accomplishing activities. Similarly, there are monitoring mechanisms concerned with reporting actual activity performance against expected. Feedback from monitoring provides an understanding of the activities, and thereby facilitates the adapting of internal organization to changing conditions.

When combined, the directing and monitoring mechanisms form a system of internal control for managing in-house production and for reducing the costs of activities. Directing and monitoring mechanisms are possible with in-house production because of control over resource allocation and access to better information about costs [Williamson, 1975, p. 154].

Internal audit would be a component of internal organization. There are two reasons for this conclusion. First, internal audit is likely to exist with in-house production. Admittedly, management can hire external auditors or consultants to evaluate

internal controls.⁴ This would be expensive, and thus unlikely to be pursued. More importantly there would be a confidentiality problem with disclosing information to outsiders. With time, the confidentiality problem with non-employees becomes exacerbated as they learn more about the organization. However, with the same lapsed time, employees as a collective become more valuable as they gain a high level of expertise in evaluating internal controls. Second, internal auditors - whether called that or something else - must examine the internal control system. Systems cannot be implemented and then left alone on the assumption that they will perform as expected. Feedback on such systems is crucial if they are to be adaptive and effective.

TCE Assumptions

To understand the theoretical framework that TCE can provide for internal audit, the assumptions behind TCE need to be enunciated. TCE assumes that the main reason for organizations is to economize on transaction costs. Williamson [1985, p. 17] argues that:

. . . the full range of organizational innovations that mark the development of the economic institutions of capitalism over the past 150 years warrant reassessment in transaction cost terms . . . (A)ny issue that can be formulated as a contracting problem can be investigated to advantage in transaction cost economizing terms.

The word contract suggests agency theory. Agency theory and TCE, while similar in that they consider contracting, differ in focus. TCE concerns itself with decisions on

⁴ The contracting out for internal audit services was the topic of a panel discussion at the 1995 annual meeting of the American Accounting Association. The Institute of Internal Auditors sponsored the panel discussion.

whether to use markets for some transactions and organizations for others [Williamson, 1988, p. 568]. Agency theory, on the other hand, asks questions about whether the separation of ownership and control observed in large organizations has organizational and public policy ramifications.

The behaviour of agents within these organizations is therefore fundamental to the descriptive validity of TCE. There are two major agency assumptions, bounded rationality and opportunism [Williamson, 1985, pp. 44-61]. Bounded or the semi-strong form of rationality is assumed, i.e., economic actors are "intendedly rational, but only limitedly so" [Simon, 1961, p. xxiv]. In accepting bounded rationality and the limits to the human ability to process information, comprehensive contracting is excluded. Contracting must be incomplete, and intra-activity interventions are possible and desirable. In this regard, TCE is primarily concerned with designing internal mechanisms that mitigate bounded rationality. With the realities of bounded rationality, the costs of directing and monitoring transactions need to be considered expressly if economizing is serious.

Opportunism is self-interest seeking with guile [Williamson, 1985, p. 47]. This assumption refers to the incomplete or distorted disclosure of information by agents, especially calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse. Thus, agent opportunism is responsible for real or contrived conditions of information asymmetry. Nevertheless, it can be constrained by internal mechanisms that prevent inappropriate behaviour and report on how well performance meets expectations. Internal audit would be one of those internal mechanisms.

TCE Dimensions

When internal organization is chosen over market, TCE maintains there are rational reasons for the choice. Williamson [1985, pp. 52-61] described these reasons as dimensions or attributes of the production situation, namely: asset specificity, uncertainty, and frequency.

Asset specificity occurs when an asset has been customized. The customization reduces production costs, but creates a unique, complicated asset that cannot be easily understood and controlled by the market. Moreover, customization restricts the asset to a narrower application, thereby inhibiting easy and costless redeployment. This further restricts the customized asset to in-house production, where opportunism and maladaptation can be checked by internal organization. Thus, in-house production is increasingly likely with asset specificity, which can be divided into four different types: site (i.e., advantageous location), physical asset, human asset, and dedicated asset.

Environmental uncertainty is the second TCE dimension; its existence complicates writing and enforcing contracts since the environment shifts in unforeseen ways. The fundamental problem under the market mode is that even the best contracts are incomplete. In-house production is better able to cope because adaptation can be made as needed without revising formal agreements. Hence, the likelihood of in-house production is expected to increase with uncertainty.

The last dimension is what Williamson calls frequency. It could be called large size or large scale production. Only when the potential demand is large is it worthwhile to invest in specialized assets and internal organization. If markets are small, such

investments would not be worthwhile. Thus, in-house production will be associated with frequency, or large size production. Accordingly, the dimensions of frequency and asset specificity will tend to be positively related.

A related dimension is called internal uncertainty [Anderson and Schmittlein, 1984]. With the organization of in-house production, there is dependence on employees, who can be opportunistic. The bounded rationality of the owners and managers cannot totally prevent opportunism. The consequence is that unwanted behaviours can occur, and to the extent they occur instead of others, there is internal uncertainty with in-house production. Anderson and Schmittlein [1984, p. 387] refer to this as "the difficulty of evaluating performance." Internal uncertainty is a result of employee opportunism.

These dimensions are all positively related to the need for operational information to economize or to select activities that keep costs down. The need for operational information is also affected by the bounded rationality of managers and the opportunism of employees; that information assists managers in monitoring and directing employees. With specialized assets, information is needed to operate the assets at optimal rates and to coordinate the output of the assets with various other parts of in-house production. Similarly, with size there is a need for information to coordinate the multiple parts of in-house production to minimize costs. With external uncertainty, information is needed to coordinate the fluctuations in the external factors with the various parts of the organization. Moreover, with internal uncertainty, information is needed to direct employees to economize in performing activities, and to monitor them for compliance.

Cost Economizing

Internal audit's purpose in the TCE framework is to provide information on the system of internal controls to economize or minimize in-house costs. The costs to be minimized are those of the series of linked internal activities that produce goods or services [Williamson, 1975, p. 8]. Cost economizing is accomplished through appropriately designed organizational activities and monitoring and directing mechanisms [Williamson, 1991, pp. 76-78]. Slack and waste are opportunities for cost economizing; they are possible given the complexity of activities and the tendency of employees for opportunism. The bounded rationality of managers prevents mechanisms from being built that completely and permanently eliminate slack and waste. However, bounded rationality is offset as managers gain in-depth understanding of the activities, and with that knowledge design cost-reducing activities and mechanisms.

Knowledge and mechanisms for reducing costs are examples of human asset specificity. These are advantages that accompany in-house production. For market transactions, knowledge accumulations and interventions are less easily captured.

Internal Control

One mechanism for economizing on costs is internal control [Williamson, 1975, p. 8]. Specifically, internal control ensures that activities are being done as expected. Williamson divides internal controls into two types. The first type is financial accounting internal control. Generally accepted accounting principles specify acceptable procedures in respect to the sequence of financial accounting activities. These principles are means

for ensuring that financial statements are reasonable. The second type is operational internal control. Operational activity sequences have their own internal control mechanisms to ensure proper practices - including economizing - are being followed. Internal controls exist in the operations of production, marketing, sales, maintenance, etc.

The condition of internal controls, as noted earlier, is reported on by the internal auditors. Internal control, as noted, can be divided into financial accounting and operational. For the first, internal auditors examine internal controls supporting the financial statements. This is done to reduce the fees charged by external auditors [Wallace, 1984, p. 16], and to ensure those financial accounting controls are effective. Second, and more importantly, internal auditors examine the internal controls supporting operational systems. With the latter, internal auditors examine the internal controls to ensure the respective operations are managed and controlled as senior management and the audit committee expect them to be managed and controlled.

Internal auditors can gather information not available to external auditors who tend to be restricted to financial accounting internal controls in providing an opinion on the financial statements. Williamson [1975, pp. 29-30] supports this argument by advocating two distinct advantages that internal auditors have in gathering insightful and important information. First, they do not have the minimal standards of GAAS to review the written records and documents prescribed by GAAP. They can examine all operations and systems, and pursue formal and informal ways to gather crucial information on the organization and its activities. Second, as employees and members of the organization,

internal auditors are able to gain co-operation from other members of the organization. Internal auditors have longer-term relationships with the organization's employees and they do not have the outsider image of external auditors. Consequently, internal auditors can receive crucial disclosures not available to external auditors.

Internal auditors are, with these advantages, able to obtain important information on an organization's economizing practices. They are able to ask and obtain answers to the following questions: Are the best deals being obtained in purchasing resources? Are resources being used efficiently? Are the operations using those resources effective?

Internal Audit's Role

In examining operations, the internal audit unit evaluates the existence of appropriate internal controls. The internal audit professional literature does not explicitly refer to economizing. However, economizing is comparable to the three E criteria, i.e., economy, effectiveness, and efficiency [Sawyer, 1988, pp. 198-199].

Each of the Es has a separate and distinct definition. Economy refers to the acquisition of human and other resources in the appropriate quality and quantity at the lowest cost. Efficiency is defined as the relationship between goods and services produced and the resources used to produce them. One operation is more efficient than another when it produces more output of a specific quality for a given set of inputs, or it produces the same output with fewer inputs. Effectiveness is the accomplishment of the intended outputs or objectives of an operation.

As a set, the three Es are comparable to Williamson's economizing. Economical,

efficient, and effective operations accomplish the desired objectives while reducing slack and waste. To Williamson [1991, p. 78] economizing does the same, i.e., working smarter - better form of organization; better internal incentives and control; better alignment of the contractual (inter-firm and intra-firm) interfaces. Williamson [1991] describes economizing with the terms economy and efficiency, and implies that effectiveness is a pre-condition. Sawyer [1988, p. 198] says the three terms have meanings that overlap, suggesting they encompass economizing.

There are two benefits that managers obtain from internal audit operational findings. The first benefit is an identification of internal control shortcomings. The second is the description of the system of internal controls. Together they comprise information that enable managers to understand an operation and to bring about changes for further cost economizing.

As asset specificity, uncertainty, and size increase so will the existence of operational information and the potential for operational audit benefits. The effects of asset specificity and size on operational audit findings are related. As in-house production is undertaken, physical assets, employees, and internal controls are employed to produce the goods or services in large quantities (i.e., frequency). In TCE terms these many components and large quantities lead to complexity, which causes information asymmetry between managers and employees.

Internal audit usefulness increases with information asymmetry. Information asymmetry enables employee opportunism to occur, as managers do not always know what the employee is doing. The possibility of opportunism increases audit risk, i.e., the

probability of control failures increases. These possible control failures can be alleviated by internal audit reporting on them and making recommendations for their elimination or minimization. Internal audit findings are, therefore, a means of monitoring and thereby controlling opportunism.

Superiority of Operational Audit Findings

TCE emphasizes the importance of operational information for making economizing decisions. Internal audit contributes operational information, beyond what a financial accounting audit provides. Internal audit findings tell managers how well a system of internal controls is functioning. This assessment is a proxy for how well the operations themselves are functioning. An examination of internal control restricted to financial accounting is a proxy for the operation, but more abstract than an examination of the internal control for the operation per se. This is because financial accounting is based on financial transactions defined by GAAP. Although accurate and objective, financial transactions are historical and restricted in their information content. Financial accounting provides less insight into the operations than does less abstract operational information. For example, financial accounting would record expenses incurred in the past. Operational information could consider more insightful information such as the efficiency of those expenses. Thus, it is inferred from Williamson [1975, pp. 29-30, 146-147; 1985, pp. 154-156] that internal audit findings on operations will be more useful to managers for economizing than internal audit financial accounting information.

There is a proviso. Internal audit findings must be objective, which occurs when

the internal audit unit reports to a sufficiently high hierarchical level in the organization [Penno, 1990, p. 521]. If the reporting is to a low level in the hierarchy, there will be a tendency for the findings to be biased by opportunistic behaviour of the manager overseeing the internal audit unit. For example, with this argument, an internal auditor would be less likely to report negative findings about his/her superior than for another manager. Reporting to the chief executive officer and/or the audit committee will lead to fewer biases and more objective findings.

Penno's analytical-agency proof is based on the internal auditors undertaking operational audits. Operational auditing is not constrained by the limited information requirements of financial reporting and considers a much wider variety of information sources than does a financial accounting audit. Given that financial accounting constitutes a small fraction of the available information, the operational audit fills an important gap in the provision of information to managers.

Internal audit operational findings become a valid source of information when two conditions are fulfilled. First, the information must be difficult to dispute and verifiable by third parties. To Penno, the actual internal audit technology represents a fact-finding interview, which puts a certain burden of proof on employees. According to Penno, this places the internal auditor in the role of attestor rather than assertor. The attestor (employee) must prepare information for the attestor to examine. In this context, the employee must develop and document the system of internal controls for his or her responsibilities. The internal auditor then examines this documentation to ensure that internal controls are adequate.

Second, the internal auditors must be independent. This occurs when they report to a high hierarchical level. The minimal requirement, according to Penno, is to report to a level higher than that of the employee being evaluated. Ideally, the director of internal audit reports to the audit committee functionally and to the chief executive officer administratively. This provides independence and ensures objectivity in the work of internal audit.

CHAPTER IV

RESEARCH HYPOTHESES

Research Questions

The general research question for this thesis deals with the usefulness of internal audit. Rational decision makers use control mechanisms (e.g., internal audit) because of the usefulness of these mechanisms. For governmental organizations, they use internal audit as in-house control mechanisms rather than acquiring such service from the market, with the purpose of cost economizing. In this case, one would assume that the dimensions specified by TCE theory (asset specificity, uncertainty, and size) prevail in these organizations. That is, the existence of internal audit in any organization is a sign for cost economizing as stipulated by TCE theory. Hence governmental organizations provide a good setting for empirically testing and validating the predictions of TCE theory.

The major research questions of this thesis are as follows:

1. Are the predictions of TCE theory valid in connection with the existence of internal audit in governmental organizations? and
2. To what extent do managers use internal audit findings in economizing?

Hypotheses

The predictions of TCE theory are formulated as hypotheses in connection with

the usefulness of internal audits as follows (in the alternative form).

H₁: Asset specificity increases the usefulness of internal audit findings for economizing.

Hypothesis one was suggested by Williamson, who argued that asset specificity reduces unit production costs, but does not allow opportunism and maladaptation to be checked by market forces. Instead, internal organization must develop mechanisms for directing and monitoring operations, and internal audit would be one of the available mechanisms for reducing opportunism and maladaptation.

H₂: Uncertainty increases the usefulness of internal audit findings for economizing.

The second hypothesis was suggested by Williamson. Uncertainty complicates writing and enforcing contracts since relationships change in unforeseen ways. Thus, even the best contracts are incomplete, and market transactions are unenforceable. Accordingly, uncertainty leads to in-house production and internal audit becomes a means of reporting on incomplete contracts.

H₃: Frequency or size increases the usefulness of internal audit findings for economizing.

The third hypothesis was also suggested by Williamson. With size as with asset specificity, there is a need for information which includes internal audit to coordinate the multiple parts of in-house production to minimize costs.

H₄: The hierarchical level, to which the director of internal audit reports, positively affects the usefulness of internal audit findings for economizing.

Hypothesis four is derived from Penno [1990] who used analytical agency modelling to validate Williamson's theory about the usefulness of the internal auditor's findings. Penno concurred with Williamson, as long as the findings are objective. His indicator of objectivity was the audit unit reporting to a high level in the organizational hierarchy. Thus, the usefulness of internal audit findings will be positively affected by objectivity as indicated by the level to which the director of internal audit reports.

Empirical Evidence

The first three hypotheses were derived from Williamson's three dimensions that lead to in-house transactions. Extant empirical evidence provides support for those dimensions, and indirectly for their positive relationship with the usefulness of internal audit findings. That is, as the existence of these dimensions increases the likelihood of in-house transactions, they also increase, it is argued, the need for operational information which can be supplied by internal audit. For instance, Monteverde and Teece [1982], Anderson and Schmittlein [1984], and Masten [1984] found a positive relationship between asset specificity and in-house production.

In an automobile manufacturing setting, Monteverde and Teece [1982] found that when required parts for assembly needed asset specificity (i.e., more applications-engineering expertise), the firm, as predicted by TCE, tended to use in-house production instead of market purchases. Similarly, for the electronic components industry, Anderson and Schmittlein [1984] found asset specificity (measured by need for firm-specific knowledge) to be related to the use of sales employees (i.e., in-house) in preference to

manufacturer's representatives (i.e., contracting out or market). Masten [1984] studied make-or-buy practices in the aerospace industry. He found that components highly specialized to the company (i.e., high asset specificity) were made, rather than bought. He concluded that the degree of specialization is by far the most important determinant of organizational form in this system; the lack of alternative uses for a component increased the probability that it will be made in-house [Masten, 1984, p. 411].

Globerman [1980], Masten [1984] and Walker and Weber [1984] provide evidence for the positive relationship between environmental uncertainty and in-house production. Globerman [1980] examined the research and development activities in the telecommunications, defense, computer, and electric power industries. He found that with substantial internal and external uncertainty, there was more likely to be, as predicted by TCE, closer integration between the supplier and user. Masten's [1984] earlier cited study of the aerospace industry found a highly significant relationship between the degree of production uncertainty and the decision to make rather than buy components. Also, Walker and Weber [1984] studied 60 make or buy decisions of an automobile manufacturer. As predicted by TCE, volume uncertainty led to making rather than buying components.

Findings by Anderson and Schmittlein [1984] and Anderson et al. [1993] provide support for the frequency or size dimension increasing the likelihood of transactions being done in-house. In their above mentioned study of firms in the electronic components industry, Anderson and Schmittlein [1984] found that size in dollar assets was positively related to the decision to use employees (i.e., in-house) for selling rather than non-

employee representatives (i.e., market). However, the most compelling evidence came from Anderson et al. [1993]. For publicly owned Australian firms, they found that as size (measured by total market value of common equity and debt) increased, so did the relative expenditure on monitoring from internal audit compared to external audit.

CHAPTER V

RESEARCH METHOD

Overview

The method section describes and justifies how the hypotheses were tested with an experiment. To prepare for the hypotheses to be tested with an experiment, a field study was undertaken to clarify the appropriateness of TCE for the study of internal audit and to develop the experimental materials and instruments. This section was divided into the following sub-sections: field study, experiment, subjects, institutional setting, design, dependent variable, and independent variables.

Field Study

A field study was chosen for two reasons. First, to explore how best TCE could be examined in the context of internal audit. At the commencement of this thesis, TCE's appropriateness for explaining internal audit activities was unclear. Second, the internal audit literature did not explicitly consider the economizing of transaction costs. There was nothing to indicate what would have been audited to express an opinion on an organization's success with economizing.

A field study is necessary for understanding the variables from a TCE perspective. Once the variables are understood, experimental materials and instruments can be developed to test the hypotheses. This approach is similar to Merchant [1985, 1990] who

used interviews followed by a survey to a large number of subjects to test the use of controls.

Typically, a field study in this situation has three purposes: (1) to confirm the importance of the hypothesized variables, (2) to discover the relations among the variables, and (3) to lay the ground work for later, more systematic and rigorous testing of the hypotheses.

Provincial government departments were selected as the field study sites. There were several important reasons for this selection. The first was geographical proximity to the author. Also, they were large with more than 2,000 employees and thereby likely to possess the attributes of the TCE variable, frequency or size. Another advantage of the sample for this field study was that there has been a recent major emphasis on economizing. The provincial government and financial community recognized that the deficits were larger than sustainable. In less than five years, the provincial deficit went from about \$1 billion a year to \$15 billion and public debt from 10 percent to nearly 30 percent of gross domestic product. Drastic actions followed. A five percent decrease in civil service salaries was imposed, and those lower salaries were frozen for three years. Wide ranging cuts and freezes were made. The message was that more had to be done with less. Overall, the organizational environment appeared to be one where economizing would be important, and thereby have an impact on internal audit practices.

Based on Merchant (1985, p. 68), two departments were determined to be sufficient for multi-interview field study sites. To obtain two, it was expected that of the three directors of internal audit who would agree to a preliminary interview, only two

would volunteer for the field study. The search started with the **Corpus Administrative Index**.⁵ Telephone calls were placed commencing with the directors of internal audit in "A" departments. By the time the "E" departments were reached (no messages were left), three directors were talked to and all three agreed to preliminary interviews. Of the three interviewed, two agreed to participate. The third did not want to commit his department, but he himself was willing to participate.

Throughout the field study, the cooperation was excellent. There was a complete willingness to answer questions, sometimes the same question put two or three different ways, and a willingness by subjects to share their understanding of internal audit.

Each department's internal audit practices were discussed in regard to: the internal audit process, operational findings, financial accounting findings, asset specificity, uncertainty, and size. Reliability and validity of the field study were concerns. Appendix 1 describes the precautions taken to ensure reliability and validity. Appendix 2 is the introduction letter addressed to three directors of internal audit. The questionnaires used to conduct the interviews are in Appendix 3, and Appendix 4 contains the factors considered when reviewing documents.

With each department's internal audit unit, three employees were interviewed, the current director and two managers. Five of these six auditors had five to twenty years of internal audit experience. The time taken to interview each auditor ranged from 2.5 hours to 4.5 hours with an average of 3.3 hours. Each subject required two or three

⁵ This is a directory of governmental managers, listed by department, division, and branch. It gives positions, telephone numbers, and addresses by manager.

different meetings. Access to documents was very liberal. Interviews were also conducted with two other directors in the government with responsibilities for internal audit.

The internal audit being practiced by these departments was broader than merely financial accounting, which accounted for 10 to 20 percent of their audit activities. Operational audit was also called by other names: comprehensive, management, and value-for-money. Operational audit was a word that the internal auditors understood and used.

Internal audit was considered a control that "contributed to the achievement of departmental objectives." Appropriately, each department had an audit committee to which its director of internal audit reported, functionally. Each director of internal audit reported to an assistant deputy minister⁶ administratively, but had access to the deputy minister. As the audited programs or branches were headed by a director who reported to an assistant deputy minister, the director of internal audit always reported to a level higher than he or she audited. According to Penno [1990], this would explain why the auditors perceived themselves to be independent and objective.

From the interviews, it was found that the provincial government subscribes to the Institute of Internal Auditors' "Standards for the Professional Practice of Internal

⁶ In the tradition of the British Parliamentary system, an elected member of parliament is appointed by the prime minister to be the minister responsible for a department. The day-to-day responsibilities are delegated to a deputy minister. Assistant deputy ministers report to the deputy minister.

Auditing."⁷ This is reinforced by province-wide internal audit directives and department specific documented procedures for undertaking internal audits. In each department, these procedures are followed regardless of the auditors or audit managers assigned for particular audits. In this way the audit procedures were verifiable.

Cost economizing was a very important aspect of internal audit. One director of internal audit said that, "each recommendation directly or indirectly addresses economizing." For his audit unit, the acronym SEA was used to guide audit activities. SEA was short for simplify, eliminate, and automate. An audit manager in the other branch said, "we believe that audit findings should lead to better, cheaper, and more effective operations." Another manager said the following when asked if internal audit findings are used for the economizing of costs:

Economizing is a natural focus with the branch's (operational) approach. For example, if the audited unit does not have a plan, then it will unlikely have standards for evaluating performance. Without standards, resources are likely to be used inefficiently.

Indisputably, economizing was a major focus of internal audit in the two provincial government departments. This focus by internal auditors was reinforced by commitments by the managers of audited units. Deficiencies were identified by the auditors, and the audited manager committed to recommendations for resolving those deficiencies. The audit committee reviewed the progress of implemented recommendations. Virtually all recommendations were implemented according to the interviewed auditors.

⁷ See "Standards for the Professional Practice of Internal Auditing in the Government of Ontario," developed and issued by the Ontario Public Service Internal Auditors' Council. The federal government also subscribes to these same standards, see Treasury Board of Canada [1994].

With the semi-structured interviews and document reviews, examples of operational and financial accounting findings were sought, and the TCE dimensions of asset specificity, uncertainty, and frequency or size were explored. Asset specificity was discussed in terms of the effects of professional and highly skilled employees and computerized systems. Uncertainty was discussed in terms of unpredictable demand. Size was discussed as number of employees and dollar budgets.

The subjects provided examples of internal audit financial and operational findings. This was enhanced with examples from internal audit reports provided by each department. Eight examples were selected, four financial accounting and four operational. They all dealt with the use of resources. These typical financial accounting audit examples were: coding, cheque authorization, asset recording, and purchasing practices. The typical operational audit examples were: employee utilization, delegation of responsibilities, budgeting, and assignment of duties.

The subjects were nearly unanimous when discussing the effects of the dimensions of TCE. Although each dimension was envisaged to affect audit risk, the exact impact was described as dependent upon the system of internal controls. For example, uncertainty was discussed as increasing audit risk, but if it actually did would depend on the exact controls in place.

The expectations for asset specificity were not borne out. That is, when asset specificity was defined as professional and skilled employees, the subjects were unsure if audit risk would increase or decrease. It would increase, it was argued, as professional and skilled employees were reluctant to take direction. Under this situation, opportunism

could happen more readily. On the other hand there were those that envisaged the deployment of professional and skilled employees as a means of control. Merchant [1982, pp. 46-47] had discussed this as personnel control; reliance is placed on trained and responsible personnel.

Similarly, some subjects saw computerization as a technique for reducing control loss through automation. In support of this position, Merchant [1982, p. 44] stated that managers can avoid some control problems by investing in computers which can achieve the same performance, but more consistently than employees. Others saw control loss increasing with computerization because complexity also increased.

It was concluded that asset specificity could not be operationalized in terms of professional and highly skilled employees and computerization. Those skills and computer systems must be deepened and specialized to constitute asset specificity in TCE terms [Williamson, 1985, p. 242].

The interviews did suggest that asset specificity occurred when employees developed special knowledge and skills in carrying out their duties. This human asset investment is done on-the-job and oriented to the work situation. The result is a complex set of formal and informal rules that reduce costs. Moreover, the complexity leads to audit risk as managers, removed from the operations, are not always fully cognitive of what is being done.

Subjects were asked about the effect that uncertainty had on audit risk. They agreed that, everything else equal, unpredictable employee behaviour and fluctuating demand increased audit risk, and thereby increased the usefulness of internal audit.

Similarly, they agreed that size, especially as it was accompanied by diversity, led to audit risk and usefulness of audit findings.

In summary, the field study enabled the research questions and hypotheses to be addressed with experimental materials and instruments relevant to the subjects. TCE was found to be an appropriate theoretical framework for internal audit. Economizing was a major orientation of the audit units studied, and apparently throughout provincial and federal government departments. As a major thrust, economizing was a useful construct for understanding the relationship among variables. Managers were found to use internal audit findings for economizing. The economizing findings, as with all internal audit findings, were generally accompanied by recommendations which would have been agreed to by the audited managers. Moreover, the departments had mechanisms for ensuring implementations, i.e., the recommendations were monitored by the audit committees. Economizing was explicit.

Non-Laboratory Experiment

Experiments have been used by numerous studies involving internal audit. Uecker et al. [1981], Brown [1983], Schneider [1985], Margheim [1986], and Margheim and Label [1990], Whittington and Margheim [1993] developed cases based on hypothetical organizations, manipulated parts of the case context (variables), and asked respondents to make a decision or respond to questions based on the case they had just read.

Researchers use experiments when there are practical difficulties, for example, in empirically testing the usefulness of internal audit in a real-world environment. As

internal audit practices and internal auditor personalities vary among organizations, individual managers in those different organizations perceive internal auditors based on perceptions formed by those different past experiences. Thus, a survey, that asks managers their opinions about the usefulness of their organization's internal audit findings, is subject to those uncontrollable factors. An experiment is an alternative to asking managers about their organizations. It simplifies the real-world environment in order to focus on particular variables [Swieringa and Weick, 1982, p. 80]. It allows relevant variables to be manipulated according to the researcher's plan, without the confusion of uncontrollable factors.

The practical difficulties with measuring usefulness of internal audit led to the decision to use an experiment to test the hypotheses. Nevertheless, it was important to design experimental realism so that the subjects take the experiment seriously [Swieringa and Weick, 1982]. Experimental realism was facilitated by undertaking the field study.

The experiment was not done in a laboratory. It was believed, and confirmed during the field study, that the subjects, senior, experienced managers, would be unwilling to come to a laboratory. Thus, a non-laboratory experiment was conducted. The experimental materials, in Appendix 5, were mailed to the subjects with a request to co-operate with this internal audit research initiative. The materials included background information and eight cases, where subjects were to assume the role of a decision maker - an assistant deputy minister - recently appointed to manage a government branch. Four internal audit operational findings formed part of the background information. The decision maker's superiors, the minister and the deputy

minister, demanded cost reductions.

Subjects were asked to evaluate the likeliness of using the audit findings for reducing costs. The independent variables were manipulated using high and low conditions. The orders were randomized for the audit findings and for the independent variable measures.

The background information and cases were pre-tested to ensure experimental realism. This was done with the thesis committee, academic colleagues, prospective respondents, and the directors of internal audit in the government departments where the experiment would be administered. This pre-test included a manipulation check where respondents were asked about their assessment of differences between the high and low measures for the independent variables. In total 35 persons provided their comments and insights.

Subjects

Subjects were drawn from senior executives in the federal government of Canada and one of the provincial governments. Names were obtained of senior executives⁸ listed in the **Corpus Administrative Index**. Specific names were selected from departments with responsibilities for providing goods and/or services, and not just regulatory responsibilities. It was expected that the delivery of goods and/or services would be more conducive to economizing than regulatory agencies. For the federal government, this

⁸ This thesis adopts the position classification system discussed in Paton [1989, p. 245]. Senior executives are, from the most senior, deputy minister, assistant deputy minister, and director general.

categorization included 14 of 21 departments, and for the provincial government 15 of the 20 departments. For both governments, two-thirds of the two most senior levels of managers were selected. Because of its larger number of employees, the next level in the federal government was selected, but only 25 percent were included in the sample. This provided a sample of 258 senior executives.

These executives have regular access to a variety of information sources, and they use information in decision making. In addition, there are two advantages in targeting government senior executives. First, both - the federal and the provincial - governments had previously adopted the Institute of Internal Auditors' standards for audit practice.⁹ This provided senior executives with a similar understanding of internal audit. Second, in these governmental organizations, the internal audit unit has a formal mechanism for disseminating its findings internally. There is generally an audit committee in governmental organizations, to which the director of internal audit reports his or her unit's findings. As this committee is comprised entirely of senior departmental executives, this implies that internal audit findings are integrated into the information systems of governmental organizations.

Institutional Setting

The experiment's government subjects were found to be appropriate. There are three reasons for this assessment. First, as noted with the field study and the pre-test

⁹ This was verified with internal documents from a central agency in each government.

of the experimental materials, cost economizing was a normal and significant aspect of governmental internal audit units.

Second, the existence of audit committees in these governments was empirically validated. A courtesy letter was sent to the directors of internal audit in the 29 surveyed departments. This letter explained the purpose of the study, the method, and indicated the hierarchical level of managers being surveyed. The letter also asked the director to respond to a few questions about his or her reporting relationship to an audit committee. Appendix 6 contains that letter and questionnaire. Twenty-seven or 93 percent of the 29 directors of internal audit responded. Ninety-six percent of the respondents report audit findings to an audit committee on a regular basis, i.e., three or more times a year. With audit committees comprised of deputy ministers, assistant deputy ministers and other senior managers, this survey confirmed the assumption that internal audit findings receive wide-spread distribution in these governmental organizations.

Third, there may be some concern about the suitability of governmental senior executives for an experiment based on TCE, which has its genesis as a theory for justifying the existence of profit-pursuing organizations. TCE states that firms exist because they can economize on costs. However, does this economizing perspective include governmental organizations? The field study and pre-testing found no dispute; economizing is a major focus of internal audit in governmental organizations. In addition, Fama and Jensen [1983, p. 292] argue there is a cost economizing similarity between the parts of large profit-pursuing organizations not subject to market competition and nonprofit organizations. The similarity is that both must develop knowledge and the

systems including, incentive systems, to control agency problems, i.e.,

The common building blocks of the diffuse decision control systems of complex organizations of all types are formal decision hierarchies in which the decision initiatives of lower level agents are passed on to higher agents, first for ratification and then for monitoring. Such decision hierarchies are found in large ... corporations, large professional partnerships, large financial mutuals, and large nonprofits. Formal decision hierarchies are buttressed by less formal mutual monitoring systems that are a by-product of interaction that takes place to produce outputs and develop human capital.

Design

There are two approaches to test the predictions of TCE. First, the existence of internal audit could be investigated. However, with government organizations internal audit has already been implemented, conceivably for the reasons put forth by TCE. Thus, the first approach cannot be used with this research.

The second approach is to predict with TCE the circumstances where internal audit will be more or less useful for economizing. This approach recognizes that internal audit exists but that there are competing sources of information for economizing. Internal audit findings are used if useful. The second approach was, accordingly, selected for this thesis.

The dependent variable is the usefulness of internal audit findings for economizing. There are four independent variables, asset specificity, uncertainty, size, and hierarchical level to which the director of internal audit reports. The expected relationship between the dependent variable and the independent variables is shown below:

$$USE = \alpha + B_1A + B_2U + B_3S + B_4L + e$$

where,

USE	=	usefulness of internal audit findings for economizing
A	=	asset specificity
U	=	uncertainty
S	=	size
L	=	level to which the director of internal reports.

Pre-testing suggested that 15 minutes would be the maximum time that senior executives would devote to a non-laboratory experiment. To have an instrument that required 15 minutes to complete necessitated the number of cases to be eight or less. However, the high and low conditions for the four independent variables required 16 different cases for a full factorial design. The solution was to use a split-plot¹⁰ design. This provided a full factorial, repeated measures model for asset specificity (A), uncertainty (U), and size (S). These variables became the within-subjects variables and required eight different cases. The other independent variable, level to which the director of internal audit reports (L), was the between-subjects variable; thus in regard to L, half of the sample was at high "L" and the other half was at low "L".

The level to which the director of internal audit reports was chosen to be the between-subjects variable. One reason for the choice was that according to Penno [1990] without high hierarchical reporting, internal audit was not objective and thereby not useful. L was a pivotal variable. Moreover, it was more important to study the interactions of TCE variables of asset specificity, uncertainty, and size.

In summary, each subject is to specify the usefulness of the internal audit findings for eight different combinations of asset specificity (high or low), uncertainty (high or

¹⁰ Maletta [1993, pp. 516-520] used the split-plot analysis of variance for comparable reasons.

low), and size (high or low). These are the within-subjects variables. Also, each subject is given background information with either a high or low condition for the between-subjects variable, L, the hierarchical level to which the director of internal audit reports. Thus, there will be 16 cases as shown in Table 3.

(Table 3 about here)

Dependent Variable

The specific decision problem created to test the hypotheses is a senior executive's assessment of the use to be made of the internal audit findings for cost economizing. Explicitly, senior executives are asked to assess the likelihood that they, as the assistant deputy minister responsible for the described branch requiring cost reductions, would use internal audit findings in reducing costs.

There are no specific instruments for directly measuring the usefulness of internal audit findings. However, there is a general construct in the survey literature for measuring "usefulness" [Larcker and Lessig, 1980]. With this construct, usefulness is "the degree to which a person believes that using a particular system would enhance his or her job performance." Accordingly, an audit finding, high in usefulness, is one for which a decision maker believes in the existence of a positive use-performance relationship. Usefulness, as a construct, can be appropriately used with experiments when it is measured in the form of a likelihood. An experiment captures all possible dimensions with a likelihood. Appendix 7 shows how usefulness of internal audit findings is measured with a likelihood scale.

Independent Variables

This thesis studies the effects of the four independent variables: asset specificity, uncertainty, size, and hierarchal level. The measurement instruments for the independent variables are included in the background information and the contexts of the eight cases, shown in Appendix 5. They were obtained from the field study, with a similar process to that which Brown [1983, p. 446] used in a case regarding the characteristics of an internal audit function. The background information, in that Appendix, also includes four internal audit operational findings, which express an evaluation of the internal controls of operations, and suggest opportunities for improvement. These operational findings were selected, during the field study, with the assistance of the definitions and examples from Mautz et al. [1980] and Etherington and Gordon [1985].

Appendix 7 contains the measurement instruments for each variable, with their high and low conditions. Briefly, Table 4 displays the variables and how they will be measured. These measures, as noted, were developed from the field study.

(Table 4 about here)

CHAPTER VI

FINDINGS

Response Rates

The prospective subjects were mailed the experimental materials and instruments. There was a second mailing to those that did not respond to the first within five weeks. The deputy ministers and assistant deputy ministers that had not responded were contacted by telephone at the time of the second request to encourage them to respond.

Table 5 displays the various response rates. This includes the response rate for each governmental organization and by deputy minister/assistant deputy minister and director general (for the federal government only). It shows the number of prospective subjects to whom the experimental materials and experiments were sent, those that were no longer in their positions, and the net or the number of subjects that were actually contacted. Although the names, titles, addresses, and telephone numbers were confirmed in the months prior to the survey, there were still 14 prospective subjects who retired, quit, or were otherwise un-reachable. They were classified un-reachable if the letter and experimental materials and instruments were sent back unopened or if another employee telephoned or wrote to communicate non-deliverability.

(Table 5 about here)

The overall response rate was an acceptable 40.6 percent [Margheim and Label, 1990, p. 300]. The rate was lowest at 33.8 percent with the deputy ministers and

assistant deputy ministers with the federal government. Experimental materials and instruments were distributed during a particularly busy period for those senior executives, especially in departments that were merging and downsizing operations. The rate was higher for the lower-ranked director generals in the federal government, at 44.9 percent. Deputy ministers and assistant deputy ministers with the provincial government responded at the rate of 41.7 percent.

Differences in Usefulness Among Cases

Subjects were asked with each case to specify their likelihood of using the audit findings for cost economizing. Table 6 shows the mean response and standard deviation for each of the 16 cases. With the scale from 1 (very low likelihood of use) to 10 (very high likelihood of use), the mean responses ranged from 6.17 to 8.64. The range for standard deviations was 1.71 to 2.57.

(Table 6 about here)

High values for the independent variables are compared to their low values with the other variables kept constant. Tables 7 to 10 show these results. Table 7 compares a case where asset specificity is high (A_H) to a case where it is low (A_L). Uncertainty, size, and level are held constant. For each of the eight sets of cases, internal audit findings are more likely used when asset specificity is high compared to where asset specificity is low. On the 10-point scale, high asset specificity ranges from 0.45 to 1.07 more than low asset specificity. These findings in Table 7 support the first hypothesis as to the positive direction of the relation of asset specificity in regard to the likelihood

of using internal audit findings.

(Table 7 about here)

The far right column of Table 7 indicates the statistical significance of those differences. For the eight sets of cases, the probability of there being no difference between the high and low means ranges from 0.0001 and 0.1607. If the criterion is set at 0.05, then seven of the eight within-subjects sets have a statistically significant difference between high and low conditions for asset specificity.

Table 8 compares cases with high uncertainty (U_H) to cases with low uncertainty (U_L) with asset specificity, size, and level held constant. For each of the eight sets of cases, internal audit findings are unexpectedly less likely used with high uncertainty than with low uncertainty. The difference between high and low conditions for uncertainty ranged from 0.51 to 1.19 on the 10-point scale. These findings in Table 8 do not support the second hypothesis as to the direction of the relation of uncertainty in regard to the likelihood of using internal audit findings. If the criterion is set at 0.05, then all eight within-subjects sets have a statistically significant difference between high and low conditions for uncertainty. Thus, not only does the evidence support the unexpected sign, the support is statistically significant at the 0.001 level.

(Table 8 about here)

Table 9 compares responses to cases with large size (S_H) to those with small size (S_L) with asset specificity, uncertainty, and level held constant. For seven of the eight sets of cases, internal audit findings are more likely used with large size compared to small size. The differences ranged from -0.15 to +0.70. These findings in Table 9

support the third hypothesis as to the positive relation of size in regard to the likelihood of using internal audit findings for seven of the eight cases. With the criterion set at 0.05, only four of the eight within-subjects sets have a statistically significant difference between large and small size. These statistically significant differences are for the cases where the between-subjects variable - L, level to which the director of internal audit reports - was set at low, i.e., see cases 9 to 16 in Table 3.

(Table 9 about here)

Table 10 compares the responses to cases with high level reporting for the director of internal audit (L_H) to low level reporting (L_L) with asset specificity, uncertainty, and size held constant. For each of the eight sets of cases, internal audit findings are more likely used when the director of internal audit reports to a high level compared to a low level as hypothesized. Differences range from 0.07 to 0.95 with only the latter being statistically significant. These findings in Table 10 support the fourth hypothesis as to the positive relation of the level to which the director of internal audit reports on the likelihood of using internal audit findings. However, with the criterion set at 0.05, only one of the eight between-subjects sets has a statistically significant difference between high and low conditions for level to which the director of internal audit reports.

(Table 10 about here)

Statistical Analyses

The next step is to determine the statistical significance of the independent variables. A split-plot analysis of variance was done with the Statistical Analysis Systems

(SAS) general linear models (GLM) procedure. The test statistics for the hypotheses of no independent variable effects are shown in Table 11 for asset specificity, uncertainty, size, and level to which the director of internal audit reports. In summary, the main effects are significant for asset specificity, uncertainty, and size at the 0.01 level. However, at 0.16 the effect is not significant for the level to which the director of internal audit reports. In addition, only one of the three-way interactions is statistically significant at the 0.20 level, i.e., A*U*L. Four of the two-way interactions are significant at that level, i.e., S*L, A*U, A*S, and U*S, with two of them - S*L and A*U - actually significant at the 0.05 level.

(Table 11 about here)

Tables 7 and 9 indicate that the independent variables asset specificity and size positively relate to usefulness. The statistical evidence in Table 11 confirms that asset specificity and size not only positively relate to the dependent variable, the usefulness of internal audit findings for economizing, but do so statistically at the 0.01 level. Consequently, H_1 and H_3 are not rejected because of the positive relationship between asset specificity and size and use of internal audit findings.

Table 8 notes that the independent variable, uncertainty negatively relates to usefulness. The results in Table 11 show the unexpected relationship to be significant at the 0.01 level. Consequently, H_2 must be rejected, i.e., instead of a positive relationship between uncertainty and use of internal audit findings for cost economizing, there was a statistically significant negative relationship.

Also, it was noted that the findings in Table 10 indicate that L positively relates

to usefulness. However, the level of significance is only 0.16, as shown in Table 11, thus providing only some support for the positive expectation. Only for one set of cases in Table 10 - $A_H U_L S_L$ - was the difference between levels to which the director of internal audit reports significant at the 0.05 level. Thus, there is some support for the fourth hypothesis, the expectation for a positive relationship between level to which the director of internal audit reports and the use of internal audit findings for cost economizing.

Additional Tests

With the split-plot design, four additional independent variables were introduced individually as between subjects variables, as was L, to determine their effect on the within-subjects variables. The additional variables were: mailing number to which the subject responded (the first or second), government (federal or provincial), senior executive level (director general, assistant deputy minister, or deputy minister), and variant of instrument order (there were three). Only the variable government has any statistical significance and this was at the 0.10 level, as shown in Table 12.

(Table 12 about here)

Moreover, the additional variables had none or minor affect on the significance of the within-subjects variables, asset specificity, uncertainty, and size. See Table 13 for specific details. These variables remained significant at the 0.01 level except for the size variable which declined to 0.07, but only for the senior executive level. In summary, these additional variables had no effect on the responses, especially the mailing number

to which the subjects responded and the particular order of the instrument.

(Table 13 about here)

As the mailing number has no importance in explaining the dependent variable, there is no significant difference between those responding to the first request and those responding to the second. This suggests that a non-response bias does not exist.

CHAPTER VII

DISCUSSION

Support for Hypotheses

Previous sections argued from TCE in terms of four hypotheses that internal audit findings are useful for cost economizing. If this was true then internal audit findings will increase in usefulness with asset specificity, uncertainty, size, and hierarchical level to which the director of internal audit reports. The experiment that was administered to senior executives with governmental organizations provided evidence for the usefulness of internal audit findings for cost economizing. There was support for three of the hypotheses (H_1 , H_3 , and H_4). The support was very strong for the H_1 and H_3 ; the usefulness of internal audit findings for cost economizing is positively and significantly related to asset specificity and size. There was limited support for H_4 ; internal audit findings increase in usefulness for cost economizing as the director of internal audit reports to a higher level. However, the statistical confidence was weak for the findings regarding H_4 .

The weak support for H_4 can be explained. The measurement of "high" hierarchical level reporting by the director of internal audit was to the deputy minister, while the "low" level was to an assistant deputy minister. These were sequential levels with nothing in between. The experiment was required to use these two closely aligned levels for both governments, because directors of internal audit report administratively

to no higher level than a deputy minister and no lower level than an assistant deputy minister. In conclusion, as there were no positions between a deputy minister and an assistant deputy minister, respondents were not offered a significant difference in hierarchical reporting levels.

In addition, the differences between these levels, in regard to fostering objectivity, is minimized with both governments. Each has policies and procedures in place that obligate objectivity by the internal auditors. More specifically, each government adopted and implemented the Institute of Internal Auditors' standards for professional practice. The objectivity gained from the level to which the director of internal audit reports is mitigated by these policies and procedures.

H₂ was not supported. Contrary to an expected positive relationship, a negative and statistically significant relationship was found for the relation of uncertainty on the usefulness of internal audit findings for economizing. TCE provided no basis for understanding this strongly negative relationship, however some suggestions were obtained from respondents. Anecdotal comments by respondents combined with the dimensions behind the dependent variable provided some insights. More specifically, Larcker and Lessig [1980; p. 124] described the usefulness construct with two dimensions, importance and usability. An audit finding could have been important for cost economizing, but if it was not usable, then it would not have likely been used. In this way confusion could have occurred from measuring uncertainty as unpredictable demand and certainty as predictable demand.

The statistical evidence from responding subjects indicated that internal audit

findings were less useful when there was demand uncertainty and more useful when demand was predictable. For an explanation, the anecdotal evidence suggested that with demand uncertainty internal audit findings were more difficult to implement, and thereby not very usable. In their words, subjects said that changes in demand dominate activities, relegated the implementation of audit findings to a lower, albeit temporary, status. This decreased usability with demand uncertainty and it could have dominated the importance of internal audit findings for cost economizing. The suggestion was that importance and usability were related in a multiplicative way.

Interactions

The relative statistical weakness of the interactions among independent variables is unexpected. With predictions of internal audit findings usefulness increasing with the independent variables, those variables are expected to be related. This is, actually, borne out only by asset size and level to which the director of internal audit reports. Asset specificity and uncertainty are also statistically significant at the 0.05 level, but uncertainty has the wrong sign, thus negating this interaction.

The weaknesses with interactions have two apparent causes. First, there is the wrong sign (and statistically significant) for the independent variable uncertainty. This appears to be a measurement problem as previously discussed. Second, there is weak support for the independent variable, level to which the director of internal audit reports, which can be explained also as a measurement problem.

Responses

A minor issue was the larger number of subjects (53) for the high condition for the variable, level to which the director of internal audit reports (i.e., the director of internal audit reports to the deputy minister), compared to the low condition (46) (i.e., the director of internal audit reports to another assistant deputy minister). This is difficult to explain. Equal numbers of each condition were sent to prospective subjects through sequential allocation. The only explanation is that respondents might have considered the reporting to the deputy as attributing more importance to the research and thus more worthy of their attention.

CHAPTER VIII

CONCLUDING COMMENTS

Overview

The four hypotheses predicted that the use of internal audit findings would increase with asset specificity, uncertainty, size and the level to which the director of internal audit reports. The empirical evidence provided strong support for two hypotheses, i.e, the use of internal audit was positively related to asset specificity and size. There was some empirical support for another hypothesis, i.e., there is a positive relationship between use of internal audit findings and the level to which the director of internal audit reports. There was no support for one hypothesis, i.e., uncertainty and the use of internal audit were, unexpectedly, found to be negatively related.

Conclusions

This research is guided by the first question: are internal audit operational findings useful to managers for cost economizing? The findings provide a strong affirmative answer to that question. Mean responses - ranging from 6.2 to 8.6 on a 10-point scale - suggest that senior executives in governmental organizations deem internal audit operational findings useful for economizing.

This research provides answers to the other stated questions. The second question was, do managers consciously economize? The field study and the experiment suggest

that managers consciously economize and that internal audit is one source of information for that economizing.

The third question was, do managers use internal audit findings for economizing? Again the answer is in the affirmative. The evidence from the experiment suggests that internal audit findings are used. Moreover, the field study indicates that governmental organizations ensure that the internal auditors' recommendations for cost economizing are implemented by following practices advocated by the Institute of Internal Auditors.

Fourth and most important, can the theory of TCE be used to explain how managers use internal audit findings to economize? TCE with its concern with internal audit findings for economizing was an appropriate perspective. The field study and the experiment found internal audit to be concerned with cost economizing. Moreover, TCE is partly successful in explaining the reasons for using internal audit findings. Asset specificity and size are very important explanatory variables. Hierarchical level to which the director of internal audit reports is somewhat important. The importance of uncertainty is still unclear. Although the research is experiment-based and thus does not reflect what would actually occur, it and the field study suggest that internal audit is used by managers for economizing.

Contributions

This research provides a number of contributions. First, it empirically tests the usefulness of internal audit operational findings for economizing within a TCE framework. Accordingly, it extends the theoretical work of Williamson [1975, 1985] and

analytical agency work of Penno [1990]. Second, it provides a theory - TCE - for examining the phenomenon of internal audit. The heretofore lack of a theory is noted by Boyle [1993] for why internal audit receives so little attention by academic researchers. Now with a theory, if Boyle's argument is accepted, greater academic attention to internal audit research should be forthcoming. Third, TCE is applied to governmental organizations. The field study and experiment provides evidence of the appropriateness of TCE with its cost economizing focus for governmental organizations. Fourth, TCE hypotheses are effectively tested with an experimental design. This new venture enables TCE to be advanced through experimentation. Fifth, cost economizing through operational findings is effectively added to internal audit academic research. Internal audit research is expanded into the neglected realm of organizational control [Boyle, 1993]. Sixth, this thesis develops experimental materials and instruments for measuring the usefulness of internal audit. Future research can benefit from tested experimental materials and instruments.

Future Research

The success and contributions of this research suggest potential for extensive future research. Several opportunities will be mentioned in regard to finding the wrong sign for the variable uncertainty. The instrument considered external uncertainty, which was measured as unpredictable demand. Other measures will need to be considered in future research. In addition, following from Larcker and Lessig [1980] usefulness of internal audit findings will need to be divided into measures for importance and

usableness.

Another directly related opportunity for future research will be to examine how well-established policies and procedures can substitute for reporting to high levels in organizational hierarchies. The question will be, can policies and procedures for ensuring objective internal audit practices be a replacement for organizational objectivity?

One more line of research from this thesis is the examination of the usefulness of non-financial information compared to financial information. Contemporary conclusions support the added usefulness of non-financial or operational information, but evidence and proof are currently missing.

Limitations

Despite the significant contributions there are the usual limitations with experimental research. Care was taken to create experimental realism. Nevertheless, it was, as many subjects said, a simplification. In reality there are many more variables to consider. Another limitation was the definition of the dependent variable with only the usefulness construct. It may have been preferable to supplement usefulness with its dimensions, importance and usableness. This was considered, but rejected in favour of less time-demanding experimental materials and instruments in order to elicit a higher response rate.

Table 1. -- Internal Controls Identified by Mautz et al.'s

Informing employees of internal controls (f, o)
Chart of accounts (f)
General ledger responsibility (f)
Internal reporting plan (f, o)
Scheduled reconciliation plan (f)
Job descriptions (f, o)
Organization chart (f, o)
Code of conduct (f, o)
Monitoring function (o)
Budget process (o)
Separation of incompatible duties
Asset use (o)
Expenditure limits (o)
Protective measures (f)
Information clearance (f)
Rotation of personnel; vacations (f)

These individual internal controls were identified by Mautz et al. (1980). They were subsequently classified financial (f) or operational (o) by using classifications suggested by Mautz and Winjum [1981].

Table 2. -- Internal Controls Objectives Identified by Etherington and Gordon

Financial Accounting

Operational

Safeguarding of assets (1)	Prevention and detection of fraud (4)
Ensuring reliability of accounting records (2)	Ensuring orderly and efficient conduct of business (5)
Prevention and detection of errors (3)	Ensuring compliance with management policies (6)
Discharging statutory responsibilities to owners (9)	Profitability and minimization of costs (7)
Timely preparation of financial statements (10)	Assuring effective use of company resources (8)

The numbers in brackets are the rank order of importance assigned by managers surveyed by Etherington and Gordon (1985).

Table 3. -- Independent Variable Manipulations

Case	Asset Specificity	Uncertainty	Size	Level
1	L	L	L	H
2	L	L	H	H
3	L	H	L	H
4	L	H	H	H
5	H	L	L	H
6	H	L	H	H
7	H	H	L	H
8	H	H	H	H
9	L	L	L	L
10	L	L	H	L
11	L	H	L	L
12	L	H	H	L
13	H	L	L	L
14	H	L	H	L
15	H	H	L	L
16	H	H	H	L

Note, each subject receives eight cases to achieve a full-factorial design for three independent, within-subjects variables (asset specificity, uncertainty, and size). The cases received by subjects could have a high value for the fourth independent variable (level to which the director of internal audit reports) or a low value. The latter variable is the between-subjects variable.

Table 4 – Measures for the Independent Variables

<u>Variables</u>	<u>Measures</u>
Asset specificity (A)	Knowledge and skills of employees
Uncertainty (U)	Uncertainty in volume of work to be done
Scale or size (S)	Size of organization in numbers of employees and dollars
Level (L)	Level to which the director of internal audit reports

Table 5 -- Response Rates

	Federal Government			Provincial	
	DM/ADM	Dir. Gen.	Total	DM/ADM	Total
Experiment Materials Mailed	81	115	196	62	258
Undeliver- able	4	8	12	2	14
Delivered	77	107	184	60	244
Responded First mailing	15	23	38	16	54
Second mailing	11	25	36	9	45
Usable responses	26	48	74	25	99
Response rate, %	33.8	44.9	40.2	41.7	40.6

Note, the response rates are calculated by dividing the number of "usable responses" by the number of "delivered" packages of experimental materials. "DM" refers to the position of deputy minister "ADM" refers to assistant deputy minister, while "Dir. Gen." refers to director general.

Table 6. -- Mean Responses and Standard Deviations for the Responses to the 16 Cases

Case	Number	Mean	Standard Deviation
1	53	7.36	2.02
2	53	7.57	2.04
3	53	6.85	2.26
4	53	6.70	2.29
5	53	8.38	1.71
6	53	8.64	1.72
7	53	7.30	2.05
8	53	7.45	2.20
9	46	6.85	2.07
10	46	7.33	1.93
11	46	6.17	2.57
12	46	6.63	2.42
13	46	7.43	2.24
14	46	8.13	1.88
15	46	6.74	2.20
16	46	7.30	1.81

Note, each subject was given eight cases that fully factorized the three within-subject independent variables (asset specificity (A), uncertainty (U), and size (S)). A subject would receive cases that had the between-subjects variable (level to which the director of internal audit reports (L)) at either high or low, but not both. Thus, eight cases administered to each subject provided 16 cases for analysis.

Table 7. -- Usefulness of Internal Audit Findings with Asset Specificity

Cases	Constants	"Use" with High "A"	"Use" with Low "A"	Differences	Significance ρ value
C5 - C1	$U_L S_L L_H$	8.38	7.36	1.02	0.0003
C6 - C2	$U_L S_H L_H$	8.64	7.57	1.07	0.0001
C7 - C3	$U_H S_L L_H$	7.30	6.85	0.45	0.1607
C8 - C4	$U_H S_H L_H$	7.45	6.70	0.75	0.0094
C13 - C9	$U_L S_L L_L$	7.43	6.85	0.58	0.0434
C14 - C10	$U_L S_H L_L$	8.13	7.33	0.80	0.0082
C15 - C11	$U_H S_L L_L$	6.74	6.17	0.57	0.0502
C16 - C12	$U_H S_H L_L$	7.30	6.63	0.67	0.0304

Note, the differences were calculated between high asset specificity (A_H) and low asset specificity (A_L) with uncertainty (U), size (S), and level (L) held constant. Significance was calculated with the SAS procedures for differences between means.

Table 8. -- Usefulness of Internal Audit Findings with Uncertainty

Cases	Constants	"Use" with High "U"	"Use" with Low "U"	Differences	Significance ρ value
C3 - C1	A _L S _L L _H	6.85	7.36	(0.51)	0.0473
C4 - C2	A _L S _H L _H	6.70	7.57	(0.87)	0.0004
C7 - C5	A _H S _L L _H	7.30	8.38	(1.08)	0.0001
C8 - C6	A _H S _H L _H	7.45	8.64	(1.19)	0.0001
C11 - C9	A _L S _L L _L	6.17	6.85	(0.68)	0.0095
C12 - C10	A _L S _H L _L	6.63	7.33	(0.70)	0.0241
C15 - C13	A _H S _L L _L	6.74	7.43	(0.69)	0.0088
C16 - C14	A _H S _H L _L	7.30	8.13	(0.83)	0.0013

Note, the differences were calculated between high uncertainty (U_H) and low uncertainty (U_L) with asset specificity (A), size (S), and level (L) held constant. Significance was calculated with the SAS procedures for differences between means.

Table 9. -- Usefulness of Internal Audit Findings with Size

Cases	Constants	"Use" with High "S"	"Use" with Low "S"	Differences	Significance ρ value
C2 - C1	A _L U _L L _H	7.57	7.36	0.21	0.3626
C4 - C3	A _L U _H L _H	6.70	6.85	(0.15)	0.4915
C6 - C5	A _H U _L L _H	8.64	8.38	0.26	0.1845
C8 - C7	A _H U _H L _H	7.45	7.30	0.15	0.3295
C10 - C9	A _L U _L L _L	7.33	6.85	0.48	0.0397
C12 - C11	A _L U _H L _L	6.63	6.17	0.46	0.0226
C14 - C13	A _H U _L L _L	8.13	7.43	0.70	0.0006
C16 - C15	A _H U _H L _L	7.30	6.74	0.56	0.0017

Note, the differences were calculated between large size (S_H) and small size (S_L) with asset specificity (A), uncertainty (U), and level (L) held constant. Significance was calculated with the SAS procedures for differences between means.

Table 10. -- Usefulness of Internal Audit Findings with Level to which the Director of Internal Audit Reports

Cases	Constants	"Use" with High "L"	"Use" with Low "L "	Differences	Significance ρ value
C9 - C1	A _L U _L S _L	7.36	6.85	0.51	0.2182
C10 - C2	A _L U _L S _H	7.56	7.32	0.64	0.5494
C11 - C3	A _L U _H S _L	6.85	6.17	0.68	0.1710
C12 - C4	A _L U _H S _H	6.70	6.63	0.07	0.8873
C13 - C5	A _H U _L S _L	8.38	7.43	0.95	0.0224
C14 - C6	A _H U _L S _H	8.64	8.13	0.51	0.1642
C15 - C7	A _H U _H S _L	7.30	6.74	0.56	0.1931
C16- C8	A _H U _H S _H	7.45	7.30	0.15	0.7134

Note, the differences were calculated between high level to which the director of internal audit reports (L_H) and low level (L_L) with asset specificity (A), uncertainty (U), and size (S) held constant. Significance was determined with the SAS procedure for a t-test with two independent samples.

Table 11. -- Analysis of Variance for Usefulness of Internal Audit Findings for Cost Economizing with Within-Subjects Variables and Level as the Between-Subjects Variable

Source of Variation	F- Value	Numerator Degrees Freedom	Denominator Degrees Freedom	Significance ρ value
Main Effects				
Asset Specificity (A)	17.73	1	97	0.0001
Uncertainty(U)	31.79	1	97	0.0001
Size (S)	10.24	1	97	0.0019
Level (L)	2.03	1	97	0.1569
Interactions				
A*L	0.23	1	97	0.6347
U*L	0.42	1	97	0.5188
S*L	4.27	1	97	0.0413
A*U	4.14	1	97	0.0447
A*S	2.42	1	97	0.1229
U*S	1.92	1	97	0.1694
A*U*L	2.07	1	97	0.1536

Note, a split-plot analysis was used, i.e., the general linear models procedure with repeated measures analysis of variance, from SAS.

Table 12. -- Analysis of Variance for Usefulness of Internal Audit Findings for Cost Economizing with Other Between-Subjects Variables

Sources of Variance	Degrees of Freedom	Sum of Squares	Mean Squares	F-Value	Significance ρ value
Mailing number	1	1.7515	1.7515	0.08	0.7715
Error	97	2003.3167	20.6527		
Government	1	55.8367	55.8367	2.78	0.0988
Error	97	1949.2314	20.0952		
Senior executive level	2	18.7551	9.3775	0.45	0.6369
Error	96	1986.2314	20.6908		
Instrument variant order	2	2.0137	1.0068	0.05	0.9529
Error	96	2003.0545	20.8652		

Note, a split-plot analysis was used, i.e., the general linear models procedure with repeated measures analysis of variance, from SAS.

Table 13. -- Analysis of Variance for Usefulness of Internal Audit Findings for Cost Economizing with Within-Subjects Variables and Other Between-Subjects Variables

Main Effects	F-Value	Numerator Degrees of Freedom	Denominator Degrees of Freedom	Significance ρ value
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Mailing Number as the Between-Subjects Variable

Asset Specificity	17.33	1	97	0.0001
Uncertainty	32.74	1	97	0.0001
Size	9.33	1	97	0.0029
Mailing Number	0.08	1	97	0.7715

Government as the Between-Subjects Variable

Asset Specificity	15.99	1	97	0.0001
Uncertainty	17.76	1	97	0.0001
Size	8.48	1	97	0.0045
Government	2.78	1	97	0.0988

Senior Executive Level as the Between-Subjects Variable

Asset Specificity	10.90	2	96	0.0014
Uncertainty	18.91	2	96	0.0001
Size	3.35	2	96	0.0703
Executive Level	0.45	2	96	0.6369

Table 13. Continued

Main Effects	F-Value	Numerator Degrees of Freedom	Denominator Degrees of Freedom	Significance ρ value
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Instrument Variant Order as the Between-Subjects Variable

Asset Specificity	17.88	2	96	0.0001
Uncertainty	32.58	2	96	0.0001
Size	8.91	2	96	0.0036
Instrument Variant Order	0.05	2	96	0.9529

Note, a split-plot analysis was used, i.e., the general linear models procedure with repeated measures analysis of variance, from SAS.

APPENDIX 1

Field Study Reliability and Validity Steps

Two recent articles reviewed field studies in accounting, and offered advice on designing research methods that ensure a high degree of reliability and validity [Ferreira and Merchant, 1992; McKinnon, 1988]. From those studies, suitable recommendations have been adapted for this thesis.

In the more comprehensive review, McKinnon identified four threats to the reliability and validity of field studies: observer-caused effects, observer bias, data access limitations, and complexities and the limitations of the human mind. To counter these threats, McKinnon recommended three strategies and five tactics, which are described in order.

Strategies. The field research strategies are specified below.

1. Substantial length of time in the field. This offers several advantages. First, it serves to reduce the potential for observer bias. The longer the time in the field, especially at earlier stages, the more the researcher can learn about the variables of interest and related variables. There is less pressure at these stages to see patterns, to uncover meaning, or to develop hypotheses and conclusions. The second benefit of a substantial investment of time in the field is that it can effectively overcome the problem of observer-caused effects. Although subjects in the setting may seek to appear different from their usual selves to the researcher, the longer the researcher remains with them, the less they are

APPENDIX 1 (continued)

able to do so. Third, threats to reliability and validity by data access limitations are also decreased. With more time, more data can be accessed. Fourth, with increased time, the researcher is likely to be granted access to additional data and insights, thereby reducing conceptual limitations of the researcher.

Despite the importance given to time in the field, McKinnon does not specify the time needed. Ferreira and Merchant [1992, p. 15] discuss the few field studies that disclosed the time devoted to interviews. The time per interview ranged from a half hour to three hours.

With this thesis, subjects were met with from 2.5 to 4.5 hours with the average being 3.3 hours. Initial interviews were followed up to fully understand the variables and to resolve measurement issues.

2. Multiple methods and observations. The field researcher needs to draw on multiple methods, such as document analysis in addition to interviews. The purpose is to achieve reliability and validity through examining the same phenomena from different perspectives. In this regard, McKinnon [1988, p. 43] said "the ability to evaluate what a subject does against what a subject says is a strong counter to the threats of observer-caused and human mind effects." The time constraint placed on the researcher can often be mitigated by the review of documents. Documents are also a major source of historical data not available from interviews of existing employees. Appendix 4 contains a tentative guide for reviewing documents.

APPENDIX 1 (continued)

Some of the documents reviewed for each department included:

- annual Provincial budgets,
- relevant government directives for internal audit,
- internal audit branch mandates,
- internal audit reports, current and past,
- external evaluation of the audit branch.

3. Social behaviour while in the field. If handled sensitively and well, the researcher's behaviour can be a mechanism which not only combats threats to reliability and validity, but also enables additional data to be obtained. As there are concerns prior to arrival, the researcher's first concern should be to reduce feelings of anxiety. This involves that all subjects, first, understand the purpose of the research, and second, have access to the information being collected. The researcher needs to gain the confidence, trust, and respect of the subjects and be seen as personable and genuinely interested in them. In addition, McKinnon advises that in gaining rapport with subjects, the researcher should be interactive and giving, but not naive. Sides should not be taken in conflicts. Subjects should not be alienated, and the researcher should seek to be neutral and trustworthy.

For this thesis, definite efforts were taken to ensure appropriate social behaviour. The above suggestions were followed. The director of internal audit was the contact person for arranging voluntary interviews and the availability of documents. The research was explained to the director of internal audit and documented in a letter, shown in Appendix 2.

APPENDIX 1 (continued)

During interviews, the researcher explained the purpose of the research and that interviews were voluntary; notes were taken, transcribed and typed, and then verified with the subjects for accuracy. Follow-up interviews were done to verify findings, clarify the contents of documents, and obtain comments on evolving conclusions.

Tactics. McKinnon specified four tactics appropriate for this thesis.¹¹

1. Note taking. Two major functions are accomplished by note taking. The first is a record of the data. The second is that systematic note taking is the means by which the research may be managed. Note taking allows control over threats to reliability and validity, primarily from observer bias.

The analysis of data is an on-going activity with field research. Data gathering and analysis - from the researcher's interpretations - can easily become intertwined to the detriment of reliability and validity. To prevent contamination of data, McKinnon (p. 46) suggests a note-taking schema that forces a physical separation of observation notes (ONs), theoretical notes (TNs), and methodological notes (MNs). ONs are the facts, based on a verbatim, accurate, and detailed record of what the researcher hears and reads. TNs are the researcher's evolving interpretations of the ONs. MNs describe which research strategies have been followed in the collection of data, and what will be done next.

¹¹ The fifth was "the use of team research." This was not appropriate as the thesis is to be an individual research effort. However, it did benefit, in this regard, from the inputs from the thesis committee.

APPENDIX 1 (continued)

This note-taking schema forces the researcher to record ONs before interpretation, which in turn must fit the facts. Prior recording means that inconsistent or anomalous facts cannot be ignored.

For this thesis, McKinnon's suggested note-taking schema was followed.

2. Choice of type of participant observation. Reliability and validity can be enhanced with appropriate participant observation (PO). Various approaches to PO have been classified by McKinnon (p. 46-49) as to their affect on reliability and validity. The approaches are shown below. A (+) represents a favourable implication of the PO approach in regard to the particular threat to reliability and validity. A (-) indicates a unfavourable implication.

	Observer-caused Effects	Observer Bias	Data Access Limitations	Complexities and Limitations of Human Mind
a. Watching from outside	+	-	-	-
b. Passive presence	-	-	-	-
c. Limited interaction	+	+	+	+
d. Active control	+	+	+	+
e. Observer as participant	+	-	-	
f. Hidden identity	+	-	-	

a. Watching from outside. With this PO, the presence of the researcher is unknown to the subjects. Although observer-caused effects are avoided, the disadvantage is that it increases the other three threats to reliability and validity. This is consequence of the researcher not being able to ask questions. All that can be done is to watch and listen. This leads to an incomplete data set which reduces reliability and validity.

APPENDIX 1 (continued)

b. **Passive presence.** This option is similar to the PO above, except it lacks the same vivid view of the research site. The passively-observing researcher is known to the subjects, but there is no active interaction. The passive observer does not explain his/her reasons for presence, which because of uncertainty can often be stressful and disturbing for the subjects. Consequently, this PO approach may lose the advantage of unobtrusiveness. It does not lead to better data, as the researcher remains unable to ask clarifying questions; the data remains incomplete.

c. **Limited interaction.** The researcher both observes and talks with the subjects in casual conversation. The researcher does not direct the conversation to specific topics, but uses it to clarify the meaning of events and comments as they occur.

The researcher is an intruder, but, as McKinnon [p. 49] argues, it is intrusion that is "socially natural and accepted". The limited interaction approach minimizes intrusiveness and allows greater understanding and explanation of the meaning of events and activities.

d. **Active control.** As with limited interaction, the researcher observes the events and activities but with active control the subjects are interviewed. The researcher uses the interviews to direct the conversation to specific topics and to clarify the meaning of events and comments as they occur.

Although the active control PO is intrusive, it is also "socially natural and accepted." It does not induce negative observer-caused effects, and it obtains data to prevent the other threats.

APPENDIX 1 (continued)

e. Observer as participant. The researcher becomes a co-worker and is identified as such with this PO approach. The shortcoming is that the researcher may become so emotionally and psychologically involved in the organization that the ability to distinguish and balance the observer and participant roles is lost. The problems of data access limitations and observer bias remain.

f. Participant with hidden identity. The researcher is known to the subjects but not as a researcher. This PO approach should be ruled out for ethical reasons. In addition, there are reliability and validity reasons for its rejection. With the researcher identity hidden, it is difficult to ask the subjects penetrating questions. Data incompleteness exists.

For this thesis the active control approach is appropriate for minimizing the threats to reliability and validity. Active control is suitable for extracting information with interviews. Intrusiveness is not considered a shortcoming. Observation of subjects by itself will not disclose their audit activities; they must be interviewed for information and clarification.

3. Informant and respondent interviewing. McKinnon draws a distinction between informants and respondents in terms of the purposes they serve in field research. Informants provide general background and pertinent historical data. In this regard they aid in overcoming the data access limitations that stem from the researcher's restricted time and mobility in the setting. Accordingly, informants should be selected based on their length of involvement, access to relevant activities, and their ability and willingness to communicate.

APPENDIX 1 (continued)

In contrast, respondents are used to provide specific information about themselves, their function, experiences, and their interactions with others in the organization, in respect to the phenomena of interest. Thus, it follows that the selection of respondents is a sampling process, and it should be comprehensive.

Respondents will be used to learn about current internal audit practices and findings. Informants will be used for internal audit practices and findings during earlier periods. Most subjects were able to function as both respondents and informants because of their years of service in the unit. Appendix 3 contains interview guides differentiated on the basis of respondent/informant.

4. Probing Questions. In addition to the semi-structured questions, reliability and validity require the researcher to use probing questions to probe the subject further about any unsolicited statements that were made, or about a response to a specific question. Probing questions are situation specific.

In being able to ask "why?" or "what happened?", the researcher has access to data not available through questionnaire surveys. In this regard, contextual details of incidents can be obtained. Probing questions allow the researcher to accommodate some of the problems caused by the complexities and limitations of the human mind. Finally, probing helps to keep the researcher's own bias constrained. Probing implicitly assumes that the researcher does not fully understand the implications of what is being said. Seeking clarification allows gaps in understanding to be filled by the respondent/informant rather than by researcher conjecture.

APPENDIX 1 (continued)

Probing is essential for this thesis. Ensuring its use is problematic. Opportunities to probe could be missed. On each interview guide shown in Appendix 3, the page was divided into two parts. The left side contains the semi-structured questions, while the right was for probing during the interview.

APPENDIX 2

Letter Requesting Field Study Cooperation

Dear Mr/Ms Director of Internal Audit:

I appreciate this opportunity to meet with you today. The main points to be discussed are in this letter.

My research addresses internal audit. Although internal audit is held in high regard by practitioner journals, it has not received much attention by academic journals. The exception is research where internal audit reduces the work of external auditors. It has been suggested that the lack of interest by academics is caused by there being no theoretical foundation behind internal audit research.

I plan to approach this research with the theory of transaction cost economics. The major proponent of this theory, Oliver Williamson, has argued that internal audit is more useful for cost economizing than external audit. The importance of internal audit for economizing has not been studied empirically by academic researchers.

Specifically, I want to test some hypotheses about the usefulness of internal audit findings to managers for economizing. To do this, there are two stages, of which the first relates to this meeting. During the first stage I want to familiarize myself with internal auditing within a large provincial government department and develop measurement instruments for testing hypotheses. The second stage will be to carry-out a non-laboratory experiment with senior executives in government departments.

APPENDIX 2 (continued)

During the first stage, my tentative questioning will address:

1. The process of internal auditing in a government department,
2. The use of internal audit findings for economizing,
3. Descriptions of internal audit findings regarding operations and financial accounting,
4. The effect that the following audit subject characteristics have on the generation and use of internal audit finding:
 - computerization,
 - skilled and professional employees,
 - uncertainty about employee behaviour,
 - uncertainty from external factors, and
 - large scale operations.
5. Differences in the generation and use of internal audit for two periods:
 - when economizing is very important, and
 - when economizing is less important.

In carrying out the first stage, I have the following requests:

- Voluntary interviews with yourself, two auditors/audit managers who have been in the branch for varying periods of time.
- The opportunity to review a sample of present and past audit reports, the audit mandate(s), and annual audit branch reports or progress reports on the implementation of internal audit recommendations.

APPENDIX 2 (continued)

Each interview will last about 60 minutes. With possible follow-up telephone calls, I would need another 30 minutes. Contents of our interviews and document reviews will be kept strictly confidential. Moreover, I would provide you with my typed notes to assure reasonableness and accuracy.

Thank you.

Sincerely

Gary Spraakman

Assistant Professor,

Accounting

APPENDIX 3

Field Study Interview Guides

Question

Probe

Director, Manager of Internal Audit - Respondent

1. Please describe the present internal audit process.
2. Are internal audit findings used for the economizing of costs? How? By whom? What findings are the most useful?
3. What are the effects of the following on internal audit findings?
 - computerization of systems
 - professionalization of employees
 - uncertainty about employee behaviour
 - uncertainty about significant external factors
 - large scale operations
4. Please provide some examples of internal audit findings regarding operations.

APPENDIX 3 (continued)

5. Please provide some examples of internal audit findings regarding financial accounting.
6. How do you differentiate between operational and financial accounting findings of the internal audit unit?
7. How has internal audit changed from an earlier period when cost economizing was less important? Financial audit? Operational audit?

APPENDIX 3 (continued)

Director, Manager of Internal Audit - Informant

Interview Guides

<u>Question</u>	<u>Probe</u>
1. Please describe the internal audit process.	
2. Were internal audit findings used for the economizing of costs? How? By whom? What findings were the most useful?	
3. What were the effects of the following on internal audit findings? - computerization of systems - professionalization of employees - uncertainty about employee behaviour - uncertainty about significant external factors - large scale operations	
4. Please provide some examples of internal audit findings regarding operations.	

APPENDIX 3 (continued)

5. Please provide some examples of internal audit findings regarding financial accounting.
6. How do you differentiate between operational and financial accounting findings of the internal audit unit?
7. How did internal audit change from an earlier period when cost economizing had a difference importance? Financial audit? Operational audit?

APPENDIX 4

Field Study Document Review Guide

Obtain:

1. Examples of internal audit operational findings.
2. Examples of internal audit financial accounting findings.
3. The implicit or explicit definitions for operational and financial accounting internal audit.
4. Examples of the concerns with economizing.
5. Examples of the effect of asset specificity
6. Examples of the effect of uncertainty
7. Examples of the effect of frequency

APPENDIX 5

Letter Requesting Experiment Cooperation

Dear Ms/Mr Senior Executive:

I am conducting research on the usefulness of internal audit findings in government organizations. This will require about 15 minutes of your time. You will need to read the attached one-page case which has multiple additional information and eight questions. Please note, you are **not** being asked to disclose information on internal practices of your department/ministry.

I chose your name from the **Corpus Administrative Index**. Your response will be kept confidential. Should you have any concerns or comments, I can be reached at the above numbers at university or home, or via fax or email.

Thank you.

Sincerely

Gary Spraakman

Assistant Professor,

Accounting

Attachments

APPENDIX 5 (continued)
INTERNAL AUDIT CASE

Instructions

After reading the background information on the next page, read each of the eight sets of additional information. Answer the question with each set of differing branch characteristics by circling the most appropriate number on the equal-interval scale.

For this case, position yourself as the decision maker, i.e., the branch's assistant deputy minister who must act on the audit findings.

You may remove the staple to more easily handle the sets of additional information.

After responding to the eight sets of additional information, please rank them (i.e., arrange the pieces of paper) in order from highest likelihood of use to the lowest. Adjust responses until you are satisfied with the ranking.

Then, insert the eight sets with this instruction page (and your signature) into the response envelope.

Thank you for your co-operation.

Signature: _____

Date: _____

APPENDIX 5 (continued)

Do you want a copy of the findings? Yes ___ No ___.

(name, title, and department of the respondent inserted by the researcher)

At your own pace, please read carefully and respond to all questions.

APPENDIX 5 (continued)

Background Information

You were appointed to this branch six months ago. It administers programs that provide benefits to clients. Eligibility is assessed against regulations. Program delivery costs per client have been reduced by two percent during each of the past five years. The cabinet and the minister want further cost reductions. Now the cost reduction objectives are for five percent a year.

The director of internal audit, who reports to the deputy minister, has just presented you with the following four audit findings. You and your managers agree with them.

- Of the hours worked by eligibility inspectors during a recent month, 90 percent were during hours generally not available to clients. This leads to a low (40 percent) utilization rate for the inspectors.

Recommended results. Change the work hours of inspectors to coincide with clients so that the utilization rate can be increased to 80 percent.

- Ten percent of the requests for benefits are not explicitly covered by regulations. When sent to supervisors for assessment, 95 percent are approved.

Recommended results. Revise regulations and delegate additional authority to front-line workers so that there are fewer exceptions requiring supervisor assessment.

APPENDIX 5 (continued)

- Although the budgeting is done carefully in financial terms, it does not explicitly incorporate service plans which are needed with about 15 percent of clients. The result is that at certain times employees are underemployed and at other times there are too few employees for the work.

Recommended results. The annual budgeting process is to include service plans and preparations for accomplishing the expected work.

- From a workload analysis, nearly 75 percent of professional employees were found to have 30 percent of their duties which could be delegated to lower-paid clerical employees.

Recommended results. Redesign the work of these professionals to remove, to the extent possible, the clerical component. This will allow an increase in the amount of professional work done by these employees.

First Set - Additional Information

The branch relies on employees with highly specialized knowledge and skills. The client demand for benefits is predictable. The branch has 3,000 employees and a \$175 million annual operating budget. Last year, \$1.5 billion in client benefits were paid.

Using the above additional information and the background information, please answer the following question.

How likely is it that you would act on the audit findings to achieve your branch's cost reduction objectives?

Very Low
Likelihood

Very High
Likelihood

1 2 3 4 5 6 7 8 9 10

APPENDIX 5 (continued)

Second Set - Additional Information

The client demand for benefits is predictable. The branch has 400 employees and a \$23 million annual operating budget. Last year \$188 million in client benefits were paid. The branch relies on employees with highly specialized knowledge and skills.

Using the above additional information and the background information, please answer the following question.

How likely is it that you would act on the audit findings to achieve your branch's cost reduction objectives?

Very Low
Likelihood

Very High
Likelihood

1 2 3 4 5 6 7 8 9 10

Third Set - Additional Information

The branch has 400 employees and a \$23 million annual operating budget. Last year \$188 million in client benefits were paid. The branch relies on employees with highly specialized knowledge and skills. The client demand for benefits is unpredictable.

Using the above additional information and the background information, please answer the following question.

How likely is it that you would act on the audit findings to achieve your branch's cost reduction objectives?

Very Low
Likelihood

Very High
Likelihood

1 2 3 4 5 6 7 8 9 10

APPENDIX 5 (continued)

Fourth Set - Additional Information

The branch relies on employees with highly specialized knowledge and skills. The client demand for benefits is unpredictable. The branch has 3,000 employees and a \$175 million annual operating budget. Last year \$1.5 billion in client benefits were paid.

Using the above additional information and the background information, please answer the following question.

How likely is it that you would act on the audit findings to achieve your branch's cost reduction objectives?

Very Low Likelihood										Very High Likelihood
1	2	3	4	5	6	7	8	9	10	

Fifth Set - Additional Information

The client demand for benefits is unpredictable. The branch has 400 employees and a \$23 million annual operating budget. Last year \$188 million in client benefits were paid. The branch relies on employees with minimal on-the-job training and experience.

Using the above additional information and the background information, please answer the following question.

How likely is it that you would act on the audit findings to achieve your branch's cost reduction objectives?

Very Low Likelihood										Very High Likelihood
1	2	3	4	5	6	7	8	9	10	

APPENDIX 5 (continued)

Sixth Set - Additional Information

The branch has 3,000 employees and a \$175 million annual operating budget. Last year \$1.5 billion in client benefits were paid. The branch relies on employees with minimal on-the-job training and experience. The client demand for benefits is predictable. Using the above additional information and the background information, please answer the following question.

How likely is it that you would act on the audit findings to achieve your branch's cost reduction objectives?

Very Low Likelihood										Very High Likelihood
1	2	3	4	5	6	7	8	9	10	

Seventh Set - Additional Information

The branch relies on employees with minimal on-the-job training and experience. The client demand for benefits is unpredictable. The branch has 3,000 employees and a \$175 million annual operating budget. Last year \$1.5 billion in client benefits were paid.

Using the above additional information and the background information, please answer the following question.

How likely is it that you would act on the audit findings to achieve your branch's cost reduction objectives?

Very Low Likelihood										Very High Likelihood
1	2	3	4	5	6	7	8	9	10	

APPENDIX 5 (continued)

Eighth Set - Additional Information

The client demand for benefits is predictable. The branch has 400 employees and a \$23 million annual operating budget. Last year \$188 million in client benefits were paid. The branch relies on employees with minimal on-the-job training and experience.

Using the above additional information and the background information, please answer the following question.

How likely is it that you would act on the audit findings to achieve your branch's cost reduction objectives?

Very Low Likelihood												Very High Likelihood
1	2	3	4	5	6	7	8	9	10			

APPENDIX 6

Letter to Directors of Internal Audit

Dear Director of Internal Audit:

I am conducting research on the usefulness of internal audit findings. This involves requesting senior executives in your department/ministry to complete a questionnaire.

The research method I am using is that of an experiment. Cases are being provided against which respondents answer questions. Your senior executives are not being questioned about their department/ministry or your internal audit branch. I would be pleased to send you a copy of the eventual findings and the journal article which I hope to publish.

I would appreciate your co-operation in completing the short questionnaire and returning it to me. Also, I would appreciate your comments on the enclosed sample case, five audit findings, and the two sets of questions. Regarding the questions, please indicate the set with the clearest wording. An addressed and stamped envelope is enclosed for your convenience. Should there be any questions, concerns, or comments, I would like to hear from you. I can be reached at 416-736-5210 at university, 905-898-0532 (home), or 416-736-5963 (fax), or GaryS@VM2.YorkU.CA by email.

Thank you.

APPENDIX 6 (continued)

Sincerely,

Gary Spraakman

Assistant Professor, Accounting

Attachments

APPENDIX 6 (continued)

1. Does your department/ministry have an audit committee?

Yes ____, No ____.

If you answered yes, continue with questions 2. Otherwise stop with the first question.

2. Does the director/director general of internal audit meet regularly (i.e., 3 or more times a year) with the audit committee to present audit findings?

Yes ____, No ____.

Thank you for your co-operation

Gary Spraakman

Please complete:

Signature: _____

Do you want a copy of the findings? Yes ____ No ____.

(name, title, and department of the respondent inserted by the researcher)

APPENDIX 7

Variables and Their Measurement Instruments

Dependent variable: USE - usefulness

How likely is it that you would act on the audit findings to achieve your branch's cost reduction objectives?

Very Low
Likelihood

Very High
Likelihood

1 2 3 4 5 6 7 8 9 10

Independent variable: A - asset specificity

Measured with scenarios in the case:

High: The branch relies on employees with highly specialized knowledge and skills.

Low: The branch relies on employees with minimal on-the-job training and experience.

Independent variable: U - uncertainty

High: The client demand for benefits is unpredictable

Low: The client demand for benefits is predictable

Independent variable: S - size

High: The branch has 3,000 employees and a \$175 million annual operating budget. Last year \$1.5 billion in client benefits were paid.

Low: The branch has 400 employees and a \$23 million annual operating budget. Last year \$188 million in client benefits were paid.

APPENDIX 7 (continued)

Independent variable: L - level of reporting

High: The director of internal audit, who reports to the deputy minister, has just presented you with the preliminary audit findings.

Low: The director of internal audit, who reports to another assistant deputy minister, has just presented you with the preliminary audit findings.

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