

THE UNIVERSITY OF HULL

INTERNAL AND EXTERNAL AUDITORS:
THEIR JUDGEMENTS AND PERCEPTIONS
ON INTERNAL CONTROL, BASED ON
A PAYROLL SYSTEM

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by

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ABSTRACT

Internal control evaluation is an area in which IAs and EAs interface. IAs review internal controls which are evaluated, and often relied upon, by EAs. It is now mandatory for UK listed companies to report in their annual reports whether they are complying with the Cadbury Code and, if not, why not.

IAs are likely to be involved in the preparation of the internal control report since they are responsible for reviewing internal control. EAs have the responsibility of reviewing the internal control report. So, cooperation between the two groups of auditors is important. Both should be interested in any systematic differences which may exist between their judgement patterns.

This study investigated this similarity assumption. Specifically, it examined whether IAs made similar judgements to EAs by means of a mailed questionnaire using a pre-answered internal control questionnaire (ICQ) for a payroll internal control system.

This is, to the researcher's knowledge, the first empirical study to investigate such possible differences in the UK, and it must be treated as preliminary and exploratory.

The answers to 8 internal control procedures (ICPs) were varied to produce 8 different cases. Each auditor received 8 cases which comprised: (a) 6 cases which were similar for all the EAs and IAs and (b) 2 cases which were similar for a pair of auditors (one EA and one IA). The 2 cases further contained: (i) 1 case which followed a $\frac{1}{4}$ replicate of 2^8 design and (ii) 1 case which was the repeat of the case in (i).

The 6 similar cases were able to test for "judgement consensus" amongst all auditors; that is to find out whether the auditors gave a similar rating to the 6 cases.

One of the 6 cases had all the 8 ICPs present and this represented the "ICQ approach" as the case was presented using an ICQ. In addition to that, the same case was presented in two other ways to test for similarity of judgements of auditors using different techniques/ approaches of evaluation.

The first was the "control objectives" (CO) approach which is a control matrix with the 8 ICPs presented on the rows and 5 "control objectives" presented as columns. The auditors were required to match the ability of each ICP to achieve the 5 control objectives and they were then required to rate the ability of the overall internal control system to achieve the control objectives.

The second presentation was the "control risk" (CR) approach which also had all the 8 ICPs presented on the rows and one column for the control risk rating. The auditors were required to rate the extent of "control risk" for each ICP. "Control risk" is the ability of each ICP to prevent or detect material errors from occurring. The auditors were also required to rate the "control risk" for the overall internal control system, that is the ability of the overall internal control system to prevent or detect "material errors" from occurring.

There were two purposes for the 2 similar cases: (a) the case which followed the experimental design was to determine the judgement model of EAs and IAs as a group and (b) the repeat case was to test for "judgement consistency" amongst individual auditors, that is to find out whether the individual auditor gave a similar rating to the 2 cases.

A judgement model, based on Kempthorne's $\frac{1}{4}$ replicate of 2^8 design was determined for each group of auditors using 64 EAs' and 64 IAs' ratings. In this design, all main effects and all 28, two-cue interactions were estimable. Three-cue interactions were not intended to be measured as previous studies had indicated that they account for no or negligible interaction. The purpose of this design was so that the effects of a number of different variables could be investigated simultaneously. The

judgement model was analysed by means of analysis of covariance with the personal profiles of auditors (experience, educational and position level) as covariates and the ICPs as the other independent variables.

Overall, the findings indicate that there was no significant difference in judgement consensus between and within each group of EAs and IAs. The two groups were also consistent in their ratings when given similar cases to evaluate. Visually, it can be seen that EAs tend to give higher ratings to all the cases. In other words there may be a tendency for EAs to place a higher degree of reliance upon particular controls than would IAs, but it was found to be not statistically significant.

There was also no significant difference found between both groups of auditors using different techniques or approaches of evaluation. They were closest in their ratings when they used the "ICQ" approach, followed by the "CO" approach and then the "CR" approach.

The final judgement models of both groups of auditors were also quite similar. Both groups of auditors considered the same five ICPs (which consist of two "accounting" and three "administrative" control procedures). Consistent with previous studies, the two separation of duties procedures were found to be

important in influencing the auditor's judgement.

Comparing the research findings with the US results (Bailey, 1981; Landry, 1987 and Moore, 1993), it appears that there is greater judgement consensus between UK's IAs and EAs than between US's IAs and EAs. This is likely to be accounted for by a greater degree of similarity of professional qualifications and background of UK's IAs and EAs than may have been the case in the US. However, this belief deserves further study.

Another implication of the findings is that there is an even stronger justification for IAs and EAs to rely on each other's work in the UK than would appear to be the case in the US. Thus, a directors' internal control report (the preparation of which IAs have had a significant input) can be relied upon more confidently by EAs.

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CHAPTER 1
OVERVIEW OF THE RESEARCH PROJECT

1.1 INTRODUCTION

This chapter attempts to give a broad coverage of the issues surrounding the study. It examines the definitions of internal control, requirements of Cadbury's Code of Best Practice, growth of importance of internal audit function, official pronouncements relating to internal control evaluation and the importance of judgement and perception in the area of internal control evaluation. Aims and objectives of the research project, issues examined in this thesis including the research procedures and instrument are also discussed. It concluded with a summary of the seven chapters of the thesis. Chapter 2 will examine developments in understanding internal control in more detail.

1.1.1 Definitions of internal control

Auditing Practices Committee (1989, ¶2) defines an independent audit as:

The independent examination of, and expression of an opinion on, the financial statements of an enterprise.

Before external auditors (EAs)¹ can "express" opinions on

¹ Hereon, will be referred to as EAs.

the financial statements, they have to look at the "input" or the data that actually provides the basis for preparation of the financial statements. This can be ascertained by looking at the internal control system in existence.

Various definitions of internal control can be found to date. Amongst them are definitions given by :

American Institute of Accountants² (AIA, 1949)

Internal control comprises the plan of an organisation and all of the co-ordinate methods and measures adopted within a business to safeguard its assets, check the accuracy and reliability of its accounting data, promote operational efficiency and encourage adherence to prescribed managerial policies.

The Institute of Internal Auditors (IIA, 1989), in its Standard 300 "Scope of work" states that,

The overall system of control is conceptual in nature. It is an integrated collection of controlled systems used by an organization to achieve its objectives and goals.

(IIA 1989, Standard 300, ¶.06, 31).

The Institute of Internal Auditors (IIA) continues to adhere to their position that internal control exists to achieve five objectives in contrast to COSO's three objectives.

The five objectives as stated in Standard 300 (IIA, 1989) are:

1. The reliability and integrity of information

² AIA, now known as AICPA (American Institute of Certified Public Accountants).

2. Compliance with policies, plans, procedures, laws and regulation
3. The safeguarding of assets
4. The economical and efficient use of resources
5. The accomplishment of established objectives and goals for operations and programmes
(IIA 1989, Standard 300, ¶.05, 29-30)

The Committee of Sponsoring Organisation of the Treadway Commission (COSO, 1992a, "Executive Summary", 1)³ has defined internal control as the following:

Internal control is a process effected by an entity's Board of Directors, management and other personnel, designed to provide reasonable assurance regarding the achievements of objectives in the following categories:

- effectiveness and efficiency of operations
- reliability of financial reporting
- compliance with applicable laws and regulations.

To elaborate on the meaning of "internal controls", Standards on Auditing Procedure (SAP) 29 (AICPA, 1972c) divided internal controls into "accounting" and "administrative controls".

Accounting controls are concerned mainly with safeguarding of assets and reliability of financial records i.e physical control over assets, separation of duties. Administrative controls are concerned mainly with operational efficiency and adherence to managerial policies i.e time and motion studies, variance reports.

An EA then has to examine the internal control system to see if the controls in existence are able to detect or prevent material financial statement errors and irregularities. After forming an opinion regarding the quality of the internal control system, an EA would then

³ Called COSO for short, comprise of American Institute of Certified Public Accountants, American Accounting Association, Institute of Internal Auditors, Institute of Management Accountants (formerly National Association of Accountants) and Financial Executives Institute.

decide to express his or her opinion via audit report.

1.1.2 Importance of judgement in performance of an audit

The internal control system is communicated to the auditor in the form of sensory stimuli. These (sensory stimuli) are perceived by the auditor as attributes of the quality of the internal control system. So, these perceptions are likely to influence the auditor's overall evaluation of internal control.

In human behaviour, the process of giving meaning to stimulus is referred to as perception.

It is a complex process by which people select, organize, and interpret sensory stimulation into a meaningful and coherent picture of the world.
(Berelson & Steiner 1964, 33).

The relevance of the concept of perception to auditing arises from the fact that the quality of the internal control system has to be perceived by the auditor first. The auditor's perception will then influence the auditing procedures to be used to evaluate the internal control system and finally, the auditor's judgement will be used to decide on the quality of the internal control system.

Perception of the auditor's initial outlook on the internal control system may/ may not be the same as the final judgement that the auditor makes of the quality of internal control system.

Almost all of the work of an EA requires the exercise of "judgement". The end product of a financial statement audit, for example, requires the auditor to express an opinion regarding the truth and fairness of the financial statements. However, before the auditor can perform this task, he will have to make a series of other judgements. This normally includes having to "judge" the quality of the internal control system and to be able to do this, he would have to "judge" whether the internal control system would be able to detect "material errors" or irregularities. Even before he is able to determine whether the internal control system is able to detect "material errors or irregularities", he would have to "judge" the most appropriate audit procedures to be used to achieve this purpose.

Thus, it can be said that an audit is a process that involves an ongoing "judgement" and that an EA usually makes a judgement on the truth and fairness of the financial statements partly based on his evaluation of the internal control system.

The determination of "material errors" itself requires some "judgement" on the part of the EAs.

Hall (1980, 78) states that,

An auditor's sense of materiality lies at the heart of his professional judgement. An appreciation of the concept may be innate, but experience nurtures, refines and sharpens it.

The Auditing Practices Board, in its paper titled "The Future Development of Auditing" (APB, 1992) states that,

Materiality cannot be precisely defined: what is material will be dependent on the context of financial statements in question ...

In assessing whether a matter is material, it should be considered in the context of:

- the amount of net assets and profit or loss of the company
- the amount of the item itself and of the total of which it forms a part;
- any other relevant circumstances.

(APB 1992, "The Future Development of Auditing", 20-21)

Realizing the importance of "judgement", the same paper states the use of it as one of the guiding principles of audit in its proposal.

Auditors should apply sound professional judgement.
(APB 1992, "The Future Development of Auditing", 20)

The definition of internal control has undergone a heavy scrutiny over the years. One of the reasons is so that there would be a common meaning attached to it.

Shelly and Bryan (1964) defined judgement in the following way:

If we need to limit it (the term "judgement") in some way beyond its intuitive content, we can say that roughly a "judgement" refers to any verbal reaction (or its equivalent) that is the "direct" product of the individual's processing his sensory inputs in combination with his memories of "stored experiences".

(Shelly and Bryan 1964, 9)

1.1.3 Inclusion of internal control report in the published annual report

In the 1990's US (COSO) and UK (Cadbury)⁴ has come out with another definition of internal control. Among the reasons for the setting up of COSO and Cadbury was so that a common meaning could be attached to internal control which could ease management in their reporting of the internal control system and could ease the attestation duties that had to be made by EAs. In this respect, both EAs and internal auditors (IAs)⁵ have an increased role to play; IAs would most probably be asked by management to help prepare the report on internal control and EAs would have to attest or evaluate the contents of the report.

COSO invited Treadway to head a commission of enquiry as a result of the growing fraudulent activities in companies and hence the Treadway report was issued in 1987. Treadway recommended that management should include a report on internal control with their published financial statements. However, adoption of the report was deferred pending clarification of the definition of internal control. To date, it looks as if it is going to

⁴ Cadbury Report is produced by the Committee on the Financial Aspects of Corporate Governance which was set up in May 1991 by the Financial Reporting Council, the London Stock Exchange, and the accountancy profession to address the financial aspects of corporate governance. The Cadbury Report incorporating a Code of Best Practice, was published on 1 December 1992.

⁵ Hereon, will be referred to as IAs.

be a voluntary, but frequently followed practice in the US. To provide for the next task of clarifying the definition of internal control, COSO funded a further project, the fieldwork of which was conducted by Coopers & Lybrand, which led to the publication of the Internal Control - Integrated Framework by AICPA in September 1992.

Cadbury (UK) made similar recommendations to Treadway, i.e. directors should include in their company's report and accounts a report "on the effectiveness of the company's system of internal control" (point 4.5). Again, similar to the US situation, before the report on the internal control system is possible, it would require further clarification as to how EAs can assess the effectiveness of the report and the form in which the auditors and the directors should report. The fieldwork was headed by Rutteman, a partner in Ernst and Young, and in October 1993 a draft report was issued. Another revised exposure draft was issued in August 1994 before the final guideline to directors was issued in December 1994.⁶

The UK Final Guidance to internal control and financial

⁶ One difference between Treadway (US) and Cadbury's (UK) requirement is that US requires management to make the report on internal control whereas UK requires the directors to produce the report.

reporting (ICAEW, 1994b)⁷ defines internal control as

The whole system of controls, financial and otherwise, established in order to provide reasonable assurance of:

1. effective and efficient operations
2. internal financial control
3. compliance with laws and regulations

(ICAEW 1994, Statement of principles, ¶2)

"Internal financial control" is defined in the UK Final Guidance as,

The internal controls established in order to provide reasonable assurance of:

- (a) the safeguarding of assets
- (b) the maintenance of proper accounting records and the reliability of financial information used within the business or for publication

(ICAEW 1994b, Statement of principles, ¶2)

According to COSO's "Internal Control - Integrated Framework",

Internal control is a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the following categories:

- effectiveness and efficiency of operations
 - reliability of financial reporting
 - compliance with applicable laws and regulations
- (COSO 1992b, "Framework", 1)

An entity's internal control structure⁸ consists of the following five components:

- Control environment - The control environment sets the tone of an organization, influencing the control consciousness of its people. It is the foundation for all other components of the internal control structure, providing discipline and structure.
- Risk assessment - Risk assessment is the entity's identification and analysis of relevant risks to achievement of its objectives, forming a basis for

⁷ The revised draft in 1994 also defines "internal control" and "internal financial control" in a similar manner.

⁸ In the Statement, "internal control" is also referred to as "internal control structure".

determining how the risks should be managed.

- Control activities - Control activities are the policies and procedures that help ensure management directives are carried out.
- Information and communication - Information and communication are the identification, capture, and exchange of information in a form and time frame that enable people to carry out their responsibilities.
- Monitoring - Monitoring is a process that assesses the quality of the internal control structure's performance over time.

(AICPA 1995, Proposed SAS 55, ¶6 and ¶7).

Although COSO's definition does not state explicitly (as compared with UK's definition) that internal control can be divided into "financial and non-financial", it does however recognise that the objectives of control are "distinct but overlapping categories which address different needs and allow a directed focus to meet the separate needs". Thus, it can be said that UK and US both agree that internal controls can be divided into two categories, i.e financial and otherwise⁹ (COSO 1992a, "Executive Summary", 1).

To date both in the US and in the UK the report on internal control has not been made mandatory¹⁰, though the majority of companies are including the reports in

⁹ Otherwise, taken to mean administrative control as indicated in 1949 AICPA's definition.

¹⁰ In the UK, it is compulsory for listed companies to comply with the Cadbury Code. This is not to say that listed companies must necessarily comply with any of the items within the Code but rather, that they must explain their reasons for non-compliance. In US, there is still no requirement for listed companies to report on internal control.

their published annual report.¹¹

As stated in a discussion paper on "Internal Financial Control Effectiveness" (APB, 1995e),

It is clear from the number of unsuccessful attempts to legislate public reporting on internal controls that consensus has not been reached in the United States as to whether such reports are of benefit to the users of financial statements. Indeed the present Chief Accountant of the Securities and Exchange Commission has publicly expressed reservations about such public reporting on the basis of its costs relative to expected benefits. (APB 1995e, "Internal Financial Control Effectiveness", 3)

COSO (1992c) notes in its report that,

...public reporting on internal control is not a component of or criterion for, effective internal control. An entity can have an effective internal control system without making a public statement to that effect ... in the end internal control effectiveness is determined by the adequacy of the system not by what is said about it. (COSO 1992c, "Reporting to External Parties", 2).

UK Final Guidance (ICAEW, 1994b) require directors only to state their opinion on the "effectiveness" of the internal financial control system and their report covers only internal "financial" control and not the whole

¹¹ M.R.Kintzele, P.L. Kintzele and Kwiatkowski (1993, 9-11) states that COSO reviews Annual reports for the calendar year 1990 from 226 publicly held corporations found that the overall percentage of companies that includes the statements was in excess of 90 %. However, currently most internal control reports are stating that "management is responsible for establishing, maintaining, and evaluating its system of internal control, but management fails to make an assessment of "the effectiveness of its control system" and state this in its report. For a detailed example of internal control reports in the UK, please refer to an article written by Chambers A.D.(1995) titled, " Directors' Report on Internal Financial Control".

system of internal control. The Guidance applies to accounting periods beginning on or after 1 January 1995.

Directors may state their opinion on the "effectiveness" of their system of internal financial control and may extend their opinion to the internal control system as a whole (ICAEW 1994b, "UK Final Guidance", ¶8 and ¶14) if they so wish.

However, EAs are not required to audit the directors' opinion on the effectiveness of the internal financial control until certain issues such as practical difficulties in reviewing internal control effectiveness and meaning of "effectiveness" is resolved (APB, 1995d, "Reporting to Corporate Governance - Revised").

In April 1995, the Auditing Practices Board (APB, 1995e) issued a discussion paper on "Internal financial control effectiveness" which among other issues seeks to clarify the issues associated with EAs' task of evaluating the directors' opinion on the effectiveness of the internal financial control system.

The Institute of Chartered Accountants of Scotland (ICAS, 1993) has also issued a draft proposal on how to implement the recommendations made by Cadbury (1992).

The ICAS directors' report on internal control has a very

broad coverage which includes management information systems, internal controls and internal control systems, but which did not state the time period that it covers. The same applies for ICAS's recommendations on the auditor's evaluation of the internal control report.

Although both US and UK have agreed to restrict the internal control report to internal financial controls, they differ with regards to the timeframe that the statement covers. Whilst, US (COSO) mentioned that the effectiveness of internal control system is at the "year end" (one point in time), UK (Final Guidance) mentioned that the internal control report should cover "a period of time".

1.1.4 Growth of importance of the internal audit function

With the recommendations placed on management/ directors to include an internal control report (the basis for which will often be prepared by IAs) in their annual reports, as a result of which EAs are required to assess that internal control report, there is increased reliance placed on IAs.

As Porter (1994) puts it,

The internal auditors are primarily responsible for monitoring the system of internal controls established by the companys' directors to control corporate activities - that is for corporate governance. The external auditors have the task of ensuring that the accountability reports produced by the directors give a fair reflection of the companys' activities and its financial affairs.
(Porter 1994, 25)

Cooperation between IAs and EAs may benefit both parties. IAs may achieve overall cost savings on the external audit fee by avoiding duplication of auditing efforts, and the testing performed for the external audit could also be used as internal audit evidence of the adequacy and effectiveness of controls.

However, there is an alternative view that diversion of IAs from the achievement of internal audit objectives (to do with efficiency and effectiveness) to acting as an assistant to the EA is often not the best use of internal audit time in value for money terms.

Nevertheless, it is generally accepted that IAs and EAs should coordinate their work so as to avoid unnecessary duplication.

If a management control report is made mandatory, there would be an increase in responsibility placed on EAs to review the "internal control report". It would thus be beneficial if both groups of auditors cooperate with one another.

In 1991, the Auditing Standards Board issued SAS 65 (AICPA, 1991a). It expanded on SAS 9 by permitting additional reliance on IAs in performing substantive tests and by encouraging coordination between the two audit functions.

Substitution of EA's work with IA's work is explicitly prohibited by SAS 9 (¶1) and SAS 500 (¶4).

It should be realized that there is likely to be similarity between the work of an EA and IA in the area of internal control evaluation. The primary mission of IAs is to assess controls to ensure that the controls are operating effectively. EAs on the other hand, are required to assess controls for the purpose of ascertaining that the financial statements show a true and fair view.

Chambers (1980, 273) states that an IA:

- a) acts as an arm of management
- b) rounds up and perfects the system of internal control
- c) directly participates in the verification of financial statements.

Since both auditors are given the task of evaluating internal controls, it has been suggested in the auditing literature (ICAS, 1993; Cadbury, 1992; COSO, 1992) that IAs be given the task of evaluating the controls (because they are employees of the organisation and would understand how the system works best) and EAs be asked to evaluate the internal control report prepared by IAs.

A possible strategy when planning audit work would be for IAs to assist in performing the required tests of controls and documenting the internal control structure when EAs have decided to rely on the internal controls.

External auditors will assess and rely on the work of the company's internal auditors in the same way, as, in some audits, they currently rely on the work of other auditors and/ or experts.
(ICAS, 1993, "Auditing into the Twenty-First Century", 3)

Auditing Guideline 3.204 (APC, 1980b, ¶1)¹² requires auditors to "ascertain and evaluate those controls and perform compliance tests on their operations, if the auditor wishes to place reliance on any internal controls".

Thus, EAs would not be required to evaluate internal controls if they do not wish to place reliance on them.

As Porter (1994) puts it,

It is acknowledged that in some cases auditors do not place reliance on a company's internal controls and where this applies they are not obliged to study and test the controls in detail. Nevertheless, it is submitted that, in gaining their understanding of the client and its affairs, and in assessing factors of audit risk, both of which are fundamental to the modern audit process, all auditors undertake a general assessment of the quality of the auditee company's internal controls and are (or should be) in a position to report accordingly. It is also observed that, at the conclusion of an audit, auditors usually routinely provide a management letter to the directors of the auditee company informing them, inter alia, of weaknesses detected in the internal controls and indicating ways in which these might be rectified. The detail of the information in the management letter relating to the company's internal controls reflects the extent to which they were studied and tested during the audit.
(Porter 1994, 22)

¹² Auditing Guideline 3.204 is superseded by SAS 300 (APB 1995). SAS 300 (¶28) states the same concept on the matter.

There are various techniques that can be used by an auditor to evaluate the internal control system such as internal control questionnaires (ICQ), assessment of control risk or achievement of control objectives.

Arens and Loebbecke (1980) have suggested an approach of evaluating internal controls quite similar to the approach being used by many IAs; that is, by means of a "matrix" to look at whether the internal controls in existence can help achieve the internal control objectives. Control matrix links up the control procedures established by a client with the control objectives that are set up by the company. The control objectives suggested by Arens and Loebbecke (1980) are "a) validity; b) authorization; c) classification; d) completeness and e) valuation". This method of evaluation has been popular since then.

COSO (1992b, "Framework") identifies these control objectives or assertions, as they called them, as "a) existence or occurrence; b) completeness; c) rights and obligations d) valuation or allocation and e) presentation and disclosure." For the purpose of this thesis, COSO's assertions are being made use of.

Studies have also shown that there are a lot of

similarities¹³ between the two groups of auditors. An example is a study by Waggoner and Ricketts (1989) who have conducted a test to address the "competency" of IAs, compared with EAs, in the performance of an internal control test. IAs' and EAs' performance was compared in a test of controls that could be used to evaluate the effectiveness of certain internal control procedures over a cash disbursement system. Results showed that IAs had an overall detection rate of 63.2 percent. EAs had an overall detection rate of 59 percent. Statistically, this is not a significant difference. The results of this comparison of IAs' and EAs' performance suggest that, in terms of performance, IAs and EAs rank equally on the task tested.

1.1.5 System/Subsystem structure of Internal Control

Johnson et al. (1967, 113) suggested that a "system" may be defined as "... an array of components designed to accomplish a particular objective according to plan". The components of the system are often referred to as "subsystems".

Ackoff (1961, 28), suggested that the principal characteristics of a system are that it is composed of interacting subsystems, each of which has interests in its own right. For example, the internal control

¹³ Please refer to Chapter 4 for the studies.

pertaining to sales, accounts receivable, inventory, and cash receipts perform important functions when each is considered by itself; however, these four subsystems interact when credit sale is made and the payment received later.

In line with these lines of thought, financial statement audit have also followed this approach of dividing the financial statement into various "transaction cycles" which is similar to the "subsystem" explained earlier.

Arens and Loebbecke (1991) suggested five transaction cycles for the financial statement audit and they are (a) payroll and personnel cycle (b) sales and collection (c) acquisition of payment cycle (d) inventory and warehousing (e) capital acquisition and repayment cycle.

1.2 RESEARCH QUESTION

The purpose of this research is therefore to answer the following question:

DO EAs AND IAs MAKE SIMILAR JUDGEMENTS?

Reliance on this would be possible if it is found that:

1. EAs and IAs make consistent judgements
2. EAs and IAs can reach consensus in their judgement

1.3 PROBLEM STATEMENT

With the increasing responsibilities for both the IAs and EAs, it would be beneficial in terms of time and cost for

EAs to rely on IAs, and vice-versa. The main purpose of this study is thus to see if "EAs and IAs will arrive at the same judgements about the quality of an internal control system that they have to evaluate". The results from this study would serve as evidence that can help to support the idea that EAs should or should not rely on IAs, and vice-versa.

1.4 SIGNIFICANCE OF THE STUDY

It would help to determine the extent of reliance that could be placed by EAs on IAs' reports on internal control. Where internal control reports are published by the Board (or by senior management) and are reviewed by the EAs, the EAs could obtain a degree of reassurance as to the reliability of those reports if the reports had been based on the output of audit work conducted by IAs who are likely to reach similar conclusions to those of EAs. If the judgements of both types of auditors are not significantly different, then there could be increased cooperation between them and this could benefit all parties concerned, namely management, IAs and EAs in terms of the quality of work that could be achieved in less time and cost.

The study can also help to identify factors that the auditor perceived as important in determining the quality of internal control system which would be useful in the context of implementing Cadbury's requirement on internal control reporting.

The nature of auditing judgement has been the subject of considerable research in the United States (Ashton, 1985; Libby and Lewis, 1977 and 1982, etc.) For review, please refer to Chapter 4). Given the dependence on judgement in auditing, it would be important to examine judgement of EAs and IAs in this context.

In fact, Turley and Cooper (1991, 29) has stated that,

Given the overt dependence on judgement to determine the parameters of the audit and their interpretation in terms of evidence requirements, as well as the evaluation of results and formulation of an opinion, it would be desirable to see this research replicated and extended in the United Kingdom.

1.5 AIM AND OBJECTIVES OF THE RESEARCH PROJECT

It has been noted that reliance on IA's work seems a necessity in order to fulfil the new demands required of both EAs and IAs. One of the principal results of the research will be:

TO DETERMINE WHETHER EAs CAN RELY ON THE WORK OF IAs, AND VICE-VERSA.

The research question "Do IAs and EAs make similar judgements?" can be answered through 4 main objectives of the study below:

- 1) whether EAs and IAs reached the same consensus as to the quality of a given internal control system
- 2) whether EAs and IAs were consistent in the ratings of two similar internal control systems
- 3) the effect of certain factors on judgement consensus and judgement consistency for both EAs and IAs, and

4) the judgement model of both groups of auditors

Findings will be discussed according to these four main issues (i.e consensus, consistency, factors affecting consensus and consistency and judgement model of auditors).

Consensus of EAs and IAs which was the main thrust of the study, was looked at in 6 ways:

- 1) consensus in the ratings of the 6 similar cases given to both groups of auditors
- 2) consensus in the ratings of a case using different techniques/ approaches of evaluation
- 3) consensus in the ratings of whether internal control procedures (ICPs) were able to achieve control objectives
- 4) consensus in the ratings of the ability of the ICPs to detect or correct material errors (control risk)
- 5) consensus in the weights (i.e relative importance) given to the ICPs and
- 6) consensus in the ratings and relative weights given by the auditors to the "accounting" controls in comparison with "administrative" controls

To facilitate achievement of these aims, the research had the following approach:

- 1) to undertake literature research (through past research, official pronouncements and auditing literature) to ascertain:

- a) the nature of internal controls
 - b) the increase in reliance on IAs
 - c) importance of judgement to internal control evaluation
 - d) techniques of internal control evaluation
 - e) the position of internal control reports
 - f) influence of the following factors on judgement
 - i) experience level
 - ii) educational level
 - iii) position level in the organisation
 - iv) independence of internal audit
 - v) size of firm
- 2) to undertake a literature review of past research related to the study
- 3) to conduct empirical research to establish the extent of similarity of IAs and EAs in the area of internal control evaluation.

1.6 RESEARCH PROCEDURES

The research has been conducted in two phases:

- a) literature-based study
- b) empirical research

1.6.1 Literature-based study

For the literature-based study, relevant literature relating to internal control evaluation and the position of the internal control report which is a key area in

which IAs and EAs can cooperate was reviewed. This was primarily derived from dissertations, reports of various committees set up by professional bodies, professional promulgations and journal articles. The literature was identified mainly from the following sources:

- i) online database searches of:
 - a) dissertation abstracts (CD-Rom and Aslib)
 - b) article abstracts (ABI information)
- ii) footnotes and references cited in the auditing literature

1.6.2 Conduct of the empirical research

A mail questionnaire using a pre-answered Internal Control Questionnaire (ICQ) for the payroll internal control system was used. There were 8 internal control procedures (ICPs) on each ICQ. The answers to the 8 ICPs on the ICQ were varied to produce 8 different cases. Each auditor received 8 cases which comprised: (a) 6 cases which were similar for all EAs and IAs and (b) 2 cases which were similar for a pair of auditor (one EA and one IA). The 2 cases were made up of (i) 1 case which followed Kempthorne's $\frac{1}{2}$ replicate of 2^8 design and (ii) 1 case which was the repeat of the case in (i).¹⁴

The purpose of the 6 similar cases was to test for "judgement consensus" amongst all auditors, that is to

¹⁴ Please refer to Appendix 5c(i) for the questionnaire.

find out whether the auditors gave a similar rating to the 6 cases.

One of the 6 cases had all the 8 ICPs present and this represented the "ICQ approach" as the case was presented using an ICQ. In addition to that, the same case was presented in two different ways to test for similarity of judgements of auditors using different techniques/ approaches of evaluation.

The first was by means of a control matrix with the 8 ICPs presented on the rows and 5 "control objectives" presented as columns. This is referred to as the "control objectives" (CO) approach in the thesis.

The second presentation also had all the 8 ICPs presented on the rows and one column for the control risk rating. This is referred to as the "control risk" (CR) approach in the thesis. Please refer to Appendix 5cii) for the approaches.

There were two purposes for the 2 similar cases: (a) the case which followed the experimental design was to determine the judgement model of EAs and IAs as a group and (b) the repeat case was to test for "judgement consistency" amongst individual auditors, i.e to find out whether the auditors gave a similar rating to the 2 cases.

The judgement model was determined for each group of auditor using 64 EAs' and 64 IAs' ratings. The judgement model was based on Kempthorne's $\frac{1}{4}$ replicate of 2^8 design. In this design, all main effects and all 28, two cue interactions were estimable. Three cue interactions were not intended to be measured as previous studies (Ashton, 1974; Ashton and Brown, 1980 and Ashton and Kramer, 1980) have indicated that they account for no or negligible interaction. The purpose of using this design was so that the effects of a number of different variables could be investigated simultaneously.

The effect of various variables indicates the degree of influence each variable has upon the final judgement. This is also known as the "main effect" of each variable. In the case of the internal control evaluation, it would be the effect of the 8 ICPs and the three covariates (experience, educational and position level) on the final judgement of auditors.

The effect of interactions among different variables indicates the effect of a combination of two or more of the variables upon the final judgement. This is called "interactions". In the case of the internal control evaluation, it would be the effect of a combination of two or more of the independent variables (8 ICPs and the three covariates) on the dependent variable, i.e the final rating of the auditors on the "visual analog

scale". In other words, the importance of each independent variable depended upon the answer to the other independent variable.

The judgement model was analyzed by means of analysis of covariance with personal profiles of auditors (experience, educational and position level) as covariates and the ICPs as the "other" independent variables.

1.7 EXAMINATION OF THE ISSUES

This section summarizes the variables examined in the study in more detail than was done in Section 1.6.2. Judgement consensus and judgement consistency are also defined. However, further discussion regarding these terms will be made in Chapter 3.

1.7.1 Judgement consistency and judgement consensus in the area of internal control evaluation

The financial statement user is entitled to assume that both the financial statements and the auditor's opinion on those statements were prepared in a consistent manner.
(Smith 1971, 1).

The reporting standard under Generally Accepted Auditing Standards (AICPA 1972, SAS 1, AU Section 150, ¶.02) states that before an unqualified audit report is issued, the auditor should ascertain that the financial statements are prepared according to generally accepted accounting principles (GAAP), that the accounting methods are used in a consistent manner and that appropriate disclosures have been made.

There are 4 types of opinion (APB 1993, SAS 600, ¶32-37) that can be issued, that is unqualified, qualified, disclaimer and adverse.

"Unqualified" opinion is issued when the auditor thinks that the financial statements are prepared according to GAAP, the accounting methods are used in a consistent manner and there are adequate disclosures. In other words, the auditor is adequately confident to say that the financial statements are true and fair.

"Qualified" opinion is issued when the auditor has some reservations regarding the financial statements but still thinks that the financial statements shows a true and fair view.

"Disclaimer" opinion is issued when the auditor does not want to issue an opinion on the financial statements.

"Adverse" opinion is issued when the auditor does not think that the financial statements show a true and fair view.

If auditors are given the same kind of internal control system and the same set of financial statements, different auditors using any approach of evaluation (be it ICQ, CO or CR) would be likely to come out with the same type of opinion. It does not matter what approach

they used as long as at the end of the day their audit opinions are the same or that they are able to reach a "consensus" regarding the quality of financial statements (which is dependent on the quality of internal control system).

If during the next year, the internal control system has not changed much and thus the financial statements would not be much affected, it would be expected that the same auditor would come out with the same type of opinion. In other words, the auditor would be "consistent" in his opinion.

The presentation of consistently-prepared opinions by independent auditors should be of concern to the public accounting profession. It is commonly assumed that financial statement users can distinguish between different "grades" of opinions. (Anderson, Glese and Booker 1970, 525).

... a financial statement user, in making his resource allocation decision, place less reliance on the financial statements in correspondence to the degree to which the audit report is qualified. (Carmichel 1972, 2).

Judgement on the quality of the internal control system would determine the "different degrees of qualifications" to be issued. If different auditors could not reach the same "degree of qualification" (cannot reach a consensus) on the same type of internal control system or if the same auditor could not reach the same "degree of qualification" at two separate times on the same type of internal control system (is not consistent), the results would be that financial statement users would make poor resource allocations.

According to Ashton (1973),

Consistency of internal control judgements is also important to the public accounting firm because the cost and/ or quality of an audit may be in part, a function of the auditor's judgement of the strength of the internal control system, regardless of the controls actually employed or the evidence gathered to evaluate them. Variations in judgement by the same auditor at different points in time or by different auditors at the same point in time will cause the cost and/ or quality of the audit to fluctuate... assuming that all other factors are equal.

Ashton (1973, 25)

One of the ways to test consistency and consensus in judgement is by means of a controlled experiment because in practice, all other factors are not equal.

In this empirical research each case would represent an internal control system. The definitions and the measures of the two variables, "judgement consensus" and "judgement consistency", were measured in the following ways:

"Judgement consensus": agreement amongst auditors on the evaluation of a particular case i.e, would the auditors pass the same judgement regarding the internal control quality of a case given a case of the same nature to evaluate?

"Judgement consistency": agreement of an auditor with himself on the evaluation of a particular case i.e, would an auditor pass the same judgement regarding the internal control quality of a case given two cases of the same nature to evaluate.

Consensus/ consistency will be investigated based on 3 aspects:

1. consensus/consistency amongst IAs
2. consensus/consistency amongst EAs
3. consensus/consistency between IAs and EAs as a group

1.7.2 Techniques/ Approaches of internal control evaluation

...several auditors might judge the effectiveness of a given system of internal control quite differently....This condition develops primarily from the use of different methods of appraisal, but can also arise because auditors place different emphasis on the relative importance of various factors of internal control.
(Brown 1962, 50).

Methods of appraisal can lead to different judgement amongst auditors regarding the quality of a given internal control system. Thus, this issue was also investigated.

An attempt was also made to have the EAs and IAs evaluate the same case using "CO", "CR" and "ICQ" approach.

Under the "CO" approach, the auditors were asked to evaluate the extent to which each of the internal control procedures (ICPs) and the overall internal control system could meet the five control objectives (completeness, existence, rights and obligations, presentation, disclosure and valuation).

The purpose was to see if the evaluation of the overall

internal control system was based on the evaluation made for each ICP (components of the internal control system).

Under the assessment of control risk, the auditors were also required to assess each ICP's and the overall internal control system's ability or potential for detecting or correcting material errors.

Control risk is the risk that a misstatement could occur in an account balance or class of transactions and that could be material, either individually or when aggregated with misstatements in other balances or classes, would not be prevented, or detected and corrected on a timely basis, by the accounting and internal control systems.
(APB 1995a, SAS 300, ¶5).

Again, the purpose was to see if the evaluation of the overall internal control system was based on the evaluation made for each ICP (components of the internal control system).

1.7.3 Description of the judgement formation processes (judgement model) utilised by IAs and EAs in the evaluation of internal control

Auditors might judge the effectiveness of a given quality of an internal control system differently because "auditors placed different emphasis on the relative importance of various factors in internal control" (Brown 1962, 50).

In line with this theory, the purpose of the "judgement model" was to find out which of the 8 ICPs (indicators of internal control strength) were used by the two groups of auditors in evaluating the internal control system. The information obtained from an examination of judgement

formation processes should be useful in resolving a problem (Brown 1962, 50).

If the internal control report is going to be prepared by management as part of the annual report and EAs would be given the task of evaluating or assessing the report, it would be important that the evaluations of IAs and EAs do not differ.

The 8 ICPs were deliberately selected to comprise 4 "administrative" and 4 "accounting" controls. It was the intention to find out if the two groups of auditors placed different emphasis on the two "types" of internal control. Although (as discussed in chapter 2) there is no clearcut definition of the two "types" of controls, auditing literature (Coopers & Lybrand, 1989; Spicer and Pegler, 1985; Auditing guideline 3.204, 1980b and COSO's "Framework", 1992b) seem to point out to the following characteristics of "accounting" and "administrative" controls:

1. "Accounting" control. It comprises the plan of organisation and all methods and procedures that are concerned mainly with, and relate directly to, the safeguarding of assets and reliability of financial records. It achieves the control objectives over "completeness, accuracy and validity". Examples include prenumbering of documents, rotation of duties

and physical security of assets.

2. "Administrative" control. It comprises the plan of organisation and all methods and procedures that are concerned mainly with operational efficiency and adherence to managerial policies and usually relate indirectly to financial records. Examples includes having an organisation chart, accounting procedures and policies adequately documented and variance reports.

1.7.4 Factors that effect judgement consensus and consistency

Previous researches have shown mixed results regarding factors that have an influence on judgement consensus and consistency. Please refer to Chapter 4 for a discussion of these factors.

1.7.4.1 Experience, professional qualifications and position level in the organisation

The three main variables examined in this thesis were:
a) experience level; b) educational level and c) position level in the organisation. These variables were also examined in determining the judgement model of EAs and IAs.

To date there have been varying results regarding the effect of these three variables on judgement consensus and consistency of auditors.

Mautz and Sharaf have emphasized the importance of "experience" on the judgements of the auditors.

When writers discuss the role of judgement in auditing, it is frequently stated or implied that the ability to apply judgement is improved through experience and/ or through association with a fellow auditor who has had a great deal of auditing experience.

(Mautz and Sharaf, 1961, 35).

Mautz also stressed the importance of "experience" and "education" in the development of an "auditing attitude".

What is this auditing attitude without which no man can attain real success in auditing? It is a combination of education, experience, and judgement which provides a frame of mind, a point of view toward his work, that enables an auditor to appraise his problems accurately and to attack them effectively.

(Mautz 1964, 1-2).

Regarding "position levels", Trotman et al. (1983, 291) have stated that they expected differences to occur across the various levels (from junior to partner) because of different weights that each level of management carries in the decision process. This study also examined the effect of "position" levels on judgement consensus and consistency.

1.7.4.2 "Independence" of IAs and "size" of firms

To date, only one research has examined this issue.

Moore (1993) found no effect of "independence" of IAs on judgement consensus. In this thesis, this variable was also explored.

Data on IAs' "independence" was gathered through questions asking: a) the accountability of head of

internal audit; b) whether they were involved in compliance testing; c) whether they made recommendations for improvement in internal control systems; d) whether they were involved with developing detailed proposals for the design of internal controls; e) whether they were involved with the implementation of control changes and f) whether they were involved in administering or operating any internal controls. Please refer to Appendix 5cii) for the questions. The data was analyzed to see if "independence" of IAs will affect judgement consensus and consistency.

Data regarding the "size" of firms was gathered through questions asking: a) firm's turnover; b) number of employees; c) net assets and d) annual profit. Please refer to Appendix 5cii) for the questions. Analysis was then done to determine the effect of "size" of firms on judgement consensus and consistency, that is to determine whether auditors working in "bigger" firms would make more consistent judgements and would agree more (consensus) with each other compared with auditors working in "smaller" firms. This is based on the assumption that "bigger" firms could provide better training facilities and more advanced modules on how to evaluate internal control.

1.7.5 "Accounting" and "administrative" controls

An analysis was also done to determine whether the

auditors showed any preference for "administrative" or "accounting" controls when making their evaluations.

The analysis was based on: a) the weightings (relative importance) given to the two "types" of controls; b) control risk (ability to detect or correct material errors) that can be achieved by the two "types" of controls and c) control objectives that can be achieved by the two "types" of controls.

1.7.6 Completeness, existence and valuation control objectives

It was noted in the auditing literature¹⁵ (COSO, 1992; Coopers and Lybrand, 1989) that "accounting" controls can achieve "completeness, existence and valuation" better than the other two objectives ("rights and obligations" and "presentation and disclosure"). Thus, this issue was also investigated in this thesis.

1.7.7 Judgement insight

Insight in this thesis, refers to the "insight that an auditor has into his own judgement formation processes". Judgement insight was calculated based on the correlation between: a) the auditors' allocation of points to each ICP based on its importance and b) the importance of each ICP as determined by the judgement model.

¹⁵ Please refer to Chapter 2 for a detailed discussion.

According to Ashton (1973),

To the extent that an auditor has a poor understanding of the way in which he formulates his judgements he will be ineffective in transferring his judgement skills to another person-perhaps a trainee in his firm.
(Ashton 1973, 23)

1.8 OUTLINE OF THE THESIS

To achieve the study objectives, the thesis is structured in the following manner:

CHAPTER ONE: OVERVIEW OF THE RESEARCH PROJECT

CHAPTER TWO: PREVIOUS LITERATURE ON INTERNAL CONTROLS AND RELIANCE ON IAS BY EAS.

Highlights the historical background of auditing, authoritative bodies in the accounting profession, controversy in the breadth of definition of internal control, different techniques of internal control evaluation, control objectives, why there should be cooperation between the two groups of auditors, impact of the internal audit function on the external audit, issues that are raised by EAs' reliance on internal audit work and auditing standards and guidelines that have been issued surrounding the topic.

CHAPTER THREE: NATURE OF JUDGEMENT

Reviews the literature on judgement and approach used on judgement research in the past. Research approach and the variables of interest in the current thesis are also explained.

CHAPTER FOUR: PREVIOUS LITERATURE ON INTERNAL CONTROL EVALUATION AND OTHER AREAS INVOLVING ISSUES OF JUDGEMENT

Mainly reviews the previous work done concerning internal control evaluation. The literature was classified according to studies in internal control evaluation, studies in other types of evaluation in "accounting" and "non-accounting areas" and studies on reliance on IAs by EAs. All these studies involved the issue of judgement and most of them used "experimental design" in their approach of study.

CHAPTER FIVE: RESEARCH METHODOLOGY-EXPERIMENTAL DESIGN

Deals with methodology of the experiment. It describes the experimental task and the experimental design. Issues discussed include choice of the payroll subsystem, ICPs selected as indicators of internal control strength, phases of the experiment, sample selection and a description of the judgement model and research instrument. Also discussed are issues such as when the questionnaire was piloted, comments given and changes that need to be done before launching of the primary questionnaire, when the primary questionnaire was sent and the practical difficulties encountered in carrying out the study.

CHAPTER SIX: DESCRIPTION AND ANALYSIS OF RESULTS OF EMPIRICAL RESEARCH

It describes the results of the findings. Discussion of findings is made by means of hypotheses and these

hypotheses are categorised into four main issues:

(a) judgement consensus; (b) judgement consistency;
(c) factors affecting judgement consensus and consistency
and (d) judgement model of EAs and IAs. An attempt is
also made to compare the findings with previous studies.

CHAPTER SEVEN: SUMMARY AND IMPLICATIONS

Provides the study summary, limitations, implications and
suggestion for future research.

1.9 SUMMARY

It has been noted that there has been a growing
importance of the internal audit function during the past
years. A recent influence has been that various bodies
have recommended the inclusion of the internal control
report as part of the financial statements.

Various research studies have been done examining the
similarities of audit judgements. The empirical research
that was used in this study was based on the idea of
Ashton (1973) who examined the judgement formation
process of individual EAs. The present study extended it
further to include the IAs' and EAs' judgement formation
process as a group.

Judgement consensus and judgement consistency are
considered to be the means by which similarity of audit
judgements can be measured. This chapter has outlined the

issues examined in the thesis, research methodology employed and has concluded with an overview of this thesis.

CHAPTER 2

UNDERSTANDING THE MEANING OF INTERNAL CONTROL: IMPORTANT CONTRIBUTIONS BY PROFESSIONAL BODIES, IN THE LITERATURE AND BY RESEARCHERS

2.1 INTRODUCTION

This chapter examines issues surrounding internal control including a consideration and criticism of:

- the diverse and evolving definitions of internal control found in literature;
- the techniques by which internal control may be evaluated;
- the educational and other requirements that have to be met to be an auditor;
- the meaning of audit risk in the context of internal control ("control risk");
- the importance and meaning of independence in auditing¹⁶ and
- how EAs and IAs can better cooperate.

¹⁶ In this thesis, only the independence of IAs was discussed.

A deliberate attempt has been made to use only official pronouncements (especially from professional bodies) and material from auditing textbooks to discuss these issues - except where it has also been found necessary to refer to certain research to support and/or clarify the topic under discussion. Prior research done in this area is discussed mainly in Chapter 3.

2.2 GROWTH OF THE AUDITING PROFESSION IN THE UK

The first Companies Act was introduced by Gladstone in 1844 (Attwood & Stein, 12-13). There had developed a need for an independent examination of accounts to safeguard shareholders' interests in view of the separation between the providers of capital for a business (shareholders) and its management (directors and executives). The rationale for external audit as a prerequisite of effective external control was summed up well by Professor McKenzie in his Foreword to Normanton's book *The Accountability and Audit of Governments*:

Without audit - no accountability; without
accountability - no control; and if there is
no control - where is the seat of power?

Under the Act, registered companies were required to appoint one or more EAs; there was no guidance as to their qualifications nor with respect to their required independence. If at the conclusion of the annual meeting of the company, no EA had been appointed, the Board of Trade was directed to appoint an auditor - a power which still persists.

The 1856 Companies Act, which replaced the 1844 Act, introduced the provision that the EA need not be a shareholder, thus encouraging the development of professional auditors. Today, the rules of the professional accounting bodies whose members are authorised to act as company auditors, expressly exclude an auditor owning or having an interest in shares of the client company.

In the 19th century, EAs' were concerned with the Balance Sheet and not the Profit and Loss account. It was the 1929 Companies Act that extended the EA's report to cover the Profit and Loss account as well; and the 1948 Act extended to the Profit and Loss disclosure requirements.

The 1985 Companies Act dealt more fully with the appointment of EAs and lays down their duties. The current 1989 Companies Act governs the accounting profession in relation to its work as statutory auditors of companies in the UK (in the Republic of Ireland, it is their 1990 Companies Act).

Under the Companies Act the EA is obliged to make a report to the members stating whether, in the EA's opinion, the financial statements show a true and fair view of the company's performance and position.

There are four main professional bodies whose members are

authorized under the Companies Act to audit the accounts of companies, which are

- ICAS (Institute of Chartered Accountants of Scotland, established 1854)
 - ICAEW (Institute of Chartered Accountants in England, and Wales, 1880)
 - ICAI (Institute of Chartered Accountants in Ireland, 1885)
- and
- CACA (Chartered Association of Certified Accountant, 1905).

Two other bodies, CIMA (Chartered Institute of Management Accountants, 1919) and CIPFA (Chartered Institute of Public Finance and Accountancy, 1885) have their specialised areas which lie principally outside external auditing, though CIPFA is seeking approval for its members to act as EAs of companies.

Woolf (1990) stated,

Members of CIPFA are largely concerned with accounting and audit work in local government, as well as in hospitals, schools and other institutions within the public sector. CIMA members are highly qualified to act in industry, their natural compass, in view of their expertise in accounting and costing systems, budgeting, financial and investment decision-making, and other skills within the full management range, not excluding the increasingly complex area of industrial law and accountability. The skills of ICA and CACA membership are less specialized, and provide the full range of professional work, both in public practice and as directors and employees in commerce and industry. (Woolf 1990, 9)

All the six above bodies form the CCAB (Consultative Committee of Accountancy Bodies) whose purpose is to promote cooperation among them.

In the context of this thesis it is a matter of regret that the Institute of Internal Auditors (IIA), which is the only professional body to cater exclusively for IAs, is not a member of CCAB: a forum which would have the potential to promote cooperation and coordination between IAs and EAs and which would have potential benefit to the work of both types of audit as well as to their clients. The overall finding of this thesis is that IAs and EAs have significant potential to rely on each others work, conclusions and even opinions relating to internal control. This is because the study finds that IAs and EAs come to closely similar judgements when they review similar systems of internal control. Yet the Auditing Practices Board (APB) of CCAB, which develops auditing standards, has no representatives from the IIA even though it has voting representatives from a number of "audit user" bodies (see later in this chapter) - and so there is insufficient opportunity to develop mature official guidance on coordination between EAs and IAs, and reliance by EAs upon internal audit (and vice versa). The findings of this research study would be useful input into such a process. It is very unusual for the IIA to be invited to nominate a representative to join even a working party of the APB: in 1995 this happened for the

first time in the working party which is developing APB guidelines for IAs.

CIPFA and the IIA have for years contested for the leadership of internal auditing in the public sector within the UK; and many IAs have professional membership of one or more of the other CCAB bodies and may not have membership of the IIA as well: it is not unreasonable that the CCAB's APB should seek to provide general guidance to its members who are IAs, and also provide guidance to its EA members on placing reliance upon internal audit. It is confusing and counter-productive to effective auditing that both the IIA and the CCAB are independently active in developing guidance for IAs. It will not be easy to resolve this problem, but it is necessary that it should be resolved. Forward looking members of the profession foresee a time when a larger part of the statutory audit task will be performed by IAs with EAs acting as assessors (ICAS, 1993, "Auditing into the Twenty-First Century"). If this is to happen the level of coordination between the two audits will need to be enhanced and in the UK it is unlikely to be so enhanced without higher levels of coordination between the CCAB and the IIA. The challenge is all the greater because the Standards of the IIA have worldwide applicability whereas the remit of CCAB extends to the UK only. Nevertheless, CCAB accounting and auditing standards and guidelines are coming closer into line with

international ones. It is the policy of the APB to endeavour to be consistent with the International Auditing Guidelines issued by the International Federation of Accountants through their International Auditing Practices Committee.

A higher level of coordination has been achieved in the US. The IIA was one of the sponsoring bodies of the Treadway Commission and the subsequent Internal Control - Integrated Framework project the latter of which has had such a profound impact upon the development of our understanding about the nature of internal control and internal control review¹⁷. There were four other professional bodies who belonged to the Committee of Sponsoring Organizations of the Treadway Commission (COSO) including the American Institute of Certified Public Accountants (AICPA) and the American Accounting Association. The IIA was not represented on the broadly equivalent UK committees which produced the so-called "Cadbury Report" and "Rutteman Report", and so were able to exert influence only by responding to exposure drafts and by the influence they had on the US developments which have been adopted to a significant extent in the UK.

¹⁷The impact has been widely felt throughout the world. For instance, in the U.K. the "Rutteman Report" on Guidance to Directors on Reporting on Internal Control (December 1994) follows closely the five COSO "components" [COSO] or "criteria" [Rutteman] of internal control systems.

Likewise, to illustrate further that the IIA is more influential at a senior level in the US, IIA. Inc. is one of three host organizations of the bi-annual World Congress of Accountants sponsored by the International Federation of Accountants (the other two being the AICPA and the US Institute of Management Accountants).

In 1994 the CACA proposed that the IIA together with other bodies such as the Institute of Taxation should become associate members of CCAB, but to date that proposal has not been advanced.

The predecessor body to the APB was the Auditing Practices Committee (APC), established by CCAB in 1976. It issued its first Discussion Drafts for Auditing Standards and Guidelines in 1978. Auditing Standards and Guidelines issued by the APC covered much of the core of the subject and are also essential material for auditing students and practitioners. In the explanatory foreword of Auditing Standards and Guidelines issued by the APC (1989),

Auditing Standards prescribes the basic principles and practices which members of the various accounting bodies will be expected to follow in the conduct of any audit.

(APC 1989, Explanatory Foreword, ¶8)

On the other hand, Auditing Guidelines are not intended to be definitive and are not intended to form part of the Auditing Standards.

Auditing Guidelines have the same status and purpose as the explanatory notes contained in some Auditing Standards and they provide guidance on:

- (a) procedures by which the Auditing Standards may be applied
 - (b) the application of the Auditing Standards to specific items appearing in the accounts
 - (c) the application of Auditing Standards to particular sectors, industries and service organisations
 - (d) specific types of reporting engagements other than financial statements audit
 - (e) other matters relating to the proper performance of audit work
- (APC 1989, Explanatory Foreword, ¶13)

In terms of their respective relative degrees of authority, the auditing standards and guidelines promulgated originally by APC (and now in their revised and expanded form by APB) correspond to the standards and guidelines of the IIA. Members of the latter Institute, per their Code of Ethics,

shall adopt suitable means to comply with The Standards and Members ... in violation of the ... Code ... shall be subject to forfeiture if their membership of The Institute.

On the other hand, the IIA's Guidelines are "the most generally accepted" ways of meeting the requirements of the Standards (IIA: "Administrative Directive No. 1, 1991) but are not obligatory. However, in terms of their relative detail, there is a significant difference between the APB standards and those of the IIA. The latter has five general and twenty-five specific standards - each concisely stated in a single sentence. They are expressed in such terms as to allow much discretion as to how they will be observed and to make it

difficult to fault a member for non-observance. The APB's standards are in more detail and cover essential procedures as well as basic principles (APB: "Scope and authority of APB Pronouncements", May 1993).

One of the six sections of the APB's Statements of Auditing Standards is devoted to "Accounting systems and internal control". The APC's "Guidance for Internal Auditors" (June 1990) is omitted from that section pending its redevelopment by an APB working party which is currently meeting: that statement had the status of a guideline but under consideration is whether it should be replaced by a Standard which would be obligatory for CCAB members working as IAs or with overall responsibility for the direction of internal audit functions. If it emerges as a Standard there will be a major conflict of jurisdiction over internal auditing between CCAB and the IIA. At present the only content of the APB's Statements of Auditing Standards which directly relates to internal auditing is their guidance to EAs on "Considering the work of internal audit". Additional content will be developed in the section on "Accounting Systems and Internal Control".

The overlap of CCAB and the IIA in the area of standards and guidelines has been discussed in some detail as it impacts upon the cooperation and coordination which may be achieved between IAs and EAs. EAs are answerable to a

CCAB body whereas IAs may be answerable to either a CCAB body or the IIAs, or both. It is desirable that there should be consistency of content in auditing standards and guidelines relating to internal audit and internal control - from whatever quarter they emanate - and preferable that there should be one set of standards and guidelines subscribed to by all bodies. Disparity between them weakens the potential for the cooperation and coordination which has always been desirable and which the findings of this thesis indicate inter alia is feasible. Furthermore, disparity between the Standards and Guidelines of different professional bodies translates itself into different training requirements and therefore levels and types of attainment which differ between the members of one professional body and another. To date, it is probable that the finding of this thesis that IAs and EAs are likely to come to closely similar internal control judgements when they evaluate a system, has in part been a consequence of closely similar backgrounds, including training, of the two types of auditor. If their standards and guidelines were to diverge markedly in the future, the same conclusions might not be drawn from a research study conducted at a future date - and an opportunity for harmonious cooperation between the two audits might have been lost. So, for these strategic reasons, it is desirable that a single set, or compatible sets, of standards and guidelines are developed into the future. This becomes

particularly clear if we consider the implications that EAs in the twenty-first century might become assessors of work done by IAs, which was touched on earlier in this chapter. It becomes very desirable that the IIA in the UK should be a full member of CCAB.

The geographical spread of the auditing standards setting bodies enhanced the problem but may not be serious as national standards are brought more into line with each other - as discussed earlier in this chapter.

The APC of the CCAB published its first three Auditing Standards in June 1980 which were respectively entitled "The Operational Standard", "The Audit Report" and "Qualifications in Audit Reports". The latter two were revised and combined in a single Standard in 1989 titled "Audit Report".

The IIA's Statements on Internal Auditing Standards (SIASs) are issued both to explain changes to the specific Standards¹⁸ and/or guidelines within the Standards for the Professional Practice of Internal Auditing, and also (and more commonly) to elaborate upon the Guidelines. They can be considered as authoritative interpretations of the Standards.

¹⁸In practice, the five general and twenty-five specific standards of the Institute of Internal Auditors have hardly changed since they were introduced in 1978.

On 1 April 1991, a new Auditing Practices Board (APB) was set up to replace the old APC. The APB makes three categories of pronouncements:

- Statements of Auditing Standards (SASs)
- Practice Notes
- Bulletins

According to MacLochlain and Punch (1995),

This new board differs from its predecessor in that the voting membership is evenly divided between practising EAs and user representatives (including nominees of the Bank of England, the London Stock Exchange, the National Audit Office, the Audit Commission, the Securities and Investments Board, the UK Department of Trade and Industry and the Irish Department of Enterprise and Employment). (MacLochlain and Punch 1995, 3)

SASs contain the basic principles and essential procedures which are the auditing standards themselves and with which at present EAs only are required to comply. Practice Notes are guidance: they assist EAs in applying Auditing Standards of general application to particular circumstances and industries. Bulletins are issued to provide timely guidance on new or emerging issues. The Auditing Standards and Guidelines determined by the APC were adopted by the APB until such time as they were amended or superseded.

UK professional bodies are also members of international accounting organisations such as:

- IASC (International Accounting Standards Committee, 1973), to issue IAS to promote the world wide

acceptance and observance of basic standards in the presentation of audited accounts and financial statements.

- FEE (Federation des Experts Comptables Europeens)
- IFAC (International Federation of Accountants, 1977) which issues International Auditing Guidelines (IAG) on Auditing through IAPC (International Auditing Practices Committee).

The Accountancy Bodies have agreed to incorporate the principles on which IAG are based into their own Auditing Standards and Guidelines when, and to the extent that they are practicable. IAG are authoritative in the UK only to the extent that they have been incorporated into the pronouncements of the CCAB.

Other UK bodies concerned with Auditing and Accounting are:

- Association of International Accountants (AIA, 1928)
- Society of Company and Commercial Accountants (SCCA, 1923)
- Association of Accounting Technicians (AAT, 1980)
- Institute of Chartered Secretaries and Administrators (ICSA, 1891)

Dunn (1991) discuss the educational route to becoming an auditor as follows:

It takes several years to become a qualified accountant. While each body has slightly different rules, in general one has to obtain the minimum entry requirements (typically a degree in the case

of ICAEW and ICAS) and then complete a period of practical training of roughly three years' duration. Students must pass a series of demanding examinations during the training period. Thus, school-leavers seeking a career in accountancy would have to commit themselves to a course of study and training which could take six years or more to complete....

Each of the professional bodies insists that its members do not provide professional accounting services unless they are in possession of a practising certificate. ..In general, one has to obtain at least two years of appropriate experience before being granted a practising certificate ... (Dunn 1991, 10).

It is a matter of some concern with respect to harnessing the full potential for cooperation and coordination between internal and external auditing which this thesis suggests is possible, that members of The IIA are the exception amongst auditors in that they do not require their members to have a practice certificate.

Furthermore, many of them joined their Institute without studying for and passing examinations. Indeed there is no statutory requirement for most UK enterprises (such as companies, for instance) to have an internal audit function although it is frequently recommended (such as in the Cadbury Report, 1992) and is often mandatory requirement through statutory instrument or regulation - for instance in local government, health authorities, universities, building societies and building associations.

Companies and many other types of enterprise which do

have internal audit need not staff the internal audit, nor head up the function, with a member of staff who is subject to the discipline of either a CCAB body or of the IIA. In these respects it could be said that internal auditing is less developed professionally than is external auditing, is less likely to be conducted to uniform standards, and may therefore be the less reliable partner when external audit seeks to place reliance upon internal audit, than vice versa.

Internal auditing developed much later than external auditing. According to Chambers, Selim and Vinten (1990):

The main impetuses in their growth appear to have been associated with times of economic restraint when managements, having less opportunity to increase profits by increasing sales, have sought to do so by controlling costs. It is probable that internal auditing has been seen as an effective agent for this purpose.

(Chambers, Selim and Vinten 1990, 4).

Some evidence suggests that the most recent recession may have been an exception in that internal audit provision often has been cut back in many businesses during this recession as part of the general processes of very significant downsizing and empowerment. To some extent at least this must have been balanced by the positive impact upon internal audit of the new emphasis upon corporate governance and internal control reporting.

Empowerment suggests that line management and staff

themselves should have a role in assessing the effectiveness of their own systems of internal control, and in some companies this has been at least the reason cutting back or cutting out the internal audit function. Sawyer (1981) said that:

Internal auditors do what management would do - if management had the time and knew how.

COSO and Rutteman both identify the monitoring of internal control as an essential part of the internal control framework. Management is responsible for internal control, and management may conduct this monitoring for themselves. But in the past many enlightened enterprises have delegated this monitoring to internal audit who do it on management's behalf. Internal audit has the time and the expertise to audit. By delegating the task to IAs, management is endeavouring to ensure that it is done - and that it is done professionally. It is also likely to be done more objectively if done by an internal audit function as line management and their staff may be too close to their systems to evaluate them dispassionately.

On the other hand a dedicated internal audit function is costly to maintain and there is the risk that line management and staff feel they have not only delegated the authority to review internal control to internal audit but have delegated the responsibility for internal

control to internal audit as well - which is very unsound and risky.

Control self assessment (CSA) is a response to these concerns (IIA - UK, 1995). Existing alongside internal audit, or sometimes as an alternative to it, it empowers line management and their staff to review their internal control arrangements themselves in a highly participative way. It has been found not to work well in highly autocratic businesses or in parts of businesses which are highly autocratic. IAs may have misgivings about CSA but they should hardly discourage its introduction into a business - in particular because it is healthy that line management and staff should take "ownership" of internal control review. CSA has generally been found to need internal audit to act as its facilitator or champion, but the risk is that if internal audit "owns" and "manages" the programme then internal audit assumes executive authority for it over line management. Internal audit is also not then well placed to advise senior management and the audit committee as to whether the CSA programme is effective and its results reliable. A significant threat to the medium to long term effectiveness of CSA is that line management and staff become demotivated to repeat their internal control evaluation perhaps annually or somewhat less frequently. They may consider that since they did the exercise a year or two before, there is less need to approach it conscientiously the second time round.

CSA is sometimes being termed Control Risk Self Assessment (CRSA) which stresses the importance of risk evaluation in any internal control framework. Control should be tailored to risk. Sometimes CSA is called Self Assessment Programme (SAP) - which broadens its potential scope beyond the review of internal control to include quality, environmental and other issues as well.

The non-mandatory role of internal audit in many enterprises, an internal audit role and scope which varies between enterprises, the increasingly popular hiving off of some or all of internal control review to line management and staff in a control self assessment process, and the downsizing of many internal audit functions - all represent challenges to the extent to which EAs in practice will be able to co-operate with internal audit in arriving at their view as to the effectiveness of the internal controls which are pertinent to their external, statutory audit.

On the other hand, the advent in the Cadbury Report of EAs reporting on directors' published reports on internal control does indicate that EAs are likely to have a broader interest in more aspects of internal control in the future - more closely corresponding to the broader scope of internal auditing. In this sense, there will therefore be more incentive and scope for EAs to rely on the results of IAs' reviews of internal control than has

been the case in the past when EAs often have been able to obtain their audit reassurance while by-passing any reliance on internal control. In the future they will not be able to by-pass internal control as they will be reviewing and reporting upon the directors' published internal control report. It is possible that the scope of the directors' report which the EAs will review and report upon may be much wider than the internal controls which relate to the reliability of the published financial statements ("Internal Financial Control Effectiveness", The APB, 1995e; "Disclosures Relating to Corporate Governance", The APB, 1995d; Chambers, A.D, 1995b).

Already the scope is to some extent wider as it includes the internal financial controls which contribute to the reliability of financial information used within the business and also the internal controls which contribute to the safeguarding of assets.

It is useful to take a brief look at the development of the IIA:

The IIA was established in the United States in 1941 with 24 members. In 1948, a Chapter was started in London, and five other UK Chapters started shortly afterwards. By 1965, the Institute had 75 Chapters worldwide with 6,000 members and currently has over 100 Chapters with 27,000 members, over 2,400 of whom are in the United Kingdom (Chambers, Selim and Vinten 1990, 20)

By 1995, the IIA had over 51,000 members worldwide and over 3,700 in the UK, a recent decline from over 4,000. As mentioned earlier in this chapter, many IAs possess the same professional qualifications as EAs, such as CACA, CIMA and CIPFA. However, IIA offered its first professional qualification in the United Kingdom and Eire in 1981, and now many IAs also have this additional qualification. People passing the examinations have been awarded the "Member of Institute of Internal Auditors" (MIIA) and the right to add the letters after their names. The IIA (UK) qualification scheme is currently in the process of significant revision: in its revised form it will be possible for a CCAB-qualified person to more readily qualify by examination as a member of IIA than was the case previously - which should assist in developing common approaches to internal control review between CCAB-qualified EAs and CCAB-qualified IAs since an increasing proportion of IAs might hold both a CCAB and the IIA qualification by examination.

2.3 IMPORTANCE OF AN AUDIT

Auditing Practices Committee (1989, ¶2) defined an independent audit as:

The independent examination of, and expression of an opinion on, the financial statements of an enterprise.

The work of the EA is directed towards the main object of representations on the financial statement. EAs approach this task by:

- proving "completeness, accuracy and validity" of the financial statements and by testing the accuracy of the underlying records on which they are based
- examining reliable, relevant and sufficient evidence of the existence, ownership and valuation of assets and liabilities.
- reviewing the overall position shown by the financial statements.

Thus independent auditing can be said to be the review of the work of others, not the original performance of that work. In this sense, reliance by EAs upon internal audit extends the former's review of the work of others - or adapts it if to some extent their use of internal audit becomes alternative to the approach they have generally taken in the past.

EAs collect various forms of evidence on which to base their opinion. In fact, Mautz and Sharaf (1985, 86) considered independent auditing to be composed of two basic functions: the "evidence-gathering" function and the "evidence-evaluation" function. In order to fulfil these functions, EAs are frequently encouraged to rely upon their "professional judgement". Mautz and Sharaf have stated that the approach of EA includes the following components:

1. Restriction of interest and inquiry primarily to matters on which judgement is requested
2. Adoption of a position of impartiality in formulating and expressing judgements

3. Basing judgement formation and expression on such evidence as is reasonably available.
(Mautz and Sharaf 1985, 22)

Although some amount of judgement is required in the "evidence-gathering" portion of audit work, a review of basic auditing textbooks indicates that a fairly wide consensus exists concerning the types of evidence that should be collected in a given situation and the techniques for collecting that evidence.

On the other hand, the EA's "evidence-evaluation" function is more difficult to define precisely than is the "evidence-gathering" function.

Looking at the area of internal control evaluation for example, EA is required to gather evidence regarding the system of internal controls through inquiry, observation, written documentation, etc and then evaluate the evidence in order to come out with an opinion as to the effectiveness of the system of internal controls. The "evidence-evaluation" function (i.e evaluation of the effectiveness of the system of internal controls) requires EAs to exercise their professional judgement.

The examination of the effectiveness of internal controls may be an important thrust or "backbone" of an audit. If the internal control system is satisfactory, then one of the outputs from the system (the financial statements) is more likely to be reliable in showing a "true and fair view". An assessment of these controls may be made by EA

in order to determine the volume of detailed checking necessary to enable the discharge of the primary external audit function.

SAS 300 (APB 1995a, ¶11) requires that the "auditor assess the adequacy of the accounting system as a basis for preparing the financial statements".

It is not a requirement of the auditing standards to have the EAs evaluate the internal control system, if they seek to conduct a "non-reliance" audit (not to rely on the internal controls system of the client). However, according to Porter (1994, 22), usually EAs are required to have a general feeling regarding the quality of internal control system in order to plan their audit work (and their Standards stipulate this) and also to be able to produce a management letter¹⁹ at the end of the audit. Furthermore, with the requirement noted above that directors have to report publicly on their system of internal financial control and EAs are required to review and report on this directors' internal control report, it becomes unavoidable that EAs learn about the internal control system even if they chose not to rely on the internal control system to any great extent in arriving

¹⁹SAS 610 [March 1995] has dropped the term "Management Letter" in favour of "Reports to directors, including any audit committee, or to management, at an appropriate level, of weaknesses in accounting and internal control systems and other matters", ¶1. However, not surprisingly, the term "Management Letter" is still widely understood.

at their opinion as to whether the year-end financial statements are true and fair. If control has been reviewed by IAs it would be constructive if EAs were able to place reliance on their work.

As stated in a discussion paper titled "Internal Financial Control Effectiveness" (APB, 1995e)

Since 1990, in both Canada and the United States, generally accepted auditing standards have been revised to require auditors to have some understanding of internal control systems on all audits. It is no longer acceptable for auditors, in those countries, to study and evaluate only those internal controls on which they expect to be able to rely (which in essence is the present situation in the United Kingdom).
(APB 1995e, "Internal Financial Control Effectiveness", 5)

SAS 300 (APB 1995a, ¶28) requires EAs to ascertain and evaluate internal control system only if they expect to be able to rely on it.

In the context of the development of control self assessment, earlier in this chapter was a recognition that the responsibility rests with management to determine the nature and extent of the system of internal control within a business (SAS 300, APB 1995a, ¶8). To help management carry out this responsibility, an internal audit department is often set up in an organisation.

SAS 500 (APB, 1995c) states that,

"Internal audit" means an appraisal or monitoring activity established by management and the directors

for the review of the accounting and internal control systems as a service to the entity. It functions by, amongst other things, examining, evaluating and reporting to management and the directors on the adequacy and effectiveness of components of the accounting and internal control systems.
(APB 1995c, SAS 500, ¶13)

The CIPFA's definition is as follows:

Internal audit is an independent appraisal function within an organisation for the review of activities as a service to all levels of management. It is a control which measures, evaluates and reports upon the effectiveness of internal controls, financial and other, as a contribution to the efficient use of resources within an organisation.
(CIPFA 1979).

Thus, it can be concluded that an internal audit department is given the task by management to look at the effectiveness of an internal control system at least in part to contribute to the efficient and economical use of resources.

2.4 DEFINING INTERNAL CONTROL

Attempts to define internal control satisfactorily have been made over several decades. In this section, the definitions of internal control in official pronouncements and auditing literature are explored.

2.4.1 Official Pronouncements

According to SIAS 1 (IIA, 1983),

"Controls" were defined early in the evolutionary process of organisational management as mechanisms or practices used to prevent or detect unauthorised activity. The purpose of controls was later expanded to include the concept of getting things done. Current usage leans toward any effort made to enhance the probability of accomplishing objectives (IIA 1983, SIAS 1, 1).

SIAS 1 came out with guidelines as to the nature of control and roles played by the participants as follows:

Internal auditors examine and evaluate the planning, organising, and directing processes to determine whether reasonable assurance exists that objectives and goals will be achieved. Thus, all systems, processes, operations, functions, and activities within the organisation are subject to internal auditing's evaluations.

External auditors evaluates "internal accounting control" within the parameters stated in their generally accepted auditing standards. (IIA 1983, SIAS 1, 3).

As can be seen from the definition above, IAs have the responsibility of reviewing whether the whole system of internal control is working economically, effectively and efficiently, whereas EAs may review that the internal control system in place would lead to the preparation of financial statements which are "true and fair". Thus the scope of IAs is much broader than that of EAs.

To date in the US and UK, through the efforts of various committees, internal control has been defined and redefined so that there is now more of a common meaning attached to it.

The main definitions of internal control from as early as 1948 to the final reports on the matter produced recently by the committees in the US and UK²⁰ are explored in the following pages. It can be seen from the evolution of the definitions that since 1958 there has been wide

²⁰In the UK, the definition was finalised in 1994. In the US, it was finalised in 1992.

acceptance of the division of internal control into "accounting" and "administrative" controls - a division we have made use of in the empirical study of this thesis.

The division of internal control between "accounting" and "administrative" control is not without its conceptual problems. It came about as a reaction by EAs in the US to the very broad scope of internal control contained within the 1948 definition. EAs considered there were large parts of a business's internal control system which, being operational as distinct from accounting-oriented, were not important to them in the development of their opinion as to whether or not the year-end financial statements were true and fair. They ensured that this was acknowledged in their professional body's 1958 and subsequent definitions of internal control. As recently as September 1992²¹ the distinction was authoritatively confirmed not so much in the new definition of internal control as in the acknowledgement that the EA's interest in internal control may amount to a "directed focus" only.

In 1948 the Committee on Auditing Procedure made a comprehensive study of internal control and published its results in 1949 as a special report entitled "Internal

²¹COSO: Internal Control - Integrated Framework

Control-Elements of a Coordinated System and its Importance to Management and the Independent Public Accountant". In that special report, internal control was defined as follows:

Internal control comprises the plan of organisation and all of the coordinate methods and measures adopted within a business to safeguard its assets, check the accuracy and reliability of its accounting data, promote operational efficiency and encourage adherence to prescribed managerial policies. This definition possibly is broader than the meaning sometimes attributed to the term. It recognises that a system of internal control extends beyond those matters which relate directly to the function of the accounting and financial departments. Such a system might include budgetary control, standard costs, periodic operating reports, statistical analyses and the dissemination thereof, a training program designed to aid personnel in meeting their responsibilities, and an internal audit staff to provide additional assurance to management as to the adequacy of its outlined procedures and the extent to which they are being effectively carried out.
(AICPA 1949)

Several Statements on Auditing Procedure (SAPs), were also issued in the United States regarding the matter. Statement on Auditing Procedure (SAP) 29, "Scope of the Independent Auditor's Review of Internal Control" issued in 1958 gave another definition of internal control as the definition given in 1949 Internal Control report was not easily interpreted. It was the 1958 definition that subdivides internal control as comprising of accounting and administrative controls.

SAP 29 (AICPA, 1958) states that,

Internal control can be divided into 2 types:
a) Accounting controls comprise the plan of organisation and all methods and procedures that are concerned mainly with, and relate directly to, the safeguarding of assets and the

reliability of financial records. They generally include such controls as the systems of authorizations and approval, separation of duties concerned with record keeping and accounting reports from those concerned with operations or asset custody, physical controls over assets, and internal auditing

- b) Administrative controls comprise the plan of organisation and all methods and procedures that are concerned mainly with operational efficiency and adherence to managerial policies and usually relate only indirectly to the financial records. They generally include such controls as statistical analyses, time and motion studies, performance reports, employee training programs and quality controls.
(AICPA 1958)

The subdivision of internal control into "accounting controls" and "administrative controls" was made for the purpose of clarifying the scope of study contemplated under generally accepted auditing standards (GAAS). The Committee's conclusions in that respect were incorporated in SAP 33 in 1963 as follows:

The independent auditor is primarily concerned with the accounting controls. Accounting controls ... generally bear directly and importantly on the reliability of financial records and require evaluation by the auditor. Administrative controls ... ordinarily relate only indirectly to the financial records and thus would not require evaluation. If the independent auditor believes, however, that certain administrative controls may have an important bearing on the reliability of the financial records, he should consider the need for evaluating such controls. For example, statistical records maintained by production, sales, or other operating departments may require evaluation in a particular instance.
(AICPA 1963)

In this thesis, the two types of subdivision of internal control is used. SAP 54 (AICPA, 1972) was issued to clarify the definition of internal control contained in SAP 33 (AICPA, 1963). It states:

Administrative control, includes but is not limited to, the plan of organisation and the procedures and records that are concerned with the decision processes leading to management's authorization of transactions. Such authorization is a management function directly associated with the responsibility for achieving the objectives of the organisation and is a starting point for establishing accounting control transactions.

Accounting control comprise the plan of organisation 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:
 - i) to permit preparation of financial statement in conformity with GAAP or any other criteria applicable to such statements and
 - ii) 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 the existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

(AICPA 1972)

In the UK, there is a similar understanding about the nature of internal control. Until the "Rutteman Report" [December 1994] the generally accepted UK definition of internal control had been in accordance with what is now SAS 300 (APB, 1995a) which continues to define an internal control system as,

"Internal control system" comprises the control environment and control procedures. It includes all the policies and procedures (internal controls) adopted by the directors and management of an entity to assist in achieving their objective of ensuring, as far as practicable, the orderly and efficient conduct of its business, including adherence to internal policies, the safeguarding of assets, the prevention and detection of fraud and error, the accuracy and completeness of the accounting record, and the timely preparation of reliable financial information. Internal controls may be incorporated within computerised accounting systems. However, the internal control system extends beyond those matters which relate directly to the accounting system.
(APB 1995a, SAS 300, ¶8)

Other definitions include International Auditing Guidelines 6 (Malaysian Institute of Accountants (MIA) and Malaysian Association of Certified Public Accountants (MACPA), 1987)²² which states that internal control is:

The plan of organisation and all the methods and procedures adopted by the management of an entity to assist in achieving management's objective of ensuring, as far as practicable, the orderly and efficient conduct of its business, including adherence to management policies, the safeguarding of assets, the prevention and detection of fraud and error, the accuracy and completeness of the accounting records, and the timely preparation of reliable financial information. The system of internal control extends beyond those matters which relate directly to the functions of the accounting system.

(MIA and MACPA 1987)

In summary, there is broad agreement between the countries (US, UK and Malaysia) that internal control has four main objectives, i.e (a) safeguarding of assets, (b) reliability of accounts (c) operational efficiency and (d) achievement of goals.²³ Also, that there are two subdivisions of internal control. For example, both SAS

²² International Auditing Guidelines (IAGs) are issued by the International Auditing Practices Committee (IAPC) of the International Federation of Accountants (IFAC). The Accounting profession in Malaysia is influenced strongly by MIA and MACPA and both of the bodies will approved the IAGs for adoption. Where there are significant differences between the provisions of an IAG and Malaysian auditing practices, additional guidance will be given on such differences with a view to achieving harmonisation. MIA also produces Malaysian Auditing Guidelines (MAGs) which are intended to cover topics not dealt with in an IAG or topics where particular features of the Malaysian environment warrant a domestic standard.

²³ As mentioned in Chapter 1, Section 1.1.1 the five objectives of IIA includes all the four objectives with an additional objective of compliance with policies, plans, procedures, laws and regulations.

300 and IAG 6 both stress that internal controls "extends beyond those matters which relate directly to the accounting system".

In the 1990's the US (COSO) and UK (Cadbury) have come out with another definition of internal control. COSO invited Treadway to head a commission of enquiry as a result of the growing concern about fraudulent financial reporting of companies and hence the Treadway Report was issued in 1987. Treadway recommended that management should include a report on internal control with their published financial statements. However, adoption of this aspect of the report was deferred pending clarification of the definition of internal control and how it should be reported upon. To date, it looks as if compliance is going to be a voluntary, but frequently followed practice in the US. To provide for the next task of clarifying the definition of internal control, COSO funded a further project, the fieldwork of which was conducted by Coopers & Lybrand, which led to the publication of the Internal Control - Integrated Framework by AICPA in September 1992.

Thus in 1992 in the United States, COSO came out with an elaborate and lengthy treatise on internal control in its report titled "Internal Control -Integrated Framework".²⁴ Since then, their definition is proposed to be

²⁴ The report has 4 volumes: a) Volume 1- Executive Summary; b) Volume 2- Framework; c) Volume 3- Reporting to External Parties and d) Volume 4- Evaluation Tools.

incorporated in SAS 55 and other SAS's which involve the definition of internal control. Proposed SAS 55²⁵ defines internal control as follows:

Internal control is a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the following categories: (a) reliability of financial reporting; (b) compliance with applicable laws and regulations and (c) effectiveness and efficiency of operations.

An entity's internal control structure²⁶ consists of the following five components:

- Control environment - The control environment sets the tone of an organization, influencing the control consciousness of its people. It is the foundation for all other components of the internal control structure, providing discipline and structure.
- Risk assessment - Risk assessment is the entity's identification and analysis of relevant risks to achievement of its objectives, forming a basis for determining how the risks should be managed.
- Control activities - Control activities are the policies and procedures that help ensure management directives are carried out.
- Information and communication - Information and communication are the identification, capture, and exchange of information in a form and time frame that enable people to carry out their responsibilities.
- Monitoring - Monitoring is a process that assesses the quality of the internal control structure's performance over time.

(AICPA 1995, Proposed SAS 55, ¶6 and 7).

"Control environment" is the foundation for all other components of internal control providing discipline and structure. It embraces factors such as: integrity and ethical values; competence of the entity's people; board of directors or audit committee; management's philosophy

²⁵ It is similar to COSO's (1992b, "Internal Control-Integrated Framework, Framework") definition.

²⁶ In the Statement, "internal control" is also referred to as "internal control structure".

and operating style; organisational structure; the way management assigns authority and responsibility and human resource policies and practices.

"Risk assessment" refers to risks that come from external and internal sources. A precondition to risk assessment is the establishment of objectives linked at different levels and internally consistent. Risk analysis is the identification and analysis of relevant risks to achievement of the objectives, forming a basis for determination of how the risks should be managed.

"Control activities" are the policies and procedures that ensure management directives are carried out. They help ensure that necessary actions are taken to address risks to achieve the entity's objectives. Control activities occur throughout the organisation at all levels and in all functions. They include approvals, authorizations, verifications, reconciliations, reviews of operating performance, security of assets and segregation of duties.

"Information and communication" refers to the fact that pertinent information must be identified, captured and communicated in a form and time frame that enables people to carry out their responsibilities. Information systems produce reports to run and control business. According to

the proposed SAS 55), it

... consists of the methods and records established to identify, assemble, analyse, classify, record and report entity transactions (as well as events and conditions) and to maintain accountability for the related assets and liabilities.
(AICPA 1995, SAS 55, ¶11).

"Communication" takes such forms as policy manuals, accounting and financial information and can be communicated orally or through management actions.

"Monitoring" is a process of ensuring that all management policies and procedures are being adhered to in order to achieve the entity's goals and objectives. It includes supervision of management.

In summary, COSO (1992b) states that,

The control environment provides an atmosphere in which people conduct their activities and carry out their control responsibilities. It serves as the foundation for the other components. Within this environment, management assesses risks to the achievement of specified objectives. Control activities are implemented to help ensure that management directives to address the risks are carried out. Meanwhile relevant information is captured and communicated through out the organisation. The entire process is monitored and modified as the conditions warrant.
(COSO 1992b, "Framework", 13)

Internal control exists to provide management with reasonable assurance (but not an absolute guarantee) of achieving a number of objectives. It is perfectly reasonable to take the view that the reliability of the financial statements is one objective of internal control and that operational effectiveness is another objective

of internal control. It is less obvious that the controls which exist, or should exist, within the business can themselves be classified between those which are "accounting" controls and those which are "administrative" or operational. Certainly, each of COSO's five components of internal control makes an essential contribution to effective "accounting" control. While COSO suggests that the EAs have a directed focus when reviewing these five components of internal control, it is not clear what that directed focus would be. For instance, a particular control activity such as searching staff before they leave the building, may contribute to both operational effectiveness and also to the reliability of the accounts. The existence of an appropriate Code of Business Conduct (which would be classified as part of the control environment) would similarly potentially contribute to all the objectives of control. It does not seem that the component parts of an internal control system are specialised in that they are targeted only or principally at one of the objectives of control (operational efficiency and effectiveness, safeguarding of assets, reliability of information, compliance with laws and regulations, etc). Since it is the components (COSO) of internal control which are to be assessed by directors to enable them to report on their system of internal control, it does seem inappropriate to suggest that the directors may restrict their report to internal financial control alone and that the auditors

may restrict their review of the directors' report to internal financial control alone - as is being currently recommended in both the US and the UK.

According to COSO (1992b, "Framework"),

There is a direct relationship between objectives, which are what an entity strives to achieve, and components, which represent what is needed to achieve the objectives. (For example) "Financial" and "non-financial" data generated from internal and external sources, which is part of the information and communication component, is needed to effectively manage business operations, develop reliable financial statements and determine that the entity is complying with applicable laws. (COSO 1992b, "Framework", 15)

COSO in its definition of internal control does not explicitly state that the internal control system can be divided into "financial and administrative control" but that the internal control system should be able to achieve 3 objectives²⁷: (a) effectiveness and efficiency of operations; (b) reliability of financial reporting and (c) compliance with applicable laws and regulations.

Cadbury (UK) made similar recommendations to Treadway, i.e. directors should include in their company's report and accounts a report "on the effectiveness of the company's system of internal control" (point 4.5). Again, similar to the US situation, before the report on internal control system would be practical, it was considered that further clarification was needed for

²⁷ According to Chambers (1994a, 7), the three objectives can be reconciled to the four objectives of control in the 1949 definition because "safeguarding of assets" is regarded by COSO as part of the "effectiveness and efficiency of operations" objective.

directors and also for EAs. Clarification for directors was headed by Rutteman, a partner in Ernst and Young, and in October 1993 a draft report was issued. Another revised exposure draft was issued in August 1994 before the final guideline to directors was issued in December 1994.

The UK Draft on "Internal Control and Financial Reporting" (ICAEW, 1993)²⁸ defined "internal control" as

The whole system of controls, financial and otherwise, established in order to provide reasonable assurance of:

1. effective and efficient operations
2. reliable financial information and reporting
3. compliance with laws and regulations

(ICAEW 1993, "Internal Control and Financial Reporting", 10)

It further defined "internal financial controls" as,

internal controls established in order to provide reasonable assurance of the maintenance of proper accounting records and the reliability of financial information used within the business or for publication.

(ICAEW 1993, "Internal Control and Financial Reporting", 6)

The UK Final Guidance to "Internal Control and Financial Reporting" (ICAEW, 1994b)²⁹ defines "internal control" as,

The whole system of controls, financial and otherwise, established in order to provide reasonable assurance of:

1. effective and efficient operations
2. internal financial control

²⁸ Hereon, referred to as "UK Draft". The UK Draft on "Internal Control and Financial Reporting" was issued in October 1993. Then a revised draft was issued in August 1994 (referred to as "UK Revised Draft" in this thesis) and finally, the final guidance (referred to "UK Final Guidance" in this thesis) was issued in December 1994.

²⁹The revised draft in 1994 also defines internal control and internal financial control in a similar manner.

2. internal financial control
3. compliance with laws and regulations
(ICAEW 1994, "Statement of principles", ¶2)

"Internal financial controls" is defined in the UK Final Guidance as,

The internal controls established in order to provide reasonable assurance of:

- (a) the safeguarding of assets
- (b) the maintenance of proper accounting records and the reliability of financial information used within the business or for publication

(ICAEW 1994b, Statement of principles, ¶2)

Although COSO's definition does not state explicitly (as compared with UK's definition) that internal control can be divided into "financial and non-financial" (administrative), it does however recognise that the objectives of control are "distinct but overlapping categories which address different needs and allow a directed focus to meet the separate needs" (COSO, 1992a, "Executive Summary", 1). Thus, it can be said that UK and US both agree that internal controls can be divided into two categories, i.e "financial and otherwise"³⁰.

The UK Draft (ICAEW, 1993, 12-13) replaced the five components by which control is achieved by four elements, taking exception to the word components. However the final version was in line with COSO in that the fivefold division was made, although COSO's components became Rutteman's criteria. The four elements had been (a) the control environment; (b) the identification of risks, control priorities and objectives; (c) control activities and (d) monitoring and corrective action. COSO's

³⁰ Otherwise, taken to mean "administrative control" as indicated in 1949 AICPA's definition.

"information and communication" component was included in "the identification of risks, control priorities and objectives", though it was shown separately in the final version.

The UK Final Guidance (ICAEW 1994b, 5-6) comes in line with the US in describing a fivefold division, though the UK now finds it preferable for "control activities" to be termed "control procedures". The five criteria are:

(a) control environment; (b) identification of risks and control objectives; (c) information and communication; (d) control procedures and (e) monitoring and corrective action.

According to Chambers (1994a),

Being the mechanisms by which control is achieved it does seem linguistically more appropriate to refer to these five sub-divisions as components, component parts or elements. In contrast, "criteria" are standards against which the components or elements should be assessed.
(Chambers 1994a, 10)

The significance of Rutteman's guidance is that directors should assess the effectiveness of internal control by examining the quality of what are termed the five internal control criteria. But they are the means to achieve the end of effective internal control. It is surely inadequate to assess internal control effectiveness just in terms of the quality of the system without reference to whether the objectives of internal control have been achieved. Chambers (1995b) has

elsewhere³¹ described this as analogous to assessing whether trains arrive on time by examining the quality of the train sets while disregarding the timetable and the past success of the operator in keeping to time.

Auditing Guideline 3.308 (APC, 1990), distinguishes between "internal control", "internal control system" and "control/internal controls" as follows:

Internal control is the regulation of activities in an organisation through systems designed and implemented to facilitate the achievement of management objectives.

Internal control system³² is the whole system of controls, financial and otherwise, established by the management in order to carry on the business of an organisation in an orderly and efficient manner, ensure adherence to management policies, safeguard assets and secure as far as possible the completeness and accuracy of records.

Controls/ internal controls is the individual components of an internal control system which ensures that processes work to meet the system's objectives.

(APC 1990, Auditing Guideline 3.308, Appendix).

The definition given for "internal control system" above, is similar to the COSO's and UK Final Guidance's definition of "internal control" .

Guideline 3.308 (¶60) further states the main objectives

³¹Chambers, A.D.: "Internal Control Reporting, Chapter in Financial Reporting, 1995-6, Chartac Books, December 1995.

³² Final UK Guidance have defined internal control as "the whole system of controls, financial and otherwise", which to the researcher's mind indicates that "internal control" and "internal control system" refers to the same thing. Throughout this thesis, internal control and internal control system is considered to be the same.

of the internal control system as follows:

- (a) to ensure adherence to management policies and directives in order to achieve the organisation's objective
 - (b) to safeguard assets
 - (c) to secure the relevance, reliability and integrity of information, so ensuring as far as possible the completeness and accuracy of records and
 - (d) to ensure compliance with statutory requirements.
- (APC 1990, Auditing Guideline 3.308, ¶60)

It is similar to the objectives given by UK Final Guidance. Auditing Guideline 3.204 (APC, 1980b)³³ states the following types of internal controls on which the auditor may seek to rely on.

1. Organisation. Enterprises should have a plan of their organisation, defining and allocating responsibilities and identifying lines of reporting for all aspects of the enterprise's operations, including the controls.
2. Segregation of Duties. One of the prime means of control is the separation of those responsibilities or duties which would, if combined, enable one individual to record and process a complete transaction.
3. Physical. These are concerned mainly with the custody of assets and involve procedures and security measures designed to ensure that access to assets is limited to authorised personnel.
4. Authorization and approval. All transactions should require authorization or approval by an appropriate responsible person. The limits for these authorizations should be specified.
5. Arithmetical and accounting. These are the controls within the recording function which check that the transactions to be recorded and processed have been authorised, that they are all included and that they are correctly recorded and accurately processed.
6. Personnel. There should be procedures to ensure that personnel have capabilities commensurate with their responsibilities. Inevitably, the

³³ Even though superseded by SAS 300, the researcher feels that the elements mentioned is actually the same as the new definition in SAS 300. Thus, it is still discussed in this thesis.

proper functioning of any system depends on the competence and integrity of those operating it. The qualifications, selection and training as well as the innate personal characteristics of the personnel involved are important features to be considered in setting up any control system.

7. Supervision. Any system of internal control should include the supervision by responsible officials of day-to-day transactions and the recording thereof.
8. Management. These are the controls exercised by management outside the day to day routine of the system. They include the overall supervisory controls exercised by management, the review of management accounts and comparison thereof with budgets, the internal audit function and any other special review procedures.
(APC 1980, Auditing Guideline 3.204, Appendix).

The above list in the Auditing Guideline 3.204 can be treated as criteria that auditors should look for in order to reach reliance upon an internal control system. If an attempt is made to match Auditing Guideline 3.204 to COSO and the UK Final Guidance, "Organisation" and "Personnel" of Guideline 3.204 can be considered to be the same as the criterion "Control environment"; "Segregation of duties", Physical, Authorization and approval and Arithmetical and accounting" of Guideline 3.204 can be considered to be the same as "Control procedures"; and "Supervision" and "Management" of Guideline 3.204 can be considered to be the same as "Monitoring and corrective action". "Organisation" of Guideline 3.204 also relates to the criterion of "Information and communication."³⁴

³⁴ "Organisation" per Guideline 3.204 touches on "Information" when it addresses the subject of reporting; but in other respects "Organisation" per Guideline 3.204 relates to COSO's "Control environment".

There are no criteria stated in the Guideline that relate directly to COSO's and the UK Final Guidance criterion of "Identification of risks and control objectives". Except for this criterion, it can be said that the difference between Guideline 3.204 and COSO's and UK's Final Guidance is in form but not in fact.

According to SIAS 1 (IIA 1983),

The variant "internal control" came into general use to distinguish controls within an organisation from those existing externally to the organisation (such as laws)... .. from the organisation's viewpoint, internal controls are all activities which attempt to ensure the accomplishment of the organisation's objectives and goals.

(IIA 1983, Auditing Guideline 300.6, SIAS 1, ¶.3)

Standard 300, "Scope of Work" (IIA, 1989) states that,

The overall system of control is conceptual in nature. It is an integrated collection of controlled systems used by an organization to achieve its objectives and goals.

(IIA 1989, Standard 300, ¶.06,)

IIA identifies five objectives³⁵ of control in contrast to the four explicit in the AICPA pronouncements and the three objectives in COSO and UK's final guidance.

According to Chambers (1994a, 6) IIA continues to adhere to their position that internal control exists to achieve these five objectives, notwithstanding that the IIA was one of the five COSO bodies. As evidence, Chambers (1994a, 6) quoted that the five objectives were agreed at the mid-year meeting of the Internal Auditing Standards Board of IIA Inc (December 1993) and are being applied,

³⁵ Please refer to Chapter 1, Section 1.1.1.

for instance, in the exposure draft of a new SIAS on "Summary Reporting on Internal Control".

2.4.2 Auditing Literature

Auditing literature has also indicated that "internal controls" or the "internal control system" in general can be divided into "financial and non-financial controls" though they are sometimes referred to under different names.

Coopers & Lybrand (1989, 78-83), for example suggested that internal control can be divided into 2 categories which are: (a) internal accounting controls and (b) operational controls.

"Internal accounting controls" are those controls that are relevant to the expression of an audit opinion on financial accounts. They comprise 2 types of controls:

(a) basic controls, which are those controls necessary for the completeness, accuracy, validity and proper authorization of the accounting records. Example: prenumbering of documents can help achieve the "completeness" objective, i.e ensure that all transactions are accounted for, and

(b) disciplines over basic controls, which are designed to ensure the continued and proper operations of basic controls to safeguard assets. Example: rotation of duties

of staff so that no one person deals with one aspect of the company's accounting procedure on a continuous basis, and custodial controls such as locked cabinets.

"Operational controls" are controls which are not directly relevant to the expression of an audit opinion on financial accounts but are important to provide conditions for the task to be carried out. Example: having a clearly defined organisational chart, having competent staff and proper documentation of accounting procedures and policies.

Coopers and Lybrand's definition of "internal accounting controls" is the same as "financial controls" and "operational controls" is the same as "non-financial controls".³⁶

Spicer and Pegler's "Practical Auditing" (1985), also suggested that there are two types of internal control: (a) application controls and (b) general controls.

Application controls are the basic controls over "completeness, accuracy and validity" control objectives. They are so called because they are specific to particular accounting applications, example the processing of sales invoices or the preparation of payrolls. Their essential feature is that they contain a procedure which either prevents or detects and corrects a particular type of accounting error.

The types of controls are as follows:

³⁶ In this thesis, "financial controls" is considered as "accounting controls" and "non-financial controls" is considered as "administrative controls".

- physical which are concerned mainly with the custody of assets and involve procedures and security measures designed to ensure that access to assets is limited to authorized personnel
- authorization and approval which requires that all transactions should be authorized or approved by an appropriate responsible person. The limits for these authorizations should be specified.
- arithmetical and accounting which are the controls within the recording function which ensure that the transactions to be recorded and processed have been authorized, that they are all included and that they are correctly recorded and accurately processed. For example, checking the arithmetical accuracy of the records, the maintenance and checking of totals, reconciliations, control accounts and trial balances.

General controls are those controls that determine the environment in which the application controls operate. It includes the following types of controls:

- organization which means that enterprises should have a plan of their organization, defining and allocating responsibilities and identifying lines of reporting for all aspects of the enterprise's operations, including the controls. The delegation of authority and responsibility should be clearly specified.
- segregation of duties which is one of the prime means of control. Segregation of duties does not enable one individual to record and process a complete transaction thus reducing the risk of intentional manipulation or error and increases the element of checking. Functions which should be separated include those of authorization, execution, custody, and in, the case of a computer-base accounting system, systems development and daily operations.
- personnel which means that there should be procedure to ensure that personnel have capabilities that can match up with their responsibilities. Inevitably, the proper functioning of any system depends on the competence and integrity of those operating it. Qualifications, selection and training as well as the innate personal characteristics of the personnel involved are important features to be considered in setting up any control system.
- supervision which means that day-to-day transactions and recordings thereof should be properly supervised by responsible officials.
- management which are the controls exercised by management outside the day-to-day routine of the system. They include the overall supervisory controls exercised by management, the review of

management accounts and comparison thereof with budgets and other special review procedures. (Spicer and Pegler 1985, 87)

Again, according to Spicer and Pegler, the internal control system can be divided into "financial" (application) and "non-financial" (general) controls.

As can be observed from the above definitions, the objective of "financial controls" is to achieve "completeness, accuracy and validity" objective. The types of control mentioned in the definitions follows closely the ones mentioned in Auditing Guideline 3.204, (ICAEW 1980, Appendix).³⁷

In this thesis, "completeness, accuracy and validity" is considered by the researcher to be the same as the "completeness, existence and valuation" objective.

In summary, the purposes of internal control discussed in the auditing literature³⁸ are to:

- safeguard the assets of an organization
- check the accuracy and reliability of accounting data
- promote operational efficiency, and
- encourage adherence to prescribed managerial policies.

The first two purposes, that is safeguarding of assets and reliability of accounting data can be achieved

³⁷ However, this guideline is superseded by SAS 400 (APB, 1995).

³⁸ SAP 29 (AICPA, 1949), Auditing Guideline 3.204, (ICAEW, 1980) and " A framework for internal control (CIMA,1992) to name a few.

through "financial controls" and the latter two purposes can be achieved through "non-financial controls". This claim is made based on the UK Final Guidance's definition of internal financial controls.

In this thesis, the internal control system has eight ICPs which consist of an equal number of "accounting" (financial) and "administrative" (non-financial) controls. The division of the 8 internal control procedures is based on the auditing literature's definition of the two types of controls.

The purpose of doing this is to find out whether: (a) EAS and IAs perceive the internal control system as having these two distinct categories; (b) the two groups of auditors place different amounts of emphasis on the two distinct categories³⁹ and (c) the accounting controls are able to achieve the "completeness, existence and valuation" objective.

The existence of satisfactory internal control improves the likelihood that the organisation's goals will be achieved. It does this in part by increasing the

³⁹ IAs are assumed to place more emphasis on the "administrative controls" since their objective is more towards ensuring that the internal control system in place can achieve management's objective and are efficient in doing it. EAs are assumed to place more emphasis on the "accounting controls" as their emphasis is ensuring whether the financial statements show a true and fair view.

probability that errors, fraud and other irregularities will be eliminated or detected early.

Satisfactory internal control will tend to limit irregularities to those that require collusion between two or more persons or those whose consequences are material.

Schiff, Miller and May (1989) suggested that the primary purpose of the auditor's study and evaluation of internal controls is to determine whether the system can be "relied on" to produce reliable financial information. According to "Due Care in the Performance of Work" issued by Auditing Standards Board (ASB) in 1972, in order to rely on an internal control system, auditors seek reasonable assurance that:

- transactions are executed in accordance with management's authorization
 - transactions are recorded so that financial statements will be in accordance with generally accepted accounting principles (GAAP) and accountability over assets will be maintained
 - access to assets is controlled
 - assets are periodically compared to recorded accountability
- (ASB 1972, "Due Care in the Performance of Work")

Schiff, Miller and May view internal control as comprising a "three-legged stool" which illustrates that internal control is a broad function that is supported by three independent elements-accounting controls, managerial or administrative controls, and operational controls.

If this stool was missing a leg, or if one of the legs were to break, it would not be properly supported and would topple over. Similarly, if a company has weak or nonexisting accounting, managerial or operational controls, internal control may not be supported properly, and the company may be vulnerable to problems.
(Schiff, May and Miller 1989, 6)

2.5 INTERNAL CONTROL REPORT

As stated earlier in this chapter, one of the reasons for the 1990's effort to redefine and clarify the definition of internal control has been so that there can be a common meaning attached to it. Amongst the reasons for this is to ease the task of preparing the internal control report by managers (as referred to in COSO) or directors (as referred in the UK final guidance) and review of that report by EAs are required to do in the UK.

To date both in the US and in the UK the report on internal control has not been made mandatory, though majority of companies are including the reports in their published annual report. In the US it is optional. In the UK it is a "requirement" of the Cadbury Code of Best Practice but a listed company need only draw attention to the parts of the Code it is not complying with, giving reasons. Strictly, it is not a Stock Exchange requirement to comply with every item in the Cadbury Code though most listed companies are intending to do so.

As stated in a discussion paper on "Internal Financial

Control Effectiveness" (APB, 1995e),

It is clear from the number of unsuccessful attempts to legislate public reporting on internal controls that consensus has not been reached in the United States as to whether such reports are of benefit to the users of financial statements. Indeed the present Chief Accountant of the Securities and Exchange Commission has publicly expressed reservations about such public reporting on the basis of its costs relative to expected benefits. (APB 1995e, "Internal Financial Control Effectiveness", 4)

COSO (1992c) notes in its report that,

...public reporting on internal control is not a component of or criterion for, effective internal control. An entity can have an effective internal control system without making a public statement to that effect ... in the end internal control effectiveness is determined by the adequacy of the system not by what is said about it. (COSO 1992c, "Reporting to External Parties", 2).

In UK, the concept of internal control reporting has also been facing increasing opposition from auditors, finance directors and others in business. According to The Guardian (1994),

Finance directors have criticized the proposals as being too long and too costly. Auditors are reluctant to report on the directors' comments for fear of litigation if internal systems subsequently turn out to have been flawed. (The Guardian, 21 Feb 1994, 10).

FRAG (Financial Reporting Auditing Group), the English Institute of Chartered Accountants opposes the plan to make companies report publicly on their controls. It says that smaller public companies would find it difficult to comply with the necessary requirements, and that public reports on internal controls could be misunderstood by the public. Also, directors and auditors would expose themselves to further liability if negligence claims arose, at a time when liability is already causing problems. (The Guardian, 9 Mar 1994, 17).

UK Final Guidance (ICAEW, 1994b) does not require directors to arrive at an opinion on the effectiveness of

internal control or even of just internal "financial" control, and they are certainly not required to publish any opinion that they do reach - though they may do so if they choose to.

The requirement covers only internal "financial" control and not the whole system of internal control. The Guidance applies to accounting periods beginning on or after 1 January 1995.

It also states that the directors' statement should contain as a minimum:

- (a) acknowledgement by the directors so that they are responsible for the company's system of internal financial control;
- (b) explanation that such a system can provide only reasonable and not absolute assurance against material misstatement or loss;
- (c) description of the key procedures that the directors have established and which are designed to provide effective internal financial control;
- (d) confirmation that the directors (or a board committee) have reviewed the effectiveness of the system of internal financial control.
(ICAEW 1994b, UK Final Guidance, ¶8)

The "last" minimum requirement is found in "Disclosure Relating to Corporate Governance (Revised)" as issued by APB in February 1995. It is as follows:

- (e) information about those weaknesses in internal financial control that have resulted in material losses, contingencies, or uncertainties which require disclosure in the financial statements or the auditors' report on the financial statements
(APB 1995d, "Disclosure Relating to Corporate Governance (Revised)", ¶9)

As can be seen from the requirements, the Directors are

not required to state their opinion as to the "effectiveness" of the internal control system (unlike in the US). They may however, state their opinion on the "effectiveness" of their system of internal "financial" control and may extend their opinion to the internal control system as a whole (UK Final Guidance, ¶8 and 14) if they so wish.

However, EAs are not required to audit the directors opinion on the effectiveness of the internal "financial" control until certain issues such as practical difficulties in reviewing internal control effectiveness, and the meaning of effective is resolved (APB, 1995d).

The UK Revised Draft (ICAEW, 1994a) and UK Final Guidance (ICAEW, 1994b) has not included an example of what the directors statement should look like but the UK Draft (ICAEW, 1993) recommends the following format,

The company maintains a system of internal financial controls, including suitable monitoring procedures, in order to provide reasonable but not absolute assurance of the maintenance of proper accounting records and the reliability of the financial information used within the business or for publication. The directors are satisfied that these controls operated effectively during the period covered by the financial statements.
(ICAEW 1993, UK Draft, 36)

Example of EA's report on the directors' internal control statement as suggested by the APB in its report titled "Disclosures Relating to Corporate Governance (Revised)" (APB, 1995d) is as follows:

In addition to our audit of the financial statements, we have reviewed the directors' statement(s) on page(s)...on the company's

compliance with the paragraphs of the Code of Best Practice specified for our review by the London Stock Exchange. The objective of our review is to draw attention to non-compliance with those paragraphs of the Code which is not disclosed.

We carried out our review in accordance with Bulletin 1995/1 'Disclosures Relating to Corporate Governance' issued by the Auditing Practices Board. The Bulletin does not require us to perform the additional work necessary to, and we do not, express any opinion on the effectiveness of either the company's system of internal financial control or its corporate governance procedures nor on the ability of the company to continue in operational existence.

Opinion

With respect to the directors' statements on internal (financial) control on page ..., in our opinion the directors have provided the disclosures required by paragraphs 4.5 and 4.6 of the Code (as supplemented by the related guidance for directors) and such statements are not inconsistent with the information of which we are aware from our audit work on the financial statements.

Based on enquiry of certain directors and officers of the company, and examination of relevant documents, in our opinion the directors' statement on page ... appropriately reflects the company's compliance with the other paragraphs of the code specified for our review.

(APB 1995d, "Disclosure Relating to Corporate Governance", Appendix 3).

As can be seen from the example above, there is no responsibility of EAs to express their opinion on whether the internal controls are operating effectively, even if the directors do express their opinion on the effectiveness of the controls. In April 1995, the APB issued a discussion paper on "Internal Financial Control Effectiveness" which among other issues seeks to clarify the issues associated with EAs' task of evaluating the directors opinion on the effectiveness of the internal financial control system.

Example of a report from the directors on the "effectiveness" of internal financial control system as recommended by the discussion paper is as follows:

The directors are responsible for the company's system of internal financial control, which is designed to provide reasonable assurance regarding;

- (a) the safeguarding of assets against unauthorised use or disposition; and
- (b) the maintenance of proper accounting records and the reliability of financial information used within the business or for publication.

Such a system can provide only reasonable and not absolute assurance against material misstatements or loss.

{Description of the key procedures that the directors have established and which are designed to provide effective internal financial control}

The Audit Committee of the Board of Directors has reviewed the effectiveness of the company's internal financial control system for the period from [date of commencement of financial statements] to [date of approval of financial statements] in relation to the 'Criteria for assessing effectiveness described' in 'Internal control and financial reporting' issued by the Cadbury Internal Control Working Group. Based on this review the directors believe that for the period from ...to ...the system of internal financial control met those criteria [and was operating effectively].

(APB 1995e, "Internal Financial Control Effectiveness", 15)

An example of an EA's evaluation report on director's report on internal control, in the same paper, is as follows:

We have examined the director's statement that XYZ's system of internal financial control over financial reporting for the period from ...to ...included in the accompanying Report on Effectiveness of Internal Financial Internal Control System met the criteria for effectiveness described in 'Internal control and financial reporting' issued by the Internal Control Working Group [and was operating effectively].

Our examination was made in accordance with standards established by the Auditing Practices Board and, accordingly, included obtaining an understanding of the system of internal financial control, testing, and evaluating the design and operating effectiveness of the internal financial control system, and such other procedures as we

considered necessary in the circumstances. we believe that our examination provides a reasonable basis for our opinion.

Because, of inherent limitations in any system of internal financial control, errors or irregularities may occur and not be detected. Also, projections of any evaluation of the internal control system to future periods are subject to the risk that the internal financial control system to future periods are subject to the risk that the internal financial control system may become inadequate because of changes in conditions or that the degree of compliance with the policies may deteriorate.

In our opinion, the directors' statement that XYZ Company's system of internal financial control for the period from ... to ... met the criteria for effectiveness described in 'Internal control and financial reporting' issued by the Internal Control Working Group [and was operating effectively] is fairly stated in all material respects.

(APB 1995e, "Internal Financial Control Effectiveness", 16)

An internal control system is "effective" if the five components are present and functioning effectively (COSO, 1992b, "Framework", 16). However, determination of whether they are present and functioning effectively involves a subjective assessment.

"Disclosures Relating to Corporate Governance (Revised)"

(APB, 1995d) requires EAs to carry out a significant number of additional procedures if they are to report on the directors' opinion on the effectiveness of the internal financial control system. This is because,

... the process of determining whether internal financial control is 'effective' is more complex and subjective than the consideration of whether to rely on an assessment of control risk in the context of the auditors' opinion on the financial statements.

... the definition of internal financial control encompasses controls over the management accounts of an entity; these are not required to be, and therefore may not be, considered by the auditors when carrying out a financial statement audit.

(APB 1995d, "Disclosure Relating to Corporate Governance (Revised)", ¶15)

The Institute of Chartered Accountants of Scotland (ICAS, 1993) has also issued a draft proposal on how to implement the recommendations made by Cadbury (CFACG, 1992).

The ICAS directors report on internal control has a very broad coverage which includes management information systems, internal controls and internal control systems but does not state the time period that it covers. The same applies to ICAS's recommendations on the auditor's evaluation of the internal control report.

In the US, COSO (1992c, "Reporting to External Parties"), lists down the following reporting guidelines that are required to be present in the internal control report,

- The category of controls being addressed (controls over the preparation of the entity's published financial statements)
- A statement about the inherent limitations of internal control systems statement about the existence of mechanisms for system monitoring and responding to identified control deficiencies
- A frame of reference for reporting - that is, identification of the criteria against which the internal control system is measured
- A conclusion on the effectiveness of the internal control system. If one or more material weaknesses exist, which would preclude a statement that the criteria for system effectiveness are met, a description of the material weaknesses should be included
- The date as of which (or the period for which) the conclusion is made
- The names of the report signers
(COSO 1992c, "Reporting to External Parties", 14)

Comparison with UK requirements, shows that the US requirements are more general in nature, whereby US

requires, date of the report and the names of report signers to be included in the report. Also, US requires management to state their opinion on the effectiveness of internal control system. COSO has come out with the following recommendations for the internal control report by management,

XYZ Company maintains a system of internal control over financial reporting, which is designed to provide reasonable assurance to the Company's management and board of directors regarding the preparation of reliable published financial statements. The system contains self-monitoring mechanisms, and actions are taken to correct deficiencies as they are identified. Even an effective internal control system, no matter how well designed, has inherent limitations - including the possibility of the circumvention or overriding of controls - and therefore can provide only reasonable assurance with respect to financial statement preparation. Further, because of changes in conditions, internal control system effectiveness may vary over time.

The company assessed its internal control system as of December 31, 19XX in relation to criteria for effective internal control over financial reporting described in "Internal Control - Integrated Framework" issued by the committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, the Company believes that, as of December 31, 19XX, its system of internal control over financial reporting met those criteria. (COSO 1992c, "Reporting to External Parties", 15)

Statement on Standards for Attestation Engagements 2

(AICPA, 1993, SSAE 2) recommended the following format

for EAs evaluation of the internal control report.

We have examined management's assertion [identify management's assertion, for example, that W company maintained an effective internal control structure over financial reporting as of December 31, 19xx] included in the accompanying [title of management report].

Our examination was made in accordance with standards established by the American Institute of Certified Public Accountants and, accordingly, included obtaining an understanding of the internal

control structure over financial reporting, testing, and evaluating the design and operating effectiveness of the internal control structure, and such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion.

Because of inherent limitations in any internal control structure, errors or irregularities may occur and not be detected. Also, projections of any evaluation of the internal control structure over financial reporting to future periods are subject to the risk that the internal control structure may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, management's assertion [identify management's assertion, for example, that W Company maintained an effective internal control structure over financial reporting as of December 31, 19XX] is fairly stated in all material respects, based upon [identify stated or established criteria].

(AICPA 1993, SSAE 2, ¶.51)

Although both US and UK restrict the internal control report to internal financial controls, they differ with regard to the timeframe that the statement covers. Whilst, US (COSO) mentioned that the effectiveness of the internal control system is at the year end (one point in time), the UK (Final Guidance) mentioned that the internal control report should cover a period of time. In addition, US's internal control report by management should state whether the internal control is "effective" but in the UK, the internal control report by directors need not state this in their report.

SSAE 2 differentiates the purpose of evaluation of internal control report by EA and evaluation of internal control in financial statement audit.

SSAE 2 has stated that,

The purpose of a practitioner's examination of

management's assertion about the effectiveness of an entity's internal control structure is to express an opinion about whether management's assertion that the entity maintained an effective internal control structure as of a point in time is fairly stated in all material respects, based on the control criteria. In contrast, the purpose of an auditor's consideration of the internal control structure in an audit of financial statements conducted in accordance with generally accepted auditing standards is to enable the auditor to plan the audit and determine the nature, timing, and extent of tests to be performed.
(AICPA 1993, SSAE 2, ¶.84)

SSAE 2 (¶.86) also states that even though an auditor's (EA's) consideration of the internal control structure in a financial statement audit is more limited than examining management's assertion about the effectiveness of the internal control structure, knowledge the auditor (EA) obtains about the entity's internal control structure as part of the examination of management's assertion may serve as the basis for his or her understanding of the internal control structure in an audit of the entity's financial statements.

2.6 EVALUATION OF INTERNAL CONTROL

External audit evaluation of internal control as part of the audit of the financial statements is only required to be done if the EA intends to rely on it.

Auditing Guideline 3.204 (APC 1980b), states:

If the auditor wishes to place reliance on any internal controls, he should ascertain and evaluate those controls and perform compliance tests on their operations.
(APC 1980b, Auditing Guideline 3.204, ¶1)

The EA should gain an understanding of the accounting

system and related internal controls and should study and evaluate the operation of those internal controls upon which he or she wishes to rely in determining the nature, timing and extent of other audit procedures (APC 1980b, Auditing Guideline 3.204, ¶7, AICPA, 1972a, GAAS, AU Section 150, ¶.02). Where the EA concludes that he or she can rely on certain internal controls, the substantive procedures would normally be less extensive than would otherwise be required and may also differ as to their nature and timing.

However, EAs are encouraged to evaluate the internal control system even if they seek not to rely on the internal controls. This is because EAs actually prepare a letter of weakness (management letter) at the end of an audit.

Auditing Guideline 3.204 states that⁴⁰

At the end of an audit, the auditors (EAs) are required to report as soon as practicable, significant weaknesses in internal controls which come to the attention during the course of an audit to an appropriately senior level of the management of the enterprise.

(APC 1980b, Auditing Guideline 3.204, ¶21)

Evaluation of internal control system eventhough EAs seek non-reliance approach is made even more important with the new developments in the US and UK relating to "disclosures in corporate governance".

⁴⁰ In the US, the same requirement is warranted through its SAS 60, "Communication of Internal Control Structure Related Matters Noted in an Audit" (AICPA 1980).

According to Mautz and Sharaf (1985, 142), there are two purposes of evaluation of internal control: (a) making constructive suggestions about improvement of the system and (b) as a basis of planning his audit work.

Mautz (1964) also states the procedure by means of which an auditor arrives at a judgement with respect to the financial statement or other representations which may include the following steps:

1. identification of the assertions to be examined
2. evaluation of the assertions as to relative importance
3. collection of the necessary information or evidence about the assertions to qualify him to give an informed opinion
4. evaluation of the evidence as valid or not valid, pertinent or not pertinent, sufficient or not sufficient
5. formulation of judgement as to the fairness of the assertions at issue.
(Mautz 1964, 55)

The steps outlined by Mautz resembles the "CO" approach whereby the auditors are required to determine whether the ICPs meet these assertions (control objectives) and then come to a conclusion on the quality of the internal control system. Control objectives used in this thesis was based on SAS 31 and COSO's definition (1992b, "Framework", 32).

EAs have to reason from the "universal" accounting principles to the specific situation. Likewise, evaluation of internal control must take into account certain basic notions of what constitute internal control and reason from these the strengths and weaknesses of the system under study.

SAS 31 (AICPA, 1980) identifies these assertions as "existence or occurrence, completeness, rights and obligations, valuation or allocation and presentation and disclosure" and these five assertions are defined as follows:

Assertions about "existence or occurrence" deal with whether assets or liabilities of the entity exist at a given date and whether recorded transactions have occurred during a given period.

Assertions about "completeness" deal with whether all transactions and accounts that should be presented in the financial statements are so included.

Assertions about "valuation or allocation" deal with whether asset, liability, revenue, and expense components have been included in the financial statements at appropriate amounts.

Assertions about "rights and obligations" deal with whether assets are the rights of the entity and liabilities are the obligations of the entity at a given date.

Assertions about "presentation and disclosure" deal with whether particular components of the financial statements are properly classified, described, and disclosed.

(AICPA 1980, SAS 31, ¶.04-.08).

In the UK, Auditing Guideline 3.203 is being superseded by SAS 400 (APB, 1995b). There is no mention of assertions in the guideline, but in SAS 400, besides the five assertions mentioned in SAS 31, there are two additional assertions, i.e "occurrence and measurement".

However, for the purpose of this thesis, the five assertions used in SAS 31 (AICPA, 1980) were thought to be more appropriate.

SAS 65 (AICPA, 1991a, ¶.21-.22) specifically notes that the "existence" assertion generally requires more

objective evidence and has a low risk of material misstatement while the "valuation and disclosure" assertions require more subjective evidence and have a high risk of material misstatement.

For the purpose of this thesis, the assertions are considered as control objectives which management has to achieve in order for the internal control system to operate effectively.

COSO (1992b, "Framework", 16) suggested that "effectiveness" of internal control is a subjective judgement resulting from an assessment of whether the five components are present and functioning effectively. Their effective functioning provides the reasonable assurance regarding achievement of one or more of the stated categories of objectives. All five criteria must be satisfied but some tradeoffs may exist between components. For example, when considering any one category of objectives control over financial reporting, all five criteria must be satisfied in order to conclude that internal control over financial reporting is effective.

The IA works in a similar way. His or her main emphasis is however in the internal control evaluation (or determination of internal control risk) where he or she would have to determine whether the internal control that

is established is sufficient to prevent material errors and fraud from happening.

SIAS 1 (IIA, 1989) states that:

The purpose of the review for adequacy of the system of internal control is to ascertain whether the system established provides reasonable assurance that the organisation's objectives and goals will be met efficiently and economically.

(IIA 1989, SIAS 1, "Control Concepts and Responsibilities", Guideline 300.02, "Scope of audit work")

Regarding the ability of the internal control system to prevent material errors or fraud from happening, Mautz and Sharaf (1985) suggested that,

The existence of a good internal system of internal control eliminates the probability of irregularities.

(Mautz and Sharaf 1985, 141)

Note that it is the "probability" of irregularities that is eliminated and not irregularities themselves. Irregularities are still possible under a good internal control system but they are no longer probable. On the other hand, if the internal control is not satisfactory, then errors and irregularities should be considered more than probable.

The quality of the internal control system is difficult to evaluate and a research carried out by Wafa (1988) has shown this to be the case. Wafa wanted to include "quality of company's internal control system in his survey as one of the factors determining audit fee but was strongly rejected by both auditors and auditee for

reasons such as "difficulties in quantifying and measuring these subjective factors".

It is also impossible for the auditor to be completely assured that the financial statements are accurate and that is why the auditor only issues his opinion that the financial statements are "true and fair". Auditing Guideline 3.204 (APC 1980b)⁴¹ states that:

No internal control system, however elaborate, can by itself guarantee efficient administration and the completeness and accuracy of the records; nor can it be proof against fraudulent collusion, especially on the part of those holding positions of authority or trust. Internal controls depending on segregation of duties can be avoided by collusion. Authorization controls can be abused by the person in whom the authority is vested. Management is frequently in a position to override controls which it has itself set up. Whilst the competence and integrity of personnel operating the controls may be ensured by selection and training, these qualities may alter due to the pressure exerted both within and without the enterprise. Human error due to errors of judgement or interpretation, to misunderstanding, carelessness, fatigue, or distraction may undermine the effective operation of internal controls.
(APC 1980b, Auditing Guideline 3.204, ¶6)

As shown in the Figure 2.1, the "rain cloud analogy" has been able to capture this situation whereby the financial statements cannot be completely accurate. The "rain" represents material errors and irregularities that can happen within the company. As the rain passes through the internal control system of a client it gets smaller in volume as there are controls implemented by the client to

⁴¹ Although superseded by SAS 300 (APB, 1995a) but the researcher feels that the explanation given by the guideline encompasses the limitations of internal control.

prevent it passing through. It gets even smaller as it passes through the scrutiny of auditor's audit procedures till there are only a few drops of rain left as it hits the financial statements. The few drops of rain represent material errors and irregularities that are left "undetected". This is because the internal control system and the audit procedures used by the auditor are not sufficient to detect the material errors and irregularities.

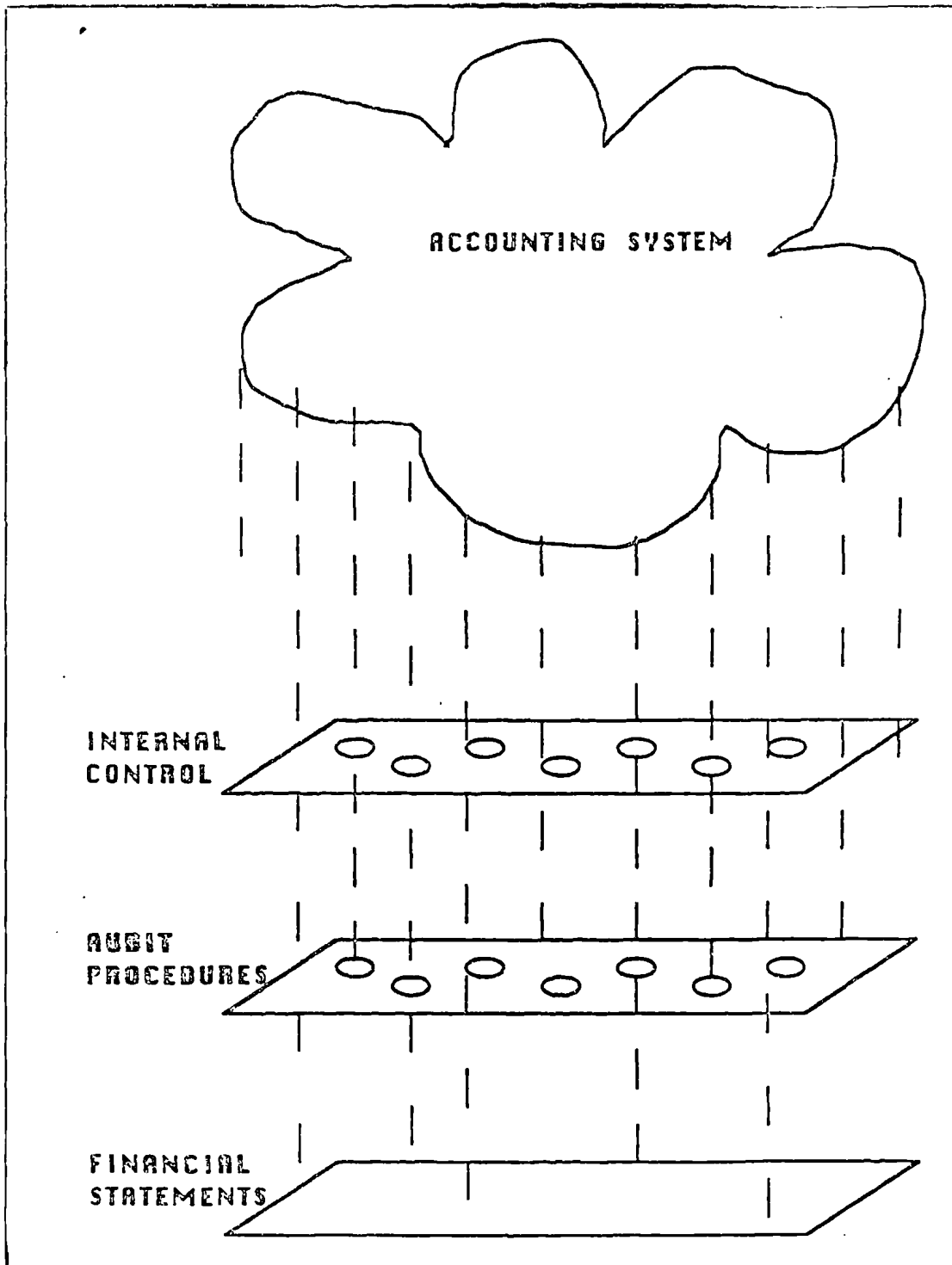


Figure 2.1: The Rain Cloud Analogy

Source: KPMG Peat Marwick's transparency shown during one of the training sessions in KPMG Peat Marwick Penang, Malaysia in March 1992.⁴²

⁴² Researcher was attached to KPMG Peat Marwick Penang, Malaysia for a period of 5 months from February to June 1992.

2.7 FINANCIAL STATEMENTS AUDIT

Johnson, Kast and Rosenweig (1967, 113) suggested that a "system" may be defined as ".....an array of components designed to accomplish a particular objective according to plan". The components of the system are often referred to as "subsystems".

Ackoff (1969, 28), suggested that the principal characteristic of a system is that it is composed of interacting subsystems, each of which has interest in its own right. For example, the internal control subsystems pertaining to sales, accounts receivable, inventory, and cash receipts perform important functions when each is considered by itself; however, these four subsystems interact when a credit sale is made and the payment received later.

In line with these lines of thought, financial statement audit has also followed this approach, that is, dividing the financial statement into various transaction cycles. Transaction cycle is similar to the subsystem referred to earlier and auditors are required to audit each transaction cycle.

According to Arens and Loebbecke (1991, 148-151), audits are usually performed by dividing the financial statements into smaller segments or components. The division makes the audit more manageable and aids in the

assignment of tasks to different members of the audit team. For example, most EAs treat fixed assets and notes payable as different segments and each segment is audited separately but not completely independently. For example, the audit of fixed assets may reveal an unrecorded note payable. After the audit of each segment is completed, including interrelationships with other segments, the results are combined. A conclusion can then be reached about the financial statements taken as a whole. There are different ways of segmenting an audit, and they are:

1. Individual account's approach that is to treat every account balance on the statements as a separate segment. Segmenting this way is usually inefficient. It would result in the independent audit of such closely related accounts as inventory and cost of goods sold.

2. The transaction cycle's approach which is a more common way and a more efficient one. It divides the audit in such a way as to keep closely related types of transactions and account balance in the same segment. For example, sales, sales returns, and cash receipts transactions and the accounts receivable balance are all a part of the sales and collection cycle. Similarly, payroll and accrued payroll are a part of the payroll and personnel cycle. To the extent it is practical, the cycle approach combines transactions recorded in different journals with the

general ledger balances that result from those transactions. Examples of cycles that are used by auditors are:

- a) Sales and collection involves the decisions and processes necessary for the transfer of the ownership of goods and services to customers after they are made available for sale. It begins with the request of the customer and ends with the conversion of material or service into an account receivable, and ultimately into cash.
- b) Acquisition of payment cycle involves the decisions and processes necessary for obtaining the goods and services for operating a business. The cycle typically begins with the initiation of a purchase requisition by an authorized employee who needs the good or services and ends with payment for the benefits received.
- c) Payroll and personnel cycle involves the employment and payment of all employees, regardless of classification or method of determining compensation.
- d) Inventory and warehousing cycle can be thought of as comprising two separate but closely related systems, one involving the actual physical flow of goods, and the other the related costs. The audit of inventories is often the most complex and time-consuming part of the audit.

e) Capital acquisition and repayment cycle includes the payment of interest and dividends. Some of the accounts included in the cycle are notes payable, contracts payable, capital stock-common, appropriations of retained earnings, treasury stock, dividends payable and interest expense.

Transaction cycles are of major importance in the conduct of the audit. For the most part, auditors treat each cycle separately as the audit is being performed. Although care should be taken to interrelate different cycles at different times, the auditor must treat the cycles somewhat independently in order to manage audits effectively.

In this thesis, the "Payroll and Personnel cycle" or "Payroll cycle" as sometimes it is called is examined. Reasons for using this cycle are as explained in Section 5.3.2 of Chapter 5.

2.8 Common approaches or techniques of evaluation of internal control

Considerable evolution in documentation and evaluation techniques has occurred over the last ten to fifteen years.. These changes are primarily the results of internal efforts by practice units. For example, Deloitte Haskins & Sells (DHS, 1985) has developed software that assists in the documentation of the control system and helps identify critical weaknesses. Mock and Willingham

(1983) describe an internal control documentation and learning approach used by Peat, Marwick, Mitchell & Co. (1976). These firm specific techniques represent an important starting point for describing and evaluating current documentation policies and/ or practices.

For the purpose of this thesis, three approaches of internal control evaluation are used, that is: (a) ICQ; (b) CO and (c) CR approach. Emphasis in discussion will gear towards these three approaches compared with the other approaches.

2.8.1 Internal control questionnaire (ICQ) technique

This is a traditional method used by EAs and the most commonly used method by EAs both to document the internal control system and to evaluate the quality of an internal control system.

ICQ is an interrogative package designed to give the auditor an overview of the controls operating in a system and allowing the identification of weaknesses therein. The questionnaire is so formulated that the answer "no" indicates a weakness. A cross-referencing system is used to link the control to a visual diagram of the system in use (a flowchart) and to the audit programme (tests undertaken).

From the answers given, the EA will be able to make a

preliminary evaluation of the quality of internal control.

2.8.2 Control objectives (CO) technique

Control objectives technique links up the ICPs established by a client with the control objectives that are set up by the company. Control objectives are usually set up with the hope of preventing errors and irregularities.

The relation between specific controls and financial statement errors or control objectives has become a major topic of the training and procedures manual used by CPA firms and thus should be an important part of the experienced knowledge store.

The control objective and the number of errors the internal control can prevent is interrelated, that is if the ICPs can meet the internal control objective, it can help prevent errors that might occur. For example, the ICP "Do personal records contain signatures of employees?" can help meet the control objective "recorded payroll are for work actually performed by nonfictitious employees" and thus prevent the error of handling out pay envelopes to the wrong person.

According to Loebbeck and Zuber (1980, 51)

The identification of specific control objectives is the necessary first step in the process of

evaluating an internal accounting control system. The accountant must also identify the prescribed control procedures that meet these objectives in order to be satisfied that the system is suitably designed to fulfil the broad objectives of internal accounting control. This is a complex step.

They (Loebbecke 1980, 51 and 53) further comment that an individual specific assertion may meet several specific control objectives to varying degrees and a single specific control objective may be met by one or more of the control procedures. They suggested the use of a table that relates specific control procedures to identified specific control objectives.

In this thesis, the "CO" approach is based on the suggested approach by Loebbecke and Zuber. However, instead of examining only "internal accounting control" procedures, it has been expanded to include "administrative control" procedures as well.

They have thus suggested the use of a control matrix to evaluate the internal control system. Figure 2.2 illustrates the "CO" approach that was suggested by Arens and Loebbecke. The diagram is based on the suggestion of Arens and Loebbecke (1980, Fig 2.55) and the example in their book (Arens and Loebbecke, 1991, Figure 11-6, 389). The internal controls refer to the internal controls that were used in this thesis.

Internal controls	* Control Objectives				
	A	B	C	D	E
1. Are time cards and other source documents checked before processing by the payroll department for casts and calculations?					
2. Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?					
3. Is there adequate physical security over personal files?					
4. Are the duties of those preparing the payroll rotated?					
5. Are the names on the payroll checked periodically against the active employee file of the personnel department?					
6. Are the tasks of both payroll preparation and payment of employees adequately separated from the tasks of payroll bank account reconciliation?					
7. Are management reports used to monitor the reliability of financial data through comparisons with budgets and following up of variance reports?					
8. Are formal procedures established for changing names on the payroll, pay rates and deductions communicated to the employees?					
***Evaluation- Is the system adequately designed to achieve the control objective?	No	No	No	No	No
	Yes	Yes	Yes	Yes	Yes

Figure 2.2 :Internal control evaluation by means of "control objectives" approach

Figure 2.2 continued ...

How would you evaluate the internal control system?

1-extremely weak

4-some weakness

2-very weak

5-not quite adequate

3-substantial weakness

6-adequate to strong

*Control objectives

A= Recorded payroll are for work actually performed by nonfictitious employee (validity)

B= Payroll transactions are properly authorised (authorization)

C= Payroll transactions are properly classified (classification)

D= Existing payroll transactions are properly recorded (completeness)

E= Recorded payroll transactions are for the amount of time actually worked and at the proper rates. Withholdings are properly calculated (valuation)

The auditor is required to judge each of the internal control procedure in order to determine whether the procedure is able to fully achieve the objective/objectives or partially achieve the objective/objectives. If the procedure fully achieves the objective/objectives it is marked (\/) and if it partially achieves the objective/objectives it is marked \/. The auditor is then required to evaluate whether the system is adequately designed to achieve the control objective and at the end of it all, he is required to evaluate whether the internal control system is weak or strong. How many checks (\/) or \/ are needed to produce a "Yes" is dependent on the auditor's judgement.

In summary, Loebbecke & Zuber described an approach to the documentation of internal controls that begins with

a pre-established list of objectives. The auditor then lists auditee controls that in part or in full meet each objective. This approach is comparable to methods that begin with detailed listing of potentially material sources of errors or with the completion of questionnaires, but may be more efficient since objectives approach should help identify redundant and overlapping controls.

2.8.3 Audit risk model

Concept of audit risk model will be discussed first which will then be followed by the CR technique.

2.8.3.1 Concept of audit risk model

Audit risk model can be represented by the following equation:

$$AR = IR * CR * SAR * SSR$$

AR or audit risk is the risk that the financial statement is said to be true and fair when in fact it is not. It is the probability that an EA issues an unqualified opinion on materially misstated financial statements. It is sometimes referred to as the probability of issuing an inappropriate opinion on financial statements because material errors, or irregularities, if they exist, will not be detected. It is a measure of how willing the EA is to accept that the financial statements may be materially misstated after the audit is completed and an unqualified opinion has been reached.

According to SAS 47 (AICPA 1983),

Audit risk is the risk that the auditor (EA) may unknowingly fail to appropriately modify his opinion on financial statements that are materially misstated
(AICPA 1983, SAS 47, AU Section 312, ¶.02)

Oladeinde, Zeger & Patrick (1992, 6) define errors or irregularities as "material" if knowledge of the misstatement would affect the decision of a reasonable user of the financial statements. Since the EA has a broader spectrum of users (external) and since financial statements might be used in sometimes unpredictable circumstances (e.g a takeover), EAs might prefer lower audit risk than IAs do.

COSO (1992c, "Reporting to External Parties") defines "material weakness" in relation to an entity's financial reporting objectives in the following way,

... the design or operation of the specific internal control structure elements do not reduce to a relatively low level the risk that errors or irregularities in amounts that would be material to the financial statements being audited may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions
(COSO 1992c, "Reporting to External Parties", 17)

According to SAS 47 (AICPA, 1983),

Financial statements are materially misstated when they contain misstatements whose effect, individually or in the aggregate, is important enough to cause them not to be presented fairly, in all material respects, in conformity with generally accepted accounting principles, departures from misapplications of generally accepted accounting principles, departures from fact, or omissions of necessary information.
(AICPA 1983, SAS 47, AU Section 312, ¶.04)

It should be borne in mind that the meaning of "material weaknesses" for an EA is different from the meaning of "material weaknesses" for an IA. It would be expected that the materiality level of an IA would be likely to be much lower than that of an EA since an IAs objective is to advise management at all levels that the internal control system is operating efficiently, effectively and economically. However, EAs' material weaknesses are concerned with whether the overall financial statements show a true and fair view. Furthermore from an external audit perspective, compensating errors, which individually may be of considerable size, might "nett out" so as to result in no significant errors in the published financial statements.

IR or inherent risk is the risk that an error may occur in a financial statement assertion, ignoring the effects of internal controls.⁴³ IR is assessed for individual assertions rather than for accounts, since the risk may vary between different assertions for the same account or it may also vary between different populations for one assertion. Some of the factors that can result in a high inherent risk are lack of experience or competence of accounting personnel, complex underlying calculations or

⁴³For details definition of "inherent, control and detection risk", please refer to SAS 47 (AICPA, 1983, AU Section 312, Audit Risk and Materiality in Conducting an Audit); AU Section 8006 (AICPA, 1991b, Risk Assessment and Internal Control) SAS 300 (APB, 1995a, Accounting and Internal Control Systems and Audit Risk Assessment).

principles or population consisting of a few individually significant items. IR can also be said to be a measure of the auditor's expectation of an error, assuming a tolerable amount exists in a segment before considering the effectiveness of internal accounting controls.

CR or control risk is the risk that internal controls fail to detect or correct material errors that occur. It is a measure of the auditor's expectation that errors exceeding a tolerable amount in a segment will not be prevented or detected by the client's internal control structure.

Although, the concept of audit risk model is discussed in conjunction with the external auditing profession, in this thesis, EAs and IAs are required to determine control risk qualitatively and the level of control risk determined by EAs and IAs is statistically compared to see if there is any significant difference.

SAR or substantive analysis risk is the risk that the procedures used by the EA are not effective.

SSR or substantive sampling risk is the risk that the sample selected is not representative of the whole population.

The model suggests each component risk has the same effect on overall audit risk.

According to KPMG's Peat Marwick (1988a) "Audit Program Guide",

The extent of timing of substantive audit procedures, and sometimes their nature, depends on the components of audit risk model."

"SAR and SSR will change only if the auditor changes one of the other factors" (Arens and Loebbecke, 1991, 255-256). That means to say that they will only be determined after the auditor has assessed both inherent risk and control risk. The key factor in the formula is therefore the determination of SAR and SSR, since it determines the amount of evidence to be gathered.

SAR and SSR are sometimes collectively referred to as "detection risk" (DR)⁴⁴. It is a measure of how willing the EA is to accept that the audit evidence to be obtained for a segment will fail to detect errors exceeding a tolerable amount, should such errors exist. Detection risk can also be said to be the risk that auditing procedures applied on a certain chosen sample can detect errors exceeding a tolerable amount in that sample.

The EA can use the following formula to calculate the detection risk and the amount of evidence to be gathered. Normally, an EA has his own AR (eg 5%) and will calculate the detection risk (DR) and the amount of evidence to be

⁴⁴ As mentioned in KPMG Audit Manual (1988, Part II, pg 14).

gathered, given the inherent risk (IR) and control risk (CR) of the client.

As an illustration, using notional figures by way of example let us say that an EA has already predetermined the audit risk that he is willing to accept, that is an audit risk of 5%. If after evaluation, he then assesses inherent risk (IR) as 10% and control risk (CR) as 20%, he would therefore have a product of both substantive analysis risk (SAR) and substantive analysis risk (SSR) as follows:

$$\text{AR} = (\text{IR} * \text{CR}) * (\text{SAR} * \text{SSR})$$

$$\begin{aligned} .05 &= (.10 * .20) * (\text{SAR} * \text{SSR}) \\ 2.5 &= \text{SAR} * \text{SSR} \\ \text{SAR} * \text{SSR} &= 250\% \end{aligned}$$

That means to say that he would have a very high % of SAR and SSR. "Very high" % of SAR or SSR implies that the auditor can accept a very high degree of risk in designing his substantive sampling and other procedures (SAR), that is he can be more relaxed in determining what audit procedures to use in carrying out audit tests; or he can accept a very high degree of risk in determining sample size (SSR), that is he can afford to use smaller sample sizes; or both.

By contrast "low" means that the EA can accept a low risk, with correspondingly larger sample sizes or more extensive other substantive audit procedures.

Detection risk is the risk that an EA's auditing procedures applied on a certain chosen sample in that sample can detect risk.

According to SAS 47 (AICPA, 1983, AU Section 312, ¶.09), the components of audit risk model can also be assessed qualitatively, that is whether it is low, moderate or high instead of quantitatively.

In essence, a high product of IR and CR would require a low product of SAR and SSR given a certain assessment of audit risk and vice-versa. Thus, an EA would need to assess IR and CR first before he can determine the audit procedures that he wants to use or the sample size that is needed to be tested.

SAS 39, (AICPA, 1981) states that the risk analysis model expresses the general relationship of the risks, and cautions that the model is not intended to be a mathematical formula including all factors that may influence the determination of individual risk components. Some of the important assumptions of the model are as follows: (a) the individual risk components are assumed to be independent of each other; (b) the non-sampling risk component of the model is assumed to be negligible; (c) inherent risk, because it is costly to measure is set conservatively at one.

The concept of audit risk is directly related to the third standard of fieldwork (GAAS) that is to gather sufficient evidence to support the audit opinion. "Sufficient" will be a judgement, finding a balance between doing the necessary work while still respecting cost-effectiveness of the audit. It should be borne in mind that the IA is less confronted with the choice and responsibility between the quality and amount of audit work and cost of the audit, since those factors are mostly determined by management.

The IA's role is to decrease control risk by evaluating and improving the client's internal control structure. This way, a cooperation between IAs and EAs eventually makes it possible to decrease the audit risk.

2.8.3.2 Control risk (CR) technique

For the purpose of this thesis, only "control risk" is examined. This is because determination of inherent and detection risk would require much more information. The auditors are required to determine the extent of which each ICP (which consist of "accounting" and "non-accounting" controls) can prevent or detect material errors from occurring and they were then required to assess the overall control risk i.e the extent to which the internal control system can prevent or detect material errors from occurring. It is known as "CR" approach in this thesis.

According to AU Section 8006 (AICPA, 1991b),

To assess control risk, the auditor (EA) should consider the adequacy of control design, as well as test adherence to control procedures. In the absence of such an assessment, the auditor should assume that control risk is high.

Assessing control risk is the process of evaluating the effectiveness of an entity's accounting and internal control systems in preventing or detecting material misstatements in the financial statements. After obtaining the understanding of the accounting and internal control systems, the auditor (EA) should make a preliminary assessment of control risk for the relevant assertions in the financial statements.

(AICPA 1991b, AU Section 8006, ¶.22 and .23),

In summary, EA may evaluate the control risk as "high" (internal control system is not effective in preventing or detecting material misstatements in the financial statements) when he,

- (a) is not able to identify policies and procedures of the accounting and internal control systems relevant to specific assertions which are likely to prevent or detect material misstatements in the financial statements; and
- (b) plans to perform tests of control to support the assessment

2.8.4 Objective internal control evaluation technique

Brown (1962, 50-52) has suggested this approach and he sees it as an improvement to the ICQ. He suggested that EAs should weigh each of the ICPs according to its importance (i.e importance in preventing an error). He suggested that a scale of 1-5 be used whereby 1 would indicate the least important and 5 would indicate the

most important. This numerical weights is given on the assumption that the ICPs are adhered to strictly. The EA would then carry out tests to see the extent of compliance with the procedures and then he would be required again to use his judgment in assigning weights to the ICPs to the extent that he thinks that the procedure is being complied with. Again a numerical scale will be assigned.

After both weights are assigned, he would then calculate an effectiveness index (E.I)

$$E.I = 100 * \frac{\text{Sum of actual values resulting from testing (extent that there is compliance)}}{\text{Sum of potential values for that audit area (assuming strict compliance)}}$$

The end result would indicate the effectiveness of the internal control system (i.e strong or weak)

$$\begin{aligned} \text{Eg. E.I} &= 100 * \frac{111}{127} \\ &= 89\% \end{aligned}$$

In summary, Brown suggests that the EA assign weights to ICQ responses based on a subjective ranking of each question's importance. The sum of the weights of the positive answers provides a quantitative measure of the quality of the internal controls. These quantitative measures must then be used subjectively to plan subsequent audit procedures.

2.8.5 Computer-assisted approach

More efforts are being made to make use of the computer

as an analytical tool to evaluate the internal control system. Computer-based decision support systems are used to aid in structuring audit decisions and expert systems in order to partially automate auditor expertise.

For example, Burns and Loebbecke (1975) described their approach towards achieving this objective by the following basic steps:

- Step 1: Describe quantitatively each type of error or irregularity that could occur in the circumstances....
 - Step 2: Identify all pertinent controls that might either detect and correct or prevent the occurrences of any errors or irregularities believed possible
 - Step 3: Chart the flow of potential errors and irregularities through the accounting and internal control procedures in question
 - Step 4: Convert the error flow diagram into a flowchart of computer logic
 - Step 5: Translate the computer logic flowchart into computer language code
 - Step 6: Gather or create any detailed accounting data necessary to run the computer program
 - Step 7: Test the program for accuracy and completeness
 - Step 8: Run the program several times, setting internal control compliance levels at different feasible values during each run
 - Step 9: Evaluate the output generated by the computer program
- (Burns and Loebbecke 1975, 64-68)

The output from each run of this computer simulation consists of the mean dollar value of net error, the mean dollar error as a percentage of the account being examined, and the standard deviation of the expected dollar error. After simulating several levels of compliance, the auditor would have a concrete basis for the establishment of tolerable compliance levels.

In summary, Burns and Loebbecke (1975), use a computer simulation to determine a tolerable upper limit on compliance deviations or systems of considerable complexity.

Bailey et al. (1985) have developed a comprehensive computer decision support system, TICOM, to assist in documentation and learning of EDP controls.

Meservy et al. (1986) used expert systems concepts to develop an expert emulator of the evaluation process used by auditors in evaluating internal accounting controls.

Dungan (1983) form an operating model of an audit judgement from an expert (computer) system. The work was facilitated by a software package called AL/X, developed by Intelligent Terminals, Ltd of Edinburgh. The resultant system, called AUDITOR, provides advice on the likely collocate of individually large, delinquent trade accounts receivable of a commercial audit client.

McDermott (1986) develop a hierarchical model to support the judgement process of auditors with respect to the Internal Accounting Control System (IACS) in a microcomputer environment. The model relates the control considerations of particular concern in this environment to a set of risks and controls and provides a framework adaptable to specific audit or electronic data processing

(EDP) consulting situations. The results of this study indicate that it is a viable process for supporting decisions in the complex area of the IACS. Methods for assisting the judgement process are particularly useful in advanced EDP system environments. Although the objectives of internal control remain the same in any processing environment, the specific controls and procedures for evaluating these controls may be different. This study demonstrates the applicability of the Analytic Hierarchy Process (AHP) approach and identifies a set of control considerations, risks, and controls of major concern in a microcomputer processing environment.

2.8.6 Mathematical models

Mathematical models of the internal control process if ultimately accepted and found useful by practitioners, could replace the subjective techniques now in use.

The reliability model approach, for example used by Yu and Neter (1973), Cushing (1974), and Bodnar (1975) is an alternative method of describing internal controls. Recent examples include Srivastava (1983) and Srinidhi and Vasarhelyi (1986). Drawing on reliability theory as developed in engineering, these models characterize accounting transaction cycles and related controls as error generation processes. The development of such models offers a number of advantages including explicit

consideration of the unconditional probability of explicit types of errors, careful analysis of control interrelatedness and numerical outputs to assist in the auditor's evaluation of internal control. However, these models have not found a great deal of acceptance either in practice or as research technologies.

Implementation in practice may not be attractive because of the high costs of setting up the initial model. In addition, internal control systems may not be especially stable across time which would indicate relatively high maintenance costs. Also, the existing models employ simplifying assumptions that are difficult for practitioners to accept. A complete reliability model of an auditee's control system can at most assist the auditor in documentation and learning. Reliability theory does not appear to meet this need very easily and possibly for this reason has not attracted a large following.

2.8.7 Protocol analysis

Protocol analysis or process-tracing models are developed by having an expert speak aloud into a tape recorder as he or she thinks through a decision. The results are then studied for an underlying logical process which may be captured in a computer algorithm. This type of approach would enable an in depth investigation of the auditor's decision behaviour (e.g., see Biggs and Mock (1983),

Gibbins and Wolf (1979). These studies attempt to identify decision behaviour in a controlled case-oriented scenario by having a subject verbalize continuously his or her thoughts while using the provided materials to reach a decision. These verbalizations (protocols) are then carefully analysed to identify decision strategies and identify important case features.

Protocol analysis is an important means of obtaining detailed knowledge of how EAs evaluate internal controls and use those evaluations to plan subsequent audit procedures, although it is perhaps subject to weaknesses such as the possible propensity of subjects to say what they think the researcher wants to hear and not to verbalize key thoughts.

One of his findings was the existence of "considerable variability among prior distributions (of error rates) assessed by different EAs for each audit case." Because error rates are a function of internal control, it may be inferred that EAs differed in their evaluation of internal control.

2.8.8 Chernoff faces

This approach uses visual representations of internal control (by means of a diagram of faces) to help EAs in their evaluation of the internal control system.

Smith (1984) conducted a study to test two decision aids for EA's preliminary evaluations of internal accounting control. The two aids were Chernoff faces and dyadic team decision making. The primary research issue was whether the aids increase the consistency of preliminary evaluations. EAs made preliminary evaluations of twenty simulated internal control systems. The information for their evaluations was presented to them by means of a completed internal control questionnaire and Chernoff faces. Each EA performed the preliminary evaluation task with both informational modes. The findings indicate that individual differences in consistency with the faces were observed. EAs showed greater consensus in their preliminary evaluations from the Chernoff faces.

To date, the use of Chernoff faces in internal control evaluation were not recommended for use in current practice as more research was called for.

2.9 COOPERATION BETWEEN EAs AND IAs

Cooperation between EAs and IAs is beneficial to all parties. A study sponsored by the IIA suggested that EAs are already relying more than before upon the work of IAs (Baker 1986, 6).

Both groups of auditors would be able to produce better quality work within lesser time. With an increasing turnover of experienced auditors it would be most helpful

if IA could be of some assistance. From the standpoint of an EA, an efficient internal audit department may be looked on as a valuable contribution to internal control. As such, it encourages him to decrease the extent of his detailed audit tests and to place greater reliance in general on the company's accounting records and procedures.

Auditing Guideline 3.408 (APC, 1984)⁴⁵ states that

An external auditor may be able to place reliance on internal audit as a means of reducing the work he performs himself in:

- the documentation and evaluation of accounting systems and internal controls;
- compliance and substantive testing

It is frequently impossible for an EA to visit and examine all the branch establishments of a client company every year. The EA can work out a schedule so that every office is visited at least once each year for a thorough examination by either the IA or EA. Sometimes the programme to be followed is developed by IA in consultation with the EA; often representatives from the 2 staffs might team up to examine a given location or division. Management would also have to pay lesser audit fees because of lesser time taken to complete the audit by the EAs. IAs will be able to learn from the helpful comments of EAs who have been auditing a lot of internal controls. Furthermore, with internal control reports

⁴⁵ Although superseded by SAS 500, "Considering the work of internal audit", the researcher feels that the guideline is able to explain the relationship between EAs and IAs better.

made mandatory, cooperation between IAs and EAs would prove significant.

Statement on Standards for the Professional Practice of Internal Auditing (IIA, 1989) states that,

The scope of internal audit should encompass the examination and evaluation of the adequacy and effectiveness of the organisation's system of internal control and the quality of performance in carrying out assigned responsibilities.
(IIA 1989, Standard 300, 6)

Auditing Guideline 3.204 (APC, 1980b)⁴⁶, states that before reliance can be placed on IA, EA will make a preliminary assessment of internal auditor on the following matters;

- a) the degree of independence of internal auditor from those whose responsibilities he is reviewing (management)
- b) the number of suitably qualified and experienced staff employed in the internal audit function
- c) the scope, extent, direction and timing of the tests made by the internal auditor
- d) the evidence available of the work done by the internal auditor and of the review of that work
- e) the extent to which management takes action based upon the reports of the internal audit function.

(APC 1980b, Auditing Guideline 3.204, ¶19)

EAs and the IAs often carry out their work by similar means. For this reason, EAs and the IAs should cooperate on the work they carry out to avoid unnecessary duplication.

⁴⁶ Although superseded by SAS 300 (APB, 1995a), the researcher feels that it is worth mentioning as SAS 300 does not deal with the issue. However, some of the points are also mentioned in SAS 500 (APB 1995c, ¶ 14).

Cooperation between EA and IA is much in line with the "total audit concept" which is a term that comes into being in response to the Foreign Corrupt Practices Act (FCPA). The concept suggests that there should be an audit committee (which should be composed exclusively of outside directors) who will be responsible for looking into management reports and audit reports and an IA who works together with the EA to test controls in the organisation.

In the United States, SAS 9 (AICPA, 1975a), "The Effect of an Internal Audit Function on the Scope of the Independent Auditor" states,

External auditors relied on the internal audit function primarily in gaining an understanding of the internal control structure and in assessing control risk.

SAS 65 (AICPA, 1991a), "The Auditor's Consideration of the Internal Audit Function in an audit of Financial Statements" expands on SAS 9 by permitting additional reliance on IAs in performing substantive tests and by encouraging coordination between the two audit functions.

.... the internal auditors ... may confirm certain accounts receivable ... The results of these procedures can provide evidence the (external) auditor may consider in restricting detection risk for the related assertions. Consequently, the auditor (EA) may be able to change the timing of the confirmation procedures, the number of accounts receivable to be confirmed
(AICPA 1991a, SAS 65, ¶17).

According to Venables and Impey (1985, 33), "the external auditor's role may be perceived as that of judging of actions, whilst the internal auditor monitors day to day

operations, the two auditors co-operating to maximise the use of audit resources to benefit both owners and management." It is depicted in Figure 2.3.

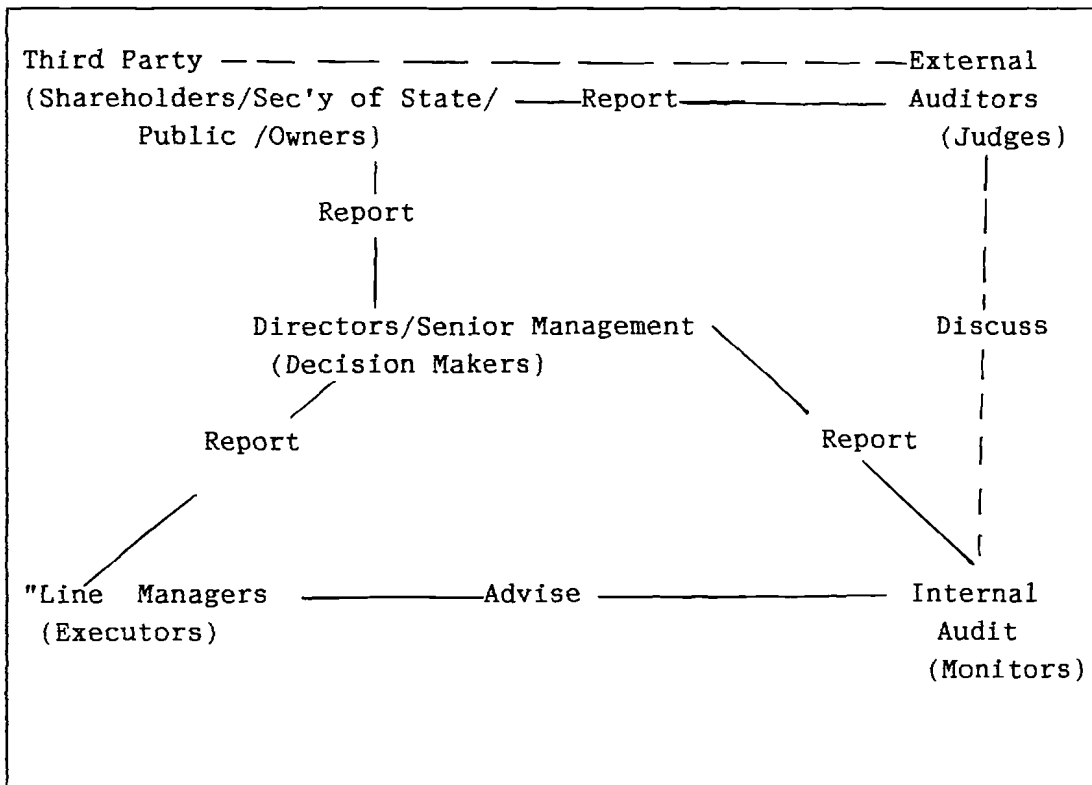


Figure 2.3: The relationship between senior management, EAs and IAs.

Source: Venables, J.S.R and Impey, K.W. 1985. Internal Audit. London: Butterworths, pg 33.

Statement for the Professional Practice of Internal Auditing (IIA, 1978, Standard 550) states that,

The director of internal auditing should coordinate internal and external audit efforts. Coordination of audit efforts involves:

- periodic meetings to discuss matters of mutual interest
- access to each other's audit programs and working papers
- exchange of audit reports and management letters
- common understanding of audit techniques, methods and terminology.

(IIA, 1978, Standard 550, ¶.01 and ¶.02)

As IA's responsibility is to senior management, and not

to the EA, IA may only assist EA in so far as directed by senior management. There is a difference between the objectives of IAs and EAs. Whilst the main objective of an EA is to ensure the truth and fairness of financial statements, the main objective of IA is to ensure that the operation of management is run efficiently, economically and effectively or to perceive risks and opportunities for improvement on behalf of management.

However, IAs can cooperate with EAs by assisting them with understanding of the internal control system in operation and in explaining the steps that have been taken by management to identify and rectify control weaknesses. In these circumstances, the IA can make a greater contribution to audit fee savings which would otherwise attract undue external audit attention.

According to Mautz (1964, 8), IA's work compares favourably with that done by EA, although there is some difference in point of view and emphasis. Much of the work of EA is directed at the verification of factual data rather than procedures. IA pays more attention to the examination of the operating procedures and practices with a view towards discovering any deviations from the company's prescribed rules and policies as well as to discover more efficient methods of record keeping and performance. Therefore, IA emphasizes the procedural aspects of accounting, although it is also interested in

the factual accuracy of the data produced by the accounting department.

IA tends to combine the intimate knowledge of a company's operations, obtained through constant study and work within the company. Thus, they are in a favourable position to pass judgment on policies and practices of a general business nature as well as of an accounting nature.

EA give somewhat lesser attention to operating and accounting procedures and relatively more to ascertaining the reliability of accounting data. Neither EA or IA can examine all (100%) transactions except in relatively rare and limited situations. However, IAs can cooperate with EAs by assisting them to develop an understanding of the internal control system in operation and in explaining the steps that have been taken by management to identify and rectify control weaknesses. In these ways IAs may be able to make a significant contribution to containing external audit fees by reducing the amount of work the EA would otherwise have to conduct. The relationship between internal and external audit may be one of co-ordination or one of substitution. Both audits have their own distinctive objectives to achieve. If IAs conduct external audit-type work on behalf of the EA there is a risk that internal audit will not be able to meet important internal audit objectives through shortage

of time for "genuine" internal audit work. Managements may ask internal audit to be effective at containing external audit costs by substituting for what would otherwise have to be performed by external audit, but this may be a counter-productive strategy if taken to excess. In addition it is unlikely that there will be a one-for-one saving through this type of internal audit substitution since the EA will need to spend time assessing the validity of the work done by internal audit. Except in the case of out-sourcing, it is unlikely that the opposite will occur: in other words, external audit are unlikely to substitute for internal audit in order to contain internal audit costs since they would have to charge the client for this work. Nevertheless there is both scope for, and a need for, co-ordination between the two audits so that they can avoid overlap and both have sight of, and be able to rely upon, each other's work in areas of mutual interest which contribute towards the achievement of both audits' differing audit objectives.

Contemporary approaches followed by management often include what have become known as "business process re-engineering", "downsizing" and "empowerment" - the latter two often being component parts of the former. In the context of internal auditing, "empowerment" may often be associated with allocating to line management and staff the responsibility to review their internal control

risk arrangements systematically, participatively and regularly. This is becoming known as "control self assessment" or "control risk self assessment". Sometimes it is termed "a self assessment programme" in which case in addition to control it may comprise a consideration of quality and other issues as well. Internal audit may act as facilitator of control self assessment by management and staff.

Whether as part of a formal business process re-engineering project driven in part by a perceived need to downsize, or more a matter of an ad hoc change of business practices, many businesses are actively examining how they can contract out many of their non-core activities. Core activities are generally defined as those that at heart of the enterprise's purpose which the enterprise can conduct as well or better than anyone else. Internal audit is now often seen as a candidate for out-sourcing (or "contracting out") following a process of market testing during which an existing in-house internal auditing may be given the opportunity to tender for the work. One rationale for out-sourcing is that specialist businesses may be able to provide the service for better value for money; in-house provision of non-core activities is often associated with premium employment costs offered to all in-house staff but not necessary as terms and conditions of employment for non-core staff. Out-sourcing may also provides the

enterprise with a better opportunity to vary the amount they spend on the service in question since they are not carrying the fixed overhead of permanent employees conducting that activity. Finally, out-sourcing reduces the overall establishment of staff so making the enterprise simpler to manage and potentially more flexible in changing direction to adjust to future change. Management are then able to focus on core activities.

There are attractions to out-sourcing internal audit - not least because there are large firms of public accountants and others for whom auditing is their own core business. The findings of this research have a bearing on the case for or against out-sourcing. If EAs come to similar judgements as in-house IAs about systems of internal control, then managements (all other things being equal) may have some confidence in entrusting the provision of internal auditing services to people who are not full-time employees of the business.

There are of course many other factors to be taken into account. For instance, whoever undertakes internal audit does need in-depth understanding of the workings of the enterprise and this may be hard for an outsider (even an EA) to come by.

According to Venables and Impey (1985, 33-34), areas of

the common interest between the two parties are:

- the operation of an effective and efficient system of internal check, ensuring internal control is adequate.
- the reliability of records
- an adequate reporting system to provide senior management with sound financial information
- prevention of fraud and waste

Management is involved in the day-to-day monitoring of the system, whilst IA helps management to maintain a current audit of the system. EA, on the other hand is much more concerned with the balance sheet.

Existence of an internal audit staff does not make an annual examination by EA less desirable. Neither can be fully supplanted by the other. Substitution of EA's work with IA's work is explicitly prohibited by SAS 9 (¶1) and implied by SAS 65.

The activities of an internal audit department usually overlap those of an independent auditor to a significant degree-sometimes they are completely parallel-but their purposes and functions are different. EA's function is to understand the client's system as a basis for relying on the end results of those systems so as to give an opinion on the financial statement. IA's function is to understand the company's systems in order to see that company policy is followed and the systems function with

maximum efficiency at minimum cost. Since EAs and IAs have so much in common, they must work together to minimise duplication. For example, IA can help EA prepare listings, account analyses and help in mailing out confirmation letters to accounts receivable.

In terms of audit theory, a degree of reliance on IAs is justified on the principle that a capable, well functioning internal audit department provides disciplinary control so reliable than an EA can limit his testing of other parts of the system.

2.10 FACTORS AFFECTING JUDGEMENT OF EAs AND IAs

To date, research in internal control evaluation has examined the effects of experience, educational level, position level, independence of IAs, firm size and personality variables on decision-making judgements of auditors (Ashton, 1974; Hamilton and Wright, 1977; Bailey, 1981; Hall, Yetton and Zimmer, 1982; Landry, 1989; Moore, 1993, to name a few). The findings indicate mixed results from no effect on judgement (Ashton, 1974); negative results (Hall Yetton and Zimmer, 1982) to positive results (Landry, 1989).

In this thesis, only three of the factors, that is, "experience, educational and position level" were investigated to see their effects on the judgement model of each group of auditor. In addition, firm size and

independence of IAs on the judgement of auditors in the ratings of the cases were also examined.

2.10.1 Experience, education and position level

Several writers have identified the attributes of experience as determinants of information processing abilities (Taylor, 1975; Ashton, 1974; Weber, 1978 to name a few). Practitioners often claim experience to be an important determinant of decision making quality (Weber, 1978, 372).

Mautz (1964, 470-472) lists some factors that can indicate that the IAs are independent and they are:

- internal auditing department is organised quite separately from accounting and treasurer's department
- the head of the department reports directly to the Board of Directors or to an officer holding a position at least equivalent to the heads of these two departments
- if the employees within the internal auditing department are competent, that is, have a thorough understanding of accounting, audit techniques and procedures, sufficient background of education and experience.

On the issue of competency, SAS 1, (AICPA, 1972b) have stated that,

In the course of his day-to day practice, the independent auditor encounters a wide range of

judgement to the occasional extreme of deliberate misstatement. He is retained to audit and report upon the financial statements of a business because, through his training and experience, he has become skilled in accounting and auditing and has acquired the ability to consider objectively and to exercise independent judgement with respect to the information recorded in books of account or otherwise disclosed by his audit.

(AICPA 1972b, SAS 1, AU Section 210, ¶.05)

In summary, SAS 1 elaborates on the characteristics of "competence" in the following way. First, the EA is to acquire the appropriate education. At a minimum, this education includes the basic accounting and auditing knowledge. Second, the EA is to be properly trained. This training includes knowledge and application of firm procedures, as well as continuing education about new developments. Third, "competency" includes acquiring professional experience. This on the job training enables the auditor to make judgements over time. These three characteristics will sum up auditors' knowledge and this knowledge is what the EAs need in order to be competent in conducting financial statement audits.

Besides having the appropriate education and training, experience is very important in the work of an auditor in order to enable the auditor able to make professional judgements. Hall (1980) states that,

An auditor's sense of materiality lies at the heart of his professional judgement. An appreciation of the concept may be innate ..., but experience nurtures, refines and sharpens it.

Hall (1980, 78)

The same also applies to IAs as stated in Auditing Guideline 3.308, AICPA 1990, ¶15. IAs should also have the appropriate experience, training and continuing professional education in order to be effective.

Regarding position level, the researcher thinks that it has some influence on the ratings of internal control system as auditors in different position levels have different experiences and educational background.

A typical audit is illustrated in the following paragraphs in order to show the effect of the auditors at the various position levels on an audit.

A typical audit would involve a preliminary evaluation of the internal control system before proceeding with the other audit procedures. As a first step, the EA will have to go through the procedures manual and interview management to be able to understand the system of internal control that has been established. The auditor will then have to document the system by means of a flowchart or a narration or some other methods (as discussed later in 2.6). After the documentation, the auditor would have to conduct "compliance testing" to ascertain whether the internal control system is operating as it should be. This test can be done by a "walk through" test where literally speaking, the auditor would have to walk through the place of work and observe

whether the control procedures are being followed. The auditor can also take a sample of transactions and follow them through from the source documents to their final recording in the accounts.

A typical independent audit would have 4 to 5 people working as a team. The auditor-in-charge (usually the most senior), would assign these jobs of compliance testing to his or her group of juniors and then evaluate the strength of the internal control by means of the materials that are given to him or her. In charge seniors or auditors are the auditors who take direct responsibility for the performance of audit fieldwork. The backbone of a good audit staff is found in the auditor-in-charge. The auditor does not only direct the fieldwork, supervise, and give on-the-job training to the assistants, but it is upon him that the final responsibility for recognising any serious problem rests. The auditor would have to consider whether the system that has been established by the client is sufficient to prevent errors and irregularities or sufficient to meet the control objectives and consideration should also be given to the extent of compliance with the system. In short, it requires a lot of judgement on the part of the auditor. In evaluating internal control, any weaknesses should be stated as precisely as possible so that the most useful audit steps can be applied to discovering whether the weaknesses would result in any errors and irregularities.

Dunn (1991) discusses the basic structure of any given audit team as follows:

Partner - The partner is ultimately responsible for the completion of the audit. He will sign the audit report on behalf of the firm. The partner will not be actively involved in the routine audit work.

Manager - The audit manager will be responsible for the overall supervision of the detailed audit testing. He will also liaise between the company's management and the partner. If the firm is auditing the statements of a group of companies, the manager will coordinate the efforts of the various audit teams involved.

Senior - The senior will be directly responsible for the day-to-day supervision of the staff engaged in the collection of evidence. The senior may be a qualified accountant, but could be a trainee who is about to become a member of one of the professional bodies.

Juniors - The junior audit staff will collect audit evidence, working under the supervision of the senior and manager. Juniors may be relatively recent recruits who are training with the firm or, increasingly, could be accounting technicians who are employed to support the qualified staff.

(Dunn 1981, 48).⁴⁷

From a look at the organisational charts of certain internal audit companies (Banks and Computer companies) it can be said that the structure of internal audit firms follow along the same lines. There will be the head or deputy head of the internal audit firm, audit manager, senior internal auditors and junior internal auditors respectively, each performing the same function as those with similar levels in an audit firm.

2.10.2 Independence/ objectivity of IAs

Independence or objectivity of EAs and IAs in performing

⁴⁷ Please refer to Mautz (1964, 476) for further description of the position level of auditors.

audits is also important. However, in this thesis only "independence" of IAs is being considered.

In Chapter 13 of The CPA Handbook, Mr E.B. Wilcox writes,

Independence is an essential auditing standard because the opinion of the independent accountant is furnished for the purpose of adding justified credibility to financial statements which are primarily the representations of management. If the accountant were not independent of the management of his clients, his opinion would add nothing ... He must fulfil this obligation even when it means opposing and denying the wishes of those who have employed him, and who, he knows, may cease to do so... The continued prestige and usefulness of accounting depends in large measure on its continued achievement.

"Independence" is a key attribute for IAs. One of the potential impairments to "independence" is the performance of duties that conflict with the internal audit role. Schneider (1984) found that "freedom from conflicting duties" is an important element of perceived internal audit "independence".

SAS 65 (AICPA 1991a, AU Section 9, ¶.10) states that EAs should look into the following factors when assessing the "objectivity" of IAs. The factors are: (a) whether the IA reports to an officer of sufficient status; (b) whether the IA has direct access; (c) reports regularly to the board of directors, the audit committee and (d) whether IAs audit areas where they were recently assigned or are scheduled to be assigned on completion of responsibilities in the internal audit function.

Thus as can be seen from the definition (part (d) above), "objectivity" of IAs is impaired when the auditor is asked to audit a system or program for which he was previously involved in designing or had some other decision making responsibility. For instance, Ward and Robertson (1980, 66) suggest that one of the steps in considering "objectivity" is to "review the IAs' freedom from operational responsibilities". The Institute of Internal Auditors (IIA), the General Accounting Office (GAO) and the Chartered Institute of Public Finance and Accountancy (CIPFA) standards all explicitly mention this type of conflict.

Standard 120 (IIA, 1989) states,

Designing, installing and operating systems are not audit functions ... Performing such activities is presumed to impair audit objectivity
(IIA 1989, Standard 120, ¶.03)

The GAO standards states,

There are circumstances in which auditors cannot be impartial ... These circumstances include ... Previous involvement in a decision making or management capacity that would affect current operations of the entity or program being audited
(Controller General of the United States 1981, 18)

The CIPFA standards states,

Internal audit should not be directly responsible for the development or implementation of new systems, or engage in any other activity which they would normally review and appraise since this could compromise their independence
(CIPFA 1979, 7)

There is some empirical evidence that indicates IAs sometimes do expose themselves to these types of conflicting duties. A study by Clay and Haskin (1981), 5%

of the chief financial officers surveyed responded that their IAs develop or install procedures that they would normally audit. In a recent survey of internal audit directors, Greenberg and Murphy (1989) report that, on average, 14.2% of their internal audit staff time is spent on systems development activities.

Coopers & Lybrand (1984, 69) suggests that the IA should not develop or install control procedures or prepare the accounting record upon which he is expected to comment as auditor if it wants to be effective and has a measure of independence.

Auditing Guideline 3.308, (APC, 1990, ¶11) states that IA's independence can be achieved through the "organisational status" and "objectivity" of IAs.⁴⁸

Regarding "organisational status", the guideline (¶12) states that the head of internal audit should have direct access to, and freedom to report to, all senior management including the chief executive, board of directors and, where one exists, the audit committee.

According to the guideline (¶13), an IA's "objectivity" can be determined through the following ways:

- (a) the internal auditor, notwithstanding his employment by the organisation, should be free from any conflict of interest arising either from professional or personal relationships or from pecuniary or other interests in an

⁴⁸ Similar to SIAS 1 (IIA 1989, 9).

- organisation or activity which is subject to audit
- (b) the internal auditor should be free from undue influences which either restrict or modify the scope or conduct of his work or over-rule or significantly affect judgement as to the content of the internal audit report
 - (c) the internal auditor should not allow his objectivity to be impaired when auditing an activity for which he has had authority or responsibility
 - (d) an internal auditor should be consulted about significant proposed changes in the internal control system and the implementation of new systems and make recommendations on the standards of control to be applied. This need not prejudice that auditor's objectivity in reviewing those systems subsequently
 - (e) an internal auditor should not normally undertake non-audit duties but where he does so, exceptionally, he should ensure that management understands that he is not then functioning as an internal auditor.

The IA needs to declare if he is involved in any of the above situations, so that another auditor could be arranged to take over the audit assignment (Auditing guideline 3.308, ¶14).

Abdel-Khalik et al. (1983, 218) states,

... organisational independence of the internal audit staff is a surrogate of its objectivity."

Their foundation for this surrogate was SAS 9 (AICPA, 1975a) which relates "objectivity" to the "organisational level" to which the IAs report.

When considering the objectivity of internal auditors, the independent auditor should consider the organisational level to which internal auditors report the results of their work and the organisational level to which they report administratively. This frequently is an indication of the extent of their ability to act independently of the individuals responsible for the functions being audited... (AICPA 1975a, SAS 9, ¶7).

If the IA reports to either the managing or finance director, it is important that he should always have the right to report directly to the chairman, on matters of importance. Auditing literature has recommended that IAs report to an independent body known as the audit committee.

Chambers, Selim and Vinten (1990) listed the benefits of audit committees. Some of them are:

- assists directors in their legal obligations
 - strengthens audit independence
 - improves contact between auditors, directors and management
 - encourages higher quality accounting and audit
- (Chambers, Selim and Vinten 1990, Table 22.1, 279)

A study carried out by Rittenberg (1977) involved investigating whether IAs can make important electronic data processing design-phase audit contributions to an organisation without impairing independence. Rittenberg divides "independence" into: (a) organizational and (b) individual.

"Organisational independence" is largely outside the direct sphere of power of the internal audit and involves the reporting level and top management support.

As for "individual independence", the IAs would have some say in cooperation with management. Individual independence is in turn divided into: (a) economic and other influences and (b) individual mental state.

As can be seen in Figure 2.4, one of the examples of "economic and other influences" is "assignment of auditors to design phase and post-installation audit work" which is the issue discussed earlier on regarding auditors' "conflict of interest".

As for "individual mental state" it involves, "personal characteristics" and "competence of auditor to perform tasks". Thus Rittenberg extended the definition of IAs' independence to include three components:

(a) organisational level; (b) economic and other influences (assignment of auditors to design phase and post-installation audit work) and (c) competence of auditor to perform tasks.

The major conclusions of the study may be summarized as follows:

- organisational factors rated highest
- individual factors such a competence rated moderately important and
- economic and other influences (assignment of auditors to post-installation audits) rated low.

For the purpose of this thesis, types of internal independence follow closely Rittenberg's categories, that is: (a) reporting level; (b) competence and (c) economic and other influences.

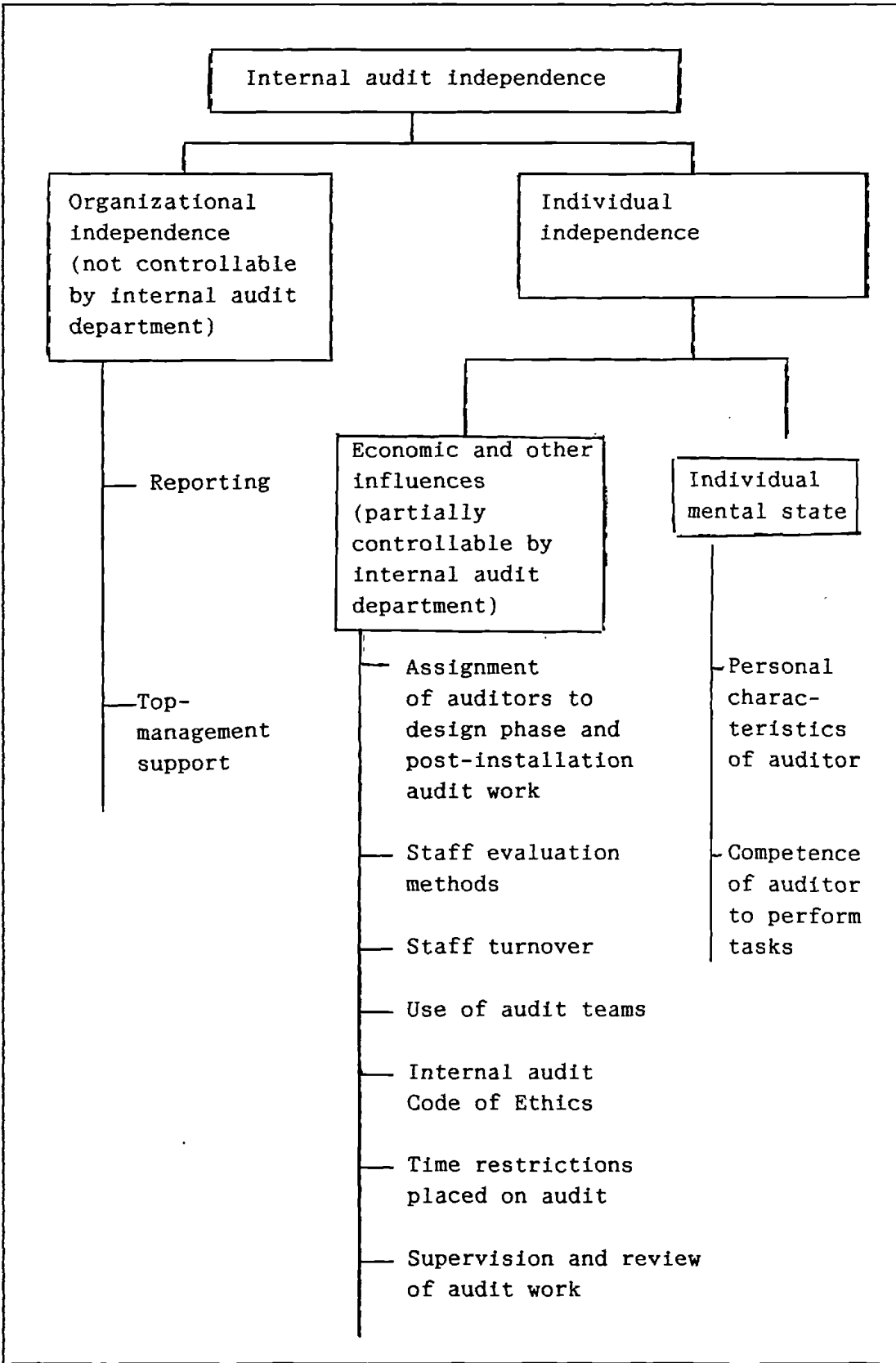


Figure 2.4: A model of internal audit independence

Source: Rittenberg, L. 1977. Audit Independence and Systems design, pg.19. Florida: IIA, Inc.

In the questionnaire, there are questions asking:

(a) to whom is the head of internal audit accountable?

This question relates to "organisational independence".

(b) whether the IA has completed and passed professional and accounting qualification and IAs' length of auditing experience.

This question relates to "competency".

(c) whether the IA is involved in compliance testing, making recommendations for improvement in internal control systems, developing detailed proposals for design or redesign of internal controls, implementation of control changes and administering or operating any internal controls.

This question relates to "economic and other influences".

These three factors (organisational independence, competency and economic and other influences) were used as a measure of IAs' independence.

Based on the answers given to the questions, IAs will be grouped as to their independence, i.e "high, moderate or low". The method of determining this is based on Rittenberg's findings as to which factors were found to be most important, moderately important and least important in determining independence of IAs. Detail calculation is shown in Chapter 5, Section 5.8.

According to SAS 65 (AICPA, 1991a, ¶.09), some of the factors that can determine IA's competency are

educational level, professional experience, professional certification and continuing education of IAs.

2.11 INCREASING IMPORTANCE OF THE ROLE OF IAs

Whittington & Margheim (1993, 51) argues that the reason for AICPA issuing SAS 65 in 1991 to supersede SAS 9 that was issued in 1975 was because of the increasing prestige of IAs and the need for the increased external audit effectiveness and efficiency.

SAS 65, considers three factors when making judgements about the extent of usage of internal audit work, that is inherent risk factors, materiality and the subjective evidence to be evaluated about an audit assertion.⁴⁹

As discussed earlier on in the Chapter, in Cadbury's Code of Best Practice (CFACG, 1992), the board of directors are encouraged to report on the quality of internal control and whether the company can operate on an ongoing basis although it is acknowledged that the introduction of these reports may be deferred pending clarification on the nature of "internal control" and of "going concern". Paragraph 4.4 of the Code states that,

The directors should explain their responsibility for preparing the accounts next to a statement by the auditors about their reporting responsibilities"

⁴⁹ SAS 9, primarily discussed about IAs characteristics, namely, competence, objectivity and work performance that should be evaluated by EAs in assessing IAs' reliability.

The directors are also required to report on the effectiveness of the company's system of internal control and whether the business is a going concern by means of paragraph 4.5 and 4.6 respectively.

Paragraph 4.5 of the Code states that,

The directors should report on the effectiveness of the company's system of internal control.

Paragraph 4.6 of the Code states that,

The directors should report that the business is a going concern with supporting assumptions or qualifications as necessary.

With the new Code, the role of IAs may become more significant.

Research by Ward (1979) indicated that EAs believe the IA's function "should be viewed as an integral part of the internal control system rather than merely a check on the system" and that "external audit costs should usually be materially less when IAs are relied upon than what they would have been without reliance".

A survey by Ward and Robertson (1980) showed that "virtually all EAs rely on IAs to some extent" and about 38% of EAs surveyed think there should be reliance on IAs with respect to evaluation of internal accounting control. The survey also asked the participants, which consist of both IAs and EAs, to predict reliance on the IAs in the next 10 years and both of the groups suggest

that there should be an increase due to certain factors.

Some of the factors are listed below:

- Because of their widening legal responsibilities, managements and audit committees seem more committed to increasing the quality, quantity and objectivity of personnel in internal audit departments.
- Clients are increasing the pressure for more audit efficiency to reduce or stabilize audit fees. The need to be competitive and timely will cause independent auditors to use whatever resources are available to them.
- As governmental regulation of industry increases and business systems grow larger and more complex, EAs will increase their reliance on IAs who should have a "better knowledge of company systems".
- EAs have difficulty obtaining and retaining enough qualified entry-level accountants to handle their needs. Thus increased reliance on IAs will become necessary to achieve adequate audit coverage. Some of the factors listed above correctly depict the current situation.

Venables and Impey (1988, 3), considers internal audit as an agent for change. In their words,

Internal audit is the management function which monitors the continuing validity of management control systems and effective compliance. In fulfilling this role the internal auditor has an excellent viewpoint from which to recognise opportunities for strengthening systems and procedures, for improving methods and for achieving greater efficiency all with the object of increasing

the contribution each management sector can make towards achieving corporate objectives.

Hobgood & Sciarrino (1972) noted that some companies are able to hold their fees down by using effective internal audit staff.

Briston & Perks (1979) indicated that considerable savings in audit efforts and audit costs should result if there is a combination of internal and external audit function within a truly independent audit department.

MAPI (1983) also found that "the increased IA's efforts and the improved quality of the financial management were apparent reasons for the external audit fee decreasing from 1976 to 1980 for companies belonging to Machinery and Allied Products Institute."

Wafa (1988), found that one of the ways to minimize audit fees by companies whose audit fees were considered "high", was to "increase cooperation both by the company and the external auditor in terms of using effective internal audit staff and sufficient internal audit planning".

Lurie (1976) indicated that the time required by companies' personnel to provide the EA with information and data represents a significant hidden audit cost which should be considered like any other factor which enters

into the cost of the annual audit such as, size, complexity, computerization of the company, and efficiency of its accounting department. Lurie suggested that by planning the audit and budgeting for its audit cost, audit fee can be reduced. Planning the audit was described as a joint venture in which top personnel from the company's staff and the audit firm participate to develop a preliminary plan which best starts shortly after the completion of the current year's audit to avoid any mistakes and problems which are still in the minds of all participants.

Moore (1993, 14) summarizes the reason for the increase in reliance on IAs by EAs as follows:

First, ... competitive pressures on external auditors to reduce their fees led to more reliance on the internal audit function. Second, the Foreign Corrupt Practices Act (FCPA) of 1977 emphasized the importance of a strong internal control structure. Third, internal auditing took steps to be recognized as a profession.

In view of the increasing reliance of EA on IA, it would be timely to conduct a research to examine whether there is consensus between IAs and EAs with regards to their internal control evaluation. If it is so, then there is justification for reliance on the IA's work.

2.12 SUMMARY

In this chapter, definitions of internal control, techniques of evaluation of internal control, factors affecting judgements of both IAs and EAs were discussed.

Emphasis of discussion were towards the techniques of evaluation used in the research instrument, namely: ICQ, CO and CR and factors examined in the research instrument that were thought to influence the judgements of both EAs and IAs, namely: experience, educational and position level. In addition independence of IAs was also examined.

CHAPTER 3
NATURE OF JUDGEMENT

3.1 INTRODUCTION

The main objective of this thesis is to find out whether EAs and IAs will come out with the same conclusion (judgement) regarding a particular internal control situation.

This chapter attempts to explore the meaning of judgement and try to describe the "inner feelings" or "thought processes" of the auditors when making a judgement. The purpose is to help understand what governs the auditors when making the internal control judgements. Discussion of the "output" or the "outcome" of judgement will also be discussed since this thesis only examined this issue. Examining the "outcome" of judgement is similar to the approach of "Brunswik lens model" which will also be discussed in this chapter.

Statistics used to measure "judgement" namely: correlation, analysis of variance (ANOVA) and analysis of covariance (ANCOVA) together with the justification of using them will be discussed as these are the techniques used in this thesis to measure judgement.

Other issues such as factors affecting judgement, definition of "judgement insight" and the use of "judgement consensus" and "consistency" as a surrogate for "correct judgement" are also discussed in this chapter. This thesis will compare EAs' and IAs' judgements along the lines of these three issues (i.e. "consensus", "consistency" and "insight").

The chapter will start off by relating judgement to the other thought processes. It will then attempt to relate the thought processes to a typical internal control evaluation.

3.2 CATEGORIES OF THOUGHT PROCESSES

Various literature to explain judgement can be found (Dewey, 1910; Wallas, 1926; Patrick, 1937; Shelly & Bryan, 1964 and Johnson, 1971) but the most complete attempt is made by Johnson. He describes three categories of thought processes in an attempt to structure the complexity of thought into identifiable categories:

a) preparation for intellectual activity b) productive thought; and c) judgement.

According to Johnson (1971, 53), "in any complex act of thought any of the three processes may be the source of individual differences in the final outcome."

3.2.1 Preparation for Intellectual Activity

The first category, that of "preparation", includes everything that precedes and influences thought. The primary occurrence involved in preparation is the formation of a psychological "set". A set is usually defined as "a readiness to make a specific response to a specific stimulus" (Johnson, 1971, 65).

The term readiness in the definition means that the stimulus-response coordination is prepared in advance, so that when the stimulus is perceived, the response follows with little delay. On the stimulus side, the organism is prepared to select from its repertoire of responses certain acts rather than others.

(Johnson 1971, 65).

Johnson (1971, 67-70) suggested that the set adopted by a particular individual for a particular situation is largely determined by four major influences: a) the individual's motives; b) instructions or suggestions concerning the situation which were given to the individual by another person. When there is a conflict of the instructions or suggestions with his individual's motives, he would not be willing to accept them; c) a previously acquired set may be reinstated, that is, the influence of experience⁵⁰. It has been shown that a set which has been developed during the solution of one problem is likely to be transferred, for better or worse, to the solution of subsequent problems of a similar nature and d) the individual may develop a new set during

⁵⁰ Prior knowledge has been shown to influence performance in problem-solving tasks and in learning tasks (Britton & Tesser, 1982).

the performance of a task. He may be partially prepared for the task when he begins but modifying his set as he proceeds.

When the activities of an auditor are compared with the psychological set, it can be seen that in performing his task, the auditor is usually given instructions or suggestions by his superiors on how to perform the task. He may use the instructions or suggestions by his superiors if they suit the particular task that he is looking into but if it does not, then he will make use of his past experiences or the firm's policies or instructions on handling the task. Thus he has to modify his set according to the particular work that he is attending to.

Bonner (1990, 77) states that,

In general, auditors acquire knowledge of relevant cues and how to weight them for judgement tasks by several means including collegiate auditing courses, audit firms' training programs, performance of the tasks in question, or by reviewing other auditors' performance of the tasks.

A complex judgement is facilitated if the stimulus pattern to be judged can be compared with a standard or ideal pattern.

Complex judgements are those in which the object of judgement is complex and the stimulus aspect or aspects to be judged are not distinctive. When a foreman is asked, for example, to rate the merits of his crew or when a conscientious voter tries to select the best candidate for public office (Johnson 1971, 286).

As mentioned in Chapter 1, Harrison (1940) expressed the importance of the ideal type very well as observed from the following quotation of his book on judging dairy cattle.

The purpose of a true type cow, as adopted by the various breed associations, is to set forth a standard that can be used as the basis of judging. The successful judge actually compares each cow that he studies with the ideal or true type cow, and selects the cow that most nearly approaches this perfection. It is highly important, therefore, that a student of judging study the true type model so as to acquire a knowledge of the type that constitutes perfection in a dairy cow.
(Harrison 1940, 313).

In summary, it is likely that the situation which surrounds a real-world complex judgement is compared with similar situations that the judge has faced in the past or an ideal type of situation.

In the internal control situation, the auditor might be influenced by his past experiences in judging which internal control is better or the auditor might use the knowledge that he has learned before he becomes an auditor, such as through formal education or through in-house training or through the firm's policies. This is evidenced in the following statement which refers to internal control by Broeker (1967).

The independent auditor should acquire a proper understanding of the forces of internal control as they operate within the client's business. The acquisition of such knowledge requires that the investigation be made by an experienced auditor.
(Broeker 1967, 76)

In summary, Johnson (1971) has stated that "preparation" accomplishes three things:

The thinker is alerted, prepared for action at the appropriate time. The stimulus objects, data, or materials of judgement are specified; i.e., the thinker is sensitized to, or set for, some aspects of the environment or of memory rather than others. Third, the form of the response or the alternative response categories are specified.
(Johnson 1971, 286)

3.2.2 Productive thought

Johnson's second classification of thought, that of production, concerns the examining of alternatives on solving a problem. Thus, production is considered an elaborating process, a process of exploring alternatives. It can in fact be equated to the process of deliberation where Churchman and Eisenberg (1964, 50-52) has defined it as the act of "processing data through opposite logics and somehow arriving at a judgement on the basis of these processes". This stage of judgement is affected by task characteristics and the amount of information presented.

Evidence in the literature suggests that when objects have been categorized into groups, the perceiver tends to overestimate the degree of dissimilarity between groups (Tajfel and Wilkes, 1963).

Chapman (1967) introduced the term "illusory correlation" to refer to the erroneous report by an observer regarding the degree of association between two variables or classes of events. Chapman argued an illusory correlation may be based either on the associative meaning that exists between two events or on the pairing

of distinctive events. In either case, the subject "sees" the two events as "going together" with more regularity than has actually been done.

Results from a number of studies aimed at investigating the effect of amount of information available in judgement behaviour (Einhorn, 1971; Hayes, 1964; Hendrick, Mills & Kiesler, 1968 and Oskamp, 1965) seem to indicate that the effects of increasing the amount of information are to increase the variability of the responses and to decrease the quality of the choices. In other words, decision makers make poor decisions "because there was too much information for human intelligence to cope with".

Bearing in mind the points discussed above, the internal control case study presented in this thesis involves a task which is not swamped with too much information and as far as possible each internal control procedure chosen to represent the internal control system was distinct from the other.

3.2.3 Judgement

Johnson (1971, 280) states that "the thinker halts his productive activity to judge the merit of what he has produced". Judgement is thus considered to be the last phase of problem-solving. In his book, Johnson offers the following definitions of "judgement".

..... judgement is a conclusive or decisive process, not a productive one, that brings a thoughtful episode to an end.
(Johnson 1971, 282)

Judgement may be identified as the evaluation or categorising of an object of thought. This is logically differentiated from productive thought in that typically nothing is produced. The material is merely judged, i.e., put into one category or another.
(Johnson 1971, 51).

A definition offered by Shelly and Bryan (1964)

If we need to limit it [the term "judgement"] in some way beyond its intuitive content, we can say that roughly a "judgement" refers to any verbal reaction (or its equivalent) that is the "direct" product of the individual's processing his sensory inputs in combination with his memories of "stored experiences". This would exclude reactions such as reading number off a dial.
(Shelly and Bryan 1964, 9)

According to Johnson, judgement is a

... process in that the thinker takes into account the motivational and instructional conditions that initiated the thoughtful episode. The preparation sets up two or more alternatives, between which a choice is made. These alternatives may be perceived from the past or they may be produced ... by a creative process.
(Johnson 1971, 282)

In these definitions the emphasis is upon choosing between alternative responses, or placing the object of judgement into one category or another. It may be argued that EAs' and IAs' overall evaluation of an internal control subsystem fits such a description. The auditor categorizes the internal control subsystem and places it at some point on a continuum of strength or weakness, although both the point and the continuum may be ill-defined.

Most real life judgements are complex, which means that the stimulus material is heterogenous, with no one prominent dimension to which the judge can be easily prepared to respond. The response is therefore correlated with more than one aspect of the stimulus material. The ability to make good judgements of complex stimulus depends upon:

(1) abstracting the pertinent data from the complex situation; (2) adopting and maintaining a set for these pertinent data; (3) attending to several data simultaneously; (4) weighting each appropriately; (5) integrating all this information somehow so that it is related to one of the response alternatives rather than the others. Presumably such judgement requires (6) delaying or inhibiting response, i.e., carefulness, caution, or deliberateness. Errors could be made in any of these aspects of complex judgement and some people are better than others in any or all aspects.
(Johnson 1971, 421-422).

The process is also done by IAs and EAs when they are evaluating an internal control system where they have to attend to several data simultaneously, weighting each appropriately and somehow integrating all the pieces together so that they can come out with their judgement on the quality of internal control system.

3.3 RELATIONSHIP WITH PERCEPTION

Berelson & Steiner (1964, 33) states,

In human behaviour, the process of giving meaning to stimuli is referred to as perception. It is a complex process by which people select, organize, and interpret sensory stimulation into a meaningful and coherent picture of the world.⁵¹

⁵¹ As cited in Pisharodi, Ramohan. 1985. A Behavioral Process Model of Customer Service Evaluation Based on Supplier-Customer

In his book, Johnson stated that judgement is not the same as perception. He differentiates it in the following manner:

If one perceives the situation clearly enough that the activity under way may proceed, no distinguishable act of judgement occurs. But if the perceptual field is not clear ... choosing one of the alternatives may be called an act of judgement. (Johnson 1971, 284).

Johnson (1971, 283) said that perception and feelings are not directly observed but they may be inferred from judgements made under controlled conditions. The experimenter is usually not interested in the response made in the form of judgements but rather is interested in the underlying process it communicates.

In the internal control evaluation case, the experimenter is interested not only in the response being made by both group of auditors but also the underlying factors that account for the differences. As Brown (1962) puts it,

... several auditors might judge the effectiveness of a given system of internal control quite differently ... This condition develops primarily from the use of different methods of appraisal, but can also arise because auditors place different emphasis on the relative importance of various factors of internal control. (Brown 1967, 50)

The relevance of the concept of perception to auditing arises from the fact that the quality of the internal control system has to be perceived by the auditor. The characteristics or features of the internal control

Differences in Perception. Ph.D diss., The University of Tennessee.

system are communicated to the auditor in the form of sensory stimuli. These are perceived by the auditor as attributes of the quality of the internal control system. Apparently, these perceptions should influence the auditor's judgement. Perception can be said to be similar to the "preparation" stage as defined by Johnson.

3.4 AN APPROACH TO THE REPRESENTATION OF JUDGEMENT

The intention of the internal control study is to find out the response in the form of judgement made by the two groups of auditors and also the factors that might cause the differences in judgement. It is interesting to find out if there are differences between the judgements of both EAs and IAs as their past experiences and the ideal type of internal control situation might differ and thus the judgements that they made might also be different.

Johnson (1971, 294) stated that if one wished to identify which aspects of the complex stimulus the judge takes into account, the responses must be tabulated and compared with the various aspects of the stimulus.

Johnson especially likes the correlational technique for analyses of this type.

When data on judgement suitable for correlational analysis can be obtained, the correlation approach offers a sharper method for evaluating the contribution of a number of characteristics of the material of judgement to the final judgement. (Johnson 1971, 302).

He goes on to say that the ultimate in this type of

correlational analysis would be multiple regression.

The ideal of this type of analysis ... appears to be a multiple regression equation, identifying and weighting all the variables that have significant effects on the final overall judgement. The variables must of course be known to the experimenter and the subjects in order that they can be correlated with the overall judgement. (Johnson 1971, 303).

3.5 THE USE OF "LENS MODEL" FOR THE REPRESENTATION OF JUDGEMENT

The lens model was developed initially by Brunswik (1952). It is a way of summarizing correlational relationships between a decision-maker's response (judgement or decision), the "outcome" which is eventually observed (the criterion event) and a set of cues which are related to both.

According to Biddle (1983, 39), "the lens model gets its name from the fact that the decision-maker views the criterion event through a 'lens' made up of cues." The side of the lens relating the criterion event and the cues is referred to as the environment or left side while the relationship between the cues and the response form the decision-maker or the right side. A linear regression model is often employed on the left side to summarize the relationship between the cues and the criterion event and to make event predictions. Similarly, a linear regression model is used on the right side to summarize a decision-maker's use of cues and to predict responses as shown in Figure 3.1.

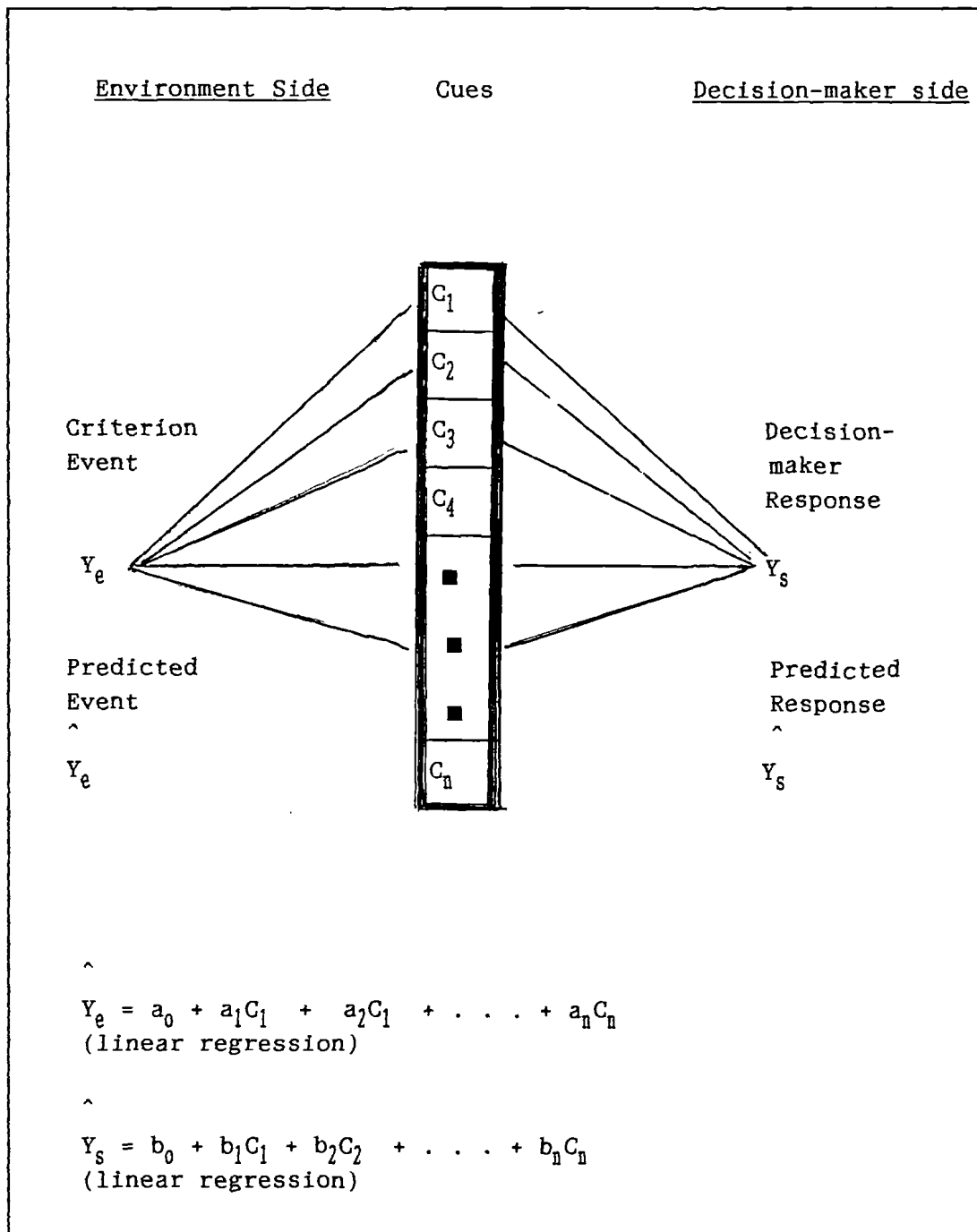


Figure 3.1: A Simplified Lens Model

Source: Biddle, Gary, C. 1983 . Decision -Making in Auditing: Alternative Research Strategies. In Symposium on Auditing Research 1982: Discussion Papers, 40. Glasgow: University of Glasgow Press.

In an internal control evaluation setting, the set of cues becomes the items of information concerning internal control which he has gathered. The variable Y_s becomes the

auditor's judgement of the degree of weakness in the internal control system. Y_e , however, maybe interpreted as the "true" state of internal control system and is therefore not observable. In order for the relationship between Y_s (judgement) and the various cues to be estimated, repeated occurrences of judgements and the various cues must be observed and a laboratory experiment is the only way to achieve this.

One of the assumptions of the lens model is that the cues are linearly related to a criterion event or response. The emphasis of the lens model is on "how well" rather than "how" a decision is reached.

Ashton (1973, 58)

... it appears that he (Brunswik) intended for multiple correlation methods to be applied to both sides of the model.

However, some researchers feel that analysis of variance (ANOVA) formulation of the lens model is better than the original multiple regression formulation for some purposes.

Ashton (1973) states,

Support for the analysis-of-variance model comes from the fact that it can be used to reveal both linear and configural cue utilisation. The latter is thought to be one significant type of nonlinear cue usage. Configurality is revealed by the "interactions" generated by the analysis-of-variance computations.⁵²
(Ashton 1973, 68-69).

⁵² For a detailed discussion please refer to Ashton (1974, pgs 64-71).

In this research, the analysis of variance with covariates (ANCOVA) was used. This was because many of the previous researches have found conflicting results on the effect of "educational level, position of auditors in the firm and experience level" of auditors on the judgement of auditors (Landry, 1989; Ashton, 1974; Ashton & Kramer, 1980; Hamilton & Wright, 1977; Hall Yetton & Zimmer, 1982). Thus, it is seen as a necessity to control for all these variables (covariates) before examining the effect of the cues (ICPs) on the judgement of auditors. Furthermore, Johnson has repeatedly mentioned in his book that "past knowledge or experiences" and the 'ideal type' of a similar situation to the one that the judge is evaluating might influence the judge's judgement. "Experience" and "educational level" will have an effect on the 'ideal type' and thus it was thought that it would be worthwhile to include both these variables in the study. These three variables are not completely independent of each other, as usually the higher the "experience level" and "educational level", the higher the "position level" of an auditor and the higher the "experience level" of an auditor the higher the "educational level" is.

Huitema (1980) states,

Analysis of covariance (ANCOVA) model represents an integration of analysis of variance (ANOVA) and the analysis of regression model.
(Huitema 1980, 13)

Basic advantages of ANCOVA over ANOVA is that it has

generally greater power and reduction in bias caused by differences between groups that exist before experimental treatments are administered.

Mead (1990) states that,

The object of the experiment is to compare the experimental treatments as precisely as possible. The precision of comparison is determined primarily by the background variation, represented by the variance, σ^2 , of the error term, ϵ . If some of the error variation can be related to variation in the additional variables, measured on each experimental unit, then the effective background variance, σ^2 will be reduced and treatment comparisons, which may require adjustment to allow for uneven patterns of values of the additional variables, can be made more precise.

(Mead 1990, 247)

...the main purpose in introducing the covariates is to improve the precision of estimation of treatment parameters.

(Mead 1990, 250-251)

Amongst the important assumptions of analysis of covariance are that: (a) each group's values should be drawn from a normally distributed universe; (b) each of the two groups must be drawn from populations of equal variances; (c) the two groups are randomly selected from some defined population; (d) they are randomly and independently assigned to the treatment groups; (e) response Y (judgement) is linearly related to the covariates and (f) the slope of the straight-line relationship is assumed to be the same for all treatments.⁵³

⁵³ For detailed discussion of the assumptions, please refer to Huitema, Bradley, E. 1980. The Analysis of Covariance and Alternatives. John Wiley & Sons, pgs 98-122.

Ott (1977) explains the difference between analysis of variance and covariance in the following manner:

Now in addition to measuring the response variable on each experimental unit, we measure a second variable x , often called a covariable, or a covariate.
(Ott 1977, 611).

His comments when there were two or more covariates are as follows,

Including more than one covariate in the model merely means that we have more than one quantitative independent variable in our model. For example, we might wish to compare the social status y of several different occupational groups while incorporating information on the number of years x_1 of formal education beyond high school and the income level x_2 of each individual in a group ... Thus we might have a response related to two covariates (x_1 and x_2) and $t=3$ treatments ...
(Ott 1977, 618-619).

Basic advantages of analysis of covariance (analysis of variance with covariates) over analysis-of-variance is that it has generally greater power and there is a reduction in bias caused by differences between groups that exist before experimental treatments are administered.

Landry (1989) has suggested the use of this approach as an extension to his study which compares the judgements of internal and external EDP audit experts on an EDP internal control system.

A possible extension of this study would be to use analysis of covariance procedures in the methodology. This procedure could answer the question of what causes the differences in consensus between external and internal auditors.
(Landry 1989, 119).

In this thesis, the analysis was done by means of ANOVA with covariates using SPSS (Statistical Package for Social Scientists); covariates being "experience", "educational" and "position level". The other treatments or independent variables were the 8 ICPs.

3.6 JUDGEMENT CONSENSUS AND CONSISTENCY

There are difficulties in assessing the validity of auditor's judgement. One of these is the absence of suitable criteria by which to distinguish correct from incorrect judgements. Because strict guidelines for evaluation do not exist, there are no clearcut "right" judgements available with which to compare individual professional judgements in most audit tasks. This is one of the reasons why only the "right side" of the Brunswik model as shown in Figure 3.1 could be experimented on and it is also the justification for using an experimental design.

"Consensus" is usually used as a surrogate for correct judgement, as is evidenced by the following statements. Joyce (1976) has stated that "if there exists a common core of knowledge that is important to auditing, and if the education, certification, and training process auditors undergo are successful in imparting that knowledge, one would expect to find agreement among the judgement of different auditors in the same audit situation." She also stated that a lack of consensus may

result in excessive audit costs. Thus, it is valid to say that consensus (that is the degree to which the auditors concur in their professional judgements) should be used as a criterion for evaluating these judgements.

The importance of the use of "consensus" as a criterion for evaluating judgements is also evidenced by statements such as:

The standard of care which the auditor owes to the client is that degree of care which would ordinarily be exercised by other members of the profession in similar circumstances.
(Willingham and Carmichael 1971, 19).

He (the "prudent man") must exercise as sound judgement as would another possessed of the same extent of information available to him at the time.
(Mautz and Sharaf 1961, 132).

In the best of all possible worlds, every auditor, given the same set of facts, would select the same auditing procedures and apply them to the same extent.
(Hicks 1964, 39).

Einhorn (1974) argues that convergent validity (consensus among experts) is one of several necessary conditions (although not sufficient on its own) for evidencing the existence of professional expertise. He goes on to say that "judgement consistency" is important because it is positively related in the long-run to "judgement accuracy", and because "judgement consistency" is considered a necessary condition for expertise.

If professional people have a high degree of "judgement consistency", it also facilitates the development of the profession's approach, as developments are made from the basis of a common ground.

In this thesis both "judgement consensus" and "judgement consistency" were investigated together with "judgement insight".

"Judgement insight" is how well an auditor is aware of his own judgement formation processes. In this thesis, "insight" refers to the extent of agreement between the auditor's allocation of points in relative importance to the 8 ICPs and the relative importance of the 8 ICPs as obtained from the judgement model.

As there is no correct answer for whether the internal control situation is good or bad, "judgement consensus" is sometimes equated to "judgement accuracy".

Ashton (1985) has conducted a research and found that there is a highly positive relationship between "consensus" and "accuracy".

3.7 SCOPE OF THESIS

As mentioned earlier in Chapter 1, the scope of this thesis is as follows:

1) to investigate:

- (a) "judgement consistency", or the agreement over time between the judgements of the same auditor using the same data and
- (b) "judgement consensus", or the degree of agreement between the judgements of different

auditors using the same data at the same point in time,

- 2) to determine similarity in ratings using different approaches of internal control evaluation, that is by using ICQ, CO and CR approach.
- 3) to determine the judgement model of EAs and IAs by means of analysis of variance with covariates. The judgement model consists of eleven treatment variables which comprise of three covariates (being experience level, educational level and position level of auditors) and the 8 ICPs. A judgement model was produced for each group of EA and IA as compared to previous research which produced multiple models for each participating auditor. The current analysis of covariance is not "orthogonal"⁵⁴ (because of the presence of covariates), eventhough the experimental design is from Kempthorne's $\frac{1}{4}$ replicate of 2^8 design.⁵⁵

Mead (1990, 251) states,

Whether or not the block and treatment effects

⁵⁴ For a detailed discussion of "orthogonal", please refer to Cochran, W. G and G.M. Cox. 1968. Experimental Designs , 2nd ed. New York: John Wiley and Sons, Inc., page 63.

⁵⁵ Thus statistical analysis such as "omega-squared" used by Ashton (1973) and his followers was not able to be used. Ashton used the "omega-squared" statistic to calculate the proportion of variance in judgement that is explained by each main effect and two factor interactions.

In this thesis, priority of importance of each variable in explaining the ratings given by the auditors was based on the "significance level" as shown by the "f ratio". The more significant the level is, the more important the variable is presumed to be.

were orthogonal in the original design model, it will usually not be true that they are orthogonal after adjustments for the effect of covariates.

Due to this, explanation tends to be more descriptive in nature because for statistical calculations such as omega-squared (which could be used to calculate the size of effect of cues as widely used in previous research) it would require a balanced or "orthogonal design".

4) to investigate the effects of the following factors on judgement consensus and consistency:

- (a) experience, professional qualifications and position level in the organisation and
- (b) independence of IAs and size of firms

5) to investigate other factors such as:

- (a) whether EAs have any preference of "accounting controls" over "administrative controls" and vice-versa
- (b) whether the auditors would rate the "accounting controls" more able to achieve "completeness, existence and valuation" control objectives as compared to the other two objectives ("rights and obligations" and "presentation and disclosure" objectives)
- (c) whether "judgement insight", which is the extent of agreement between the auditor's subjective (i.e self-reported) description of his or her judgement process and an objective description derived from mathematical or statistical techniques differs between EAs and IAs.

Although Ashton (1974, 246) has recommended that in future experiments, "the characterization of the internal control subsystem in terms of a questionnaire" should not be modified but research done later than that has found otherwise.

Bailey (1981, 117) found that several subjects in his study do not make use of the questionnaire approach for internal control evaluation. Instead, the subjects recommended an approach which identifies specific control objectives and appropriate controls to achieve those objectives. This is similar to the "CO" approach discussed in Chapter 2.

Thus in this thesis, besides the "ICQ" approach, the auditors were also asked to evaluate the internal control system by means of a "CO" and "CR" approach. The auditors were asked to make their judgements on a "visual analog scale" with "extremely strong" and "extremely weak" on either side of a line, unlike in previous research which used "likert scale". The difference in the scale used was that the "visual analog scale" was a continuous/interval measurement whereas the "likert scale" was an ordinal measurement. As the auditors' judgement model were designed according to Kempthorne's $\frac{1}{4}$ replicate of 2^8 design using ANOVA, it thus requires a "continuous" measurement. According to Schneider (1984) studies have used data which is not well suited for ANOVA. His

comments were for the studies made on the evaluation of internal audit strength by EAs but it can be applied to the studies on internal control evaluation as well.

All of these studies used ANOVA which may not have been appropriate for the data collected. Each required auditors to make judgements about a qualitative attribute (e.g., IA's competence, IA's reliability) by using a four-point or a seven-point numerical rating scale. These judgements were interpreted as having interval scale properties, with ratings unique up to linear transformations. That is, the auditors' assignments of numerical values to the internal audit profiles were interpreted such that equal distances between the numbers assigned represented equal differences in the strength of internal auditing, as represented by the profiles. This interval scale assumption raises two questions of internal validity. First, the descriptive phrases (e.g., "mostly reliable") may have different meanings for different auditors; and second, any given auditor may not perceive the intervals as being equally distant in terms of internal audit strength. (Schneider 1984, 659).

However, Andersen (1961, 310) disagrees with this and supported the use of ANOVA with "likert scale". Further discussion regarding this matter will be made in chapter 5, section 5.11.3.1 and chapter 6, section 6.4 .

3.8 SUMMARY

This chapter has described the three stages of judgement and how judgement is related to perception. However, according to Allen Newell (1968), one of the foremost contributors to the study of human problem solving,

"Judgement", is an umbrella term, like "perception", "thinking", "learning" and "cognition". Its purpose, like that of the others is to designate a class of phenomena well enough so that one knows where to start in the development and evaluation of scientific theory. It is a mistake to believe it can

(or should) be a technical term or precisely defined.
(Newell 1968, 1)

However, an attempt is made in this chapter to define judgement in the context of internal control evaluation. Most of the definitions are based on Johnson's (1971).

Influences on judgement such as the nature of judgement tasks, one's past experiences and one's comparison to the ideal type were also mentioned.

This chapter also described the Brunswik's Lens Model as an approach by which to study human judgement. The extension of that model makes use of factorial designs and analysis of variance. The chapter concluded with the scope of the thesis or the main issues that are going to be investigated in the thesis.

CHAPTER 4

PREVIOUS LITERATURE

4.1 INTRODUCTION

The objective of this chapter is to explore the importance of those variables introduced in Chapter 2 and to examine critically the research methodology used in previous research into internal control evaluation. The variables examined in previous research, the approaches to statistical analysis and the findings of previous research are noted and compared with the present study. Chapter 6, Table 6.40 gives a summary of the findings of the current study as compared to previous studies.

4.2 SYSTEM OF INTERNAL CONTROLS

The auditor's obligations in the evaluation of internal control strengths and weaknesses and in subsequent planning of audit evidence collection are described in professional standards (APC 1980b, Auditing Guideline 3.204, ¶12).

According to Felix and Niles (1988),

- From the perspective of an auditor forming an opinion on financial statements ... the auditor's essential internal control related activities are:
1. to learn and document components of the internal controls that could affect reported financial information
 2. to evaluate the apparent quality of the internal controls to assist in planning audit evidence

- collection, and
3. to re-evaluate the internal controls as a part of error assessment decisions up to and including the final opinion and reporting decisions.
(Felix and Niles 1988, 43)

While the extent of internal control related audit activities varies across engagements, this classification captures their basic nature.

Much auditing research on internal control is a part of behavioural research on human decision processes (Carmichael, 1970) as it involves a combination of complex qualitative and quantitative judgements.

Three primary research methodologies have been used in studies of audit decision-making - the lens model, probabilistic judgement and predecisional behaviour.

Biddle (1982) states,

The difference in perspectives between the lens model and probabilistic judgement methodologies relates primarily to their levels of abstraction. The lens model methodology examines relationships between decisions (or judgements), a set of factors (cues) which are assumed to affect decisions, and observable outcomes which are the objects of the decisions and which are related to cues. Probabilistic judgement focuses more narrowly on the sequence of steps by which decisions are made and the probabilistic nature of many real-world judgements.

The predecisional behaviour methodology examines the influence of contextual variables on the way in which a decision-maker structures a task and how this may affect the resulting decision. Thus, characteristics of the decision setting are viewed as possible determinants of decision-making behaviour.

(Biddle 1982, 38-39)

Examples of probabilistic judgement research are Tversky and Kahneman (1974), Joyce and Biddle (1981). Joyce and

Biddle deals specifically with biases associated with the representativeness heuristics.

Pre-decisional behaviour research can be said to be in the early stages compared with the other two. An example of it is Biggs and Mock (1980) which employed verbal protocols to explore the process by which auditors make auditing sample selections.

Since the current study follows the "lens model" approach, discussion here is limited to that approach.

Studies by Ashton (1974)⁵⁶ and Joyce (1976) are illustrations of the "lens model" approach, which may be referred to as "policy capturing" models rather than models which explore the "cognitive processes" of auditors.

In short, the lens model approach looks at the judgement (response) of a subject and tries to relate the judgement to the factors (cues) that are important in contributing to that response rather than to the cognitive processes that are involved in getting that response. It makes use of analysis of variance (ANOVA) based on an experimental design.

⁵⁶ Ashton completed his Ph.D in 1973 and published a paper regarding the findings of his thesis in 1974. Thus, Ashton 1973 and 1974 refers to the same subject matter.

In this thesis, the lens model approach is used as it is an exploratory study with the objective of examining whether the judgements of IAs and EAs differ given the same internal control situation that they have to evaluate. The majority of past research discussed in this chapter was also of this type.

4.3 PRIOR RESEARCH INTO INTERNAL CONTROL EVALUATION

During the past three decades, attempts to systematize the formulation of judgements about internal control have appeared in the literature. They were at their peak during the 1970s, initially with Ashton. Much other research was done following his research. These studies focussed on certain "segments" of the internal control system. These "segments" have been referred to as "subsystems" (Ackoff, 1961) or "cycles" (Arens and Loebbecke, 1991). The studies involved experimental tasks based on case studies described in narrative form or in ICQ form.

Earlier research on internal control evaluation had established that there are difficulties in assessing the validity of an auditor's judgement (Ashton, 1974; Hamilton and Wright, 1977 and Ashton and Brown, 1980). One of these is the absence of suitable criteria by which to distinguish correct from incorrect judgements. Because strict guidelines for evaluation do not exist, there are no clear-cut "right" judgements available against which to compare most individual professional audit judgements.

Much of past research on evaluation involved asking the auditor or student subjects to respond to varying internal control case situations. Usually a selected set of internal controls was used in a laboratory setting to attempt to identify the controls that seemed to cause important differences in auditor behaviour.

Most studies in this area replicated or extended the work of Ashton (1973) with the purpose of testing the "generalisability" of the Ashton study or of confirming Ashton's findings.

4.4 CATEGORIES OF PREVIOUS RESEARCH

In this thesis, prior research on internal control evaluation by auditors is classified into a number of categories to ease discussion (Figure 4.1):

- (a) research involving individual judgements
- (b) research involving group judgements
- (c) research comparing EAs' and IAs' judgements
- (d) other relevant research in accounting
- (e) other relevant research not in accounting
- (f) research on reliance of IAs by EAs

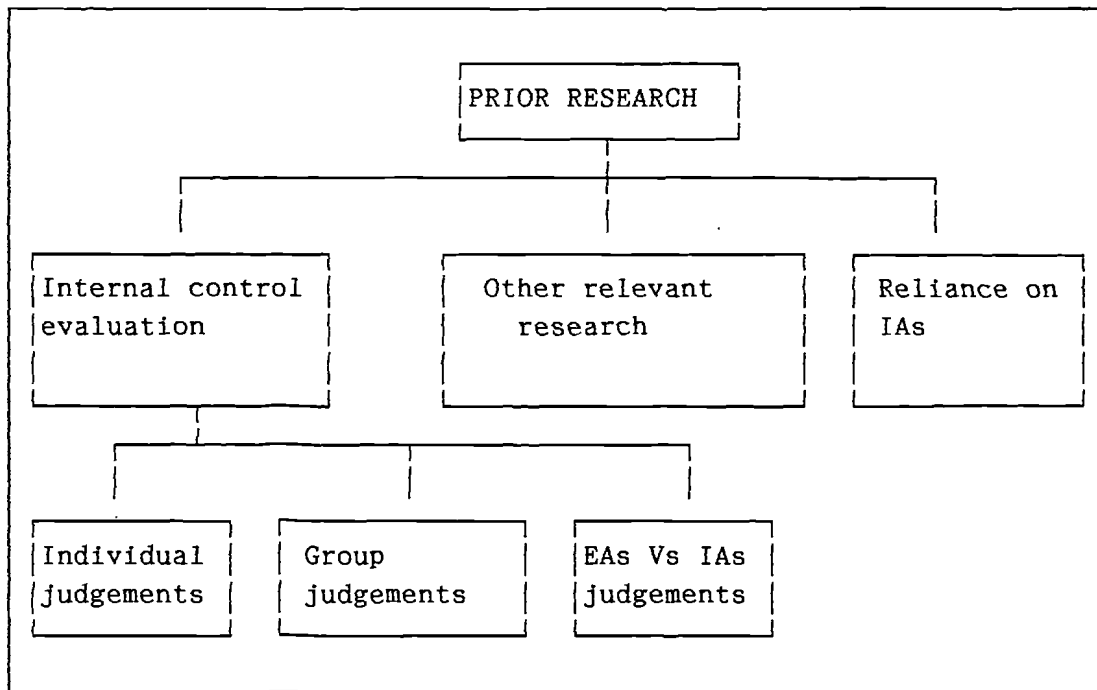


Figure 4.1: Categories of prior research

4.4.1 Research involving individual judgements in the area of internal control evaluation

Ashton (1974) was the first to research internal control evaluation using an experimental design and an ANOVA analysis in the modelling of judgements. He asked sixty-three auditors from four different public accounting firms to evaluate the quality of a hypothetical firm's payroll internal control subsystem. The subjects were employed by four public accounting firms in the Minneapolis/ St. Paul area of the United States. The four firms consisted of two large national firms, a regional firm, and a local firm. A large majority of the auditors had two or three years' experience. The experiment was conducted by visiting the public accounting firms and meeting with the auditors in small groups. The subjects were given a brief oral

introduction to the judgement task and were presented with the case materials. The subjects were selected "primarily on the basis of availability".

The average time spent completing the questionnaire was 30 to 40 minutes. The second stage of the experiment, which was necessary in order to assess consistency of judgement over time, was conducted in the same manner as the first. On the second, later stage of the experiment (two weeks after the administration of the first questionnaire), the subjects again worked on the same task for 30-40 minutes. Their judgements were made on a six-point scale from one (1) extremely weak to (6) adequate to strong. Ashton systematically manipulated the patterns of answers (either "Yes" or "No" for each internal control question) through a $\frac{1}{2}$ fractional replication of a 2^6 analysis of variance design. Each of the six internal control questions was treated as a factor. Thus, each subject made judgements with regard to each of 32 different stimulus combinations. Among the findings reported by Ashton were a moderately high degree of consensus (agreement among the subjects given the same stimulus combinations) and a high degree of judgement stability (agreement between a given subject's judgement at one point in time and his judgement at a later point in time given the same stimulus combination). Ashton also reported that, on average, agreement among subjects' within firms was the same as agreement among subjects' between firms.

Two types of consistency were evaluated:

- (a) "consensus", or consistency across auditors at the same point in time: consensus was evaluated by correlating the ratings (judgements) given to the 32 cases by all pairs of auditors.
- (b) "stability" or "consistency" over time for the same auditor using the same data: stability was evaluated by correlating the judgement ratings of each auditor at the first stage with his or her own ratings from the second stage. For the purpose of constructing descriptive models of judgement, F ratios were computed for the 6 main effects and fifteen 2 factor interactions from the data of each auditor. Then w^2 (omega squared) was computed for each main effect and 2 factor interaction. W^2 measured the extent to which each auditor utilized each of the 6 ICQs (and their interactions) in formulating internal control judgements.

In summary, Ashton's research objective was to determine the degree to which the auditors were consistent in their internal control quality evaluations. He found the responses of the individual auditors to be highly consistent over time and consistent with other auditors. 2 separation of duties controls were the most important design factors in the overall evaluation. The effect of the audit firm which employed the auditor and the experience of the auditors were reported as being statistically insignificant.

For "judgement consensus", the average correlation between the ratings of all pairs of auditors on the thirty-two cases was approximately .70. On the average, an auditor agreed with members of other firms (or experience levels) as much as the auditor agreed with members of his/ her own firm (or experience level).

For "judgement stability", the average correlation was .81. The coefficients differed very little across firms or experience levels. In general, stability was greater than consensus - indicating greater agreement between an individual's judgement at two points in time than between different individuals' judgement at the same point in time.

Ashton constructed a descriptive analysis of variance model for each auditor to obtain further information about judgement consistency. Ashton (1974) states,

On the average, the total of the omega-squared values for the six main effects was just over 80 percent (the range was 48% to 96%). For the fifteen interactions, this total was 6.4% (the range was zero to 17%). The latter indicates that the auditors did not look for patterns of answers to the six questions. Instead, they evaluated the effect of each question independently of the effects of the other questions in the same case. At least five of the six main effects were significant (at the 0.05 level) for two-thirds of the auditors, while the number of interactions reaching significance was generally zero or one.
(Ashton 1974, 152)

In order to investigate the degree of insight that an auditor has into his or her own judgement process, each auditor was asked to allocate 100 points to the six

internal control factors so as to indicate the relative importance of each factor in his or her judgements. The auditor was asked to do this after he or she had rated the 32 cases. This represented the subjective weights. "Calculated weights" for the 6 factors were then obtained by norming all the omega squared indices to add to 100 for the main effects alone, that is an "adjusted omega squared statistic" was derived for each main effect for each person by adding to the main effect, omega-squared all the interaction omega squares which included that main effect; the "adjusted omega-squared" values for the 6 main effects were summed; then each adjusted omega-squared value was divided by this sum.

An "insight index" was computed for each auditor by correlating his or her subjective weights with his or her calculated weights over the 6 factors.

In this thesis, judgement insight for each group of EA and IA (but not for individual auditors) was calculated. Thus the relationship of judgement insight to the seven variables (as will be discussed in Chapter 5, that is experience level, educational level, position level, firm size, independence level, types of independence and types of organisational level) cannot be determined. This thesis will only consider the relationship of judgement insight to the seven variables and compare it with previous studies.

Judgement insight was found to decrease with increasing experience. Ashton argued that this might have been due to the fact that the less experienced auditors have formed some "rules of thumb" to help them form their decisions. For example, the "separation of duties" cues were always emphasised in the auditing literature to be quite significant in strengthening the internal control system of a client company, whereas the more experienced auditors might not have judged the cues to be equally important, as it could be that from experience the auditor has gathered that even with the absence of those cues, other compensating controls, if present, would be equally helpful in determining the strength of internal control. A different interpretation from Ashton's of this finding would be that the further removed an auditor was from the date of qualification, the more out of touch was that auditor likely to be with the reality of control - at least in a system such as payroll.

Hamilton and Wright (1977) replicated Ashton's study and extended it by considering explicitly the relationship between years of experience and judgement consensus, the stability of judgements, the relative weighting (importance) of and the degree of self-insight into the relative weighting of internal control indicators. Relative to prior studies, they included a much broader range of experience levels (0 to 28 years) and a larger percentage of relatively experienced auditors (45% with

more than 3 years of experience) and thus provided the first opportunity to investigate the generalisability of previous results to more experienced auditors. The subjects were 17 practising auditors in Minneapolis/ St. Paul in the United States consisting of 5 CPA firms, 2 Big Eight and 3 multi office non Big Eight.

A large student sample was also obtained from 2 groups of auditing students enrolled in the introductory auditing course at the University of Minnesota. The experiment was administered after the topic of internal control questionnaires had been discussed in class.

The participants were divided into 3 experience categories; a) no experience (represented by the students), b) less than or equal to 3 years (inexperienced auditors) for comparability with Ashton's results and c) more than 3 years experience (experienced auditors) which were both represented by the auditors. Hamilton and Wright omitted 2 of the original six questions and divided the 2 separation of duties questions into 3 questions in order to "isolate a more detailed classification of separation of duties".

In this thesis, three experience categories were also investigated although the definitions of the three categories vary; a) inexperienced refers to auditors with 0 to 3 years of auditing experience; b) moderately

experienced refers to auditors with 3 to 6 years of auditing experience and c) very experienced refers to auditors with more than 6 years of auditing experience. Justification for the three categories is as discussed in Chapter 5, Section 5.8.

Hamilton and Wright presented their subjects with all 32 combinations of the "Yes and "No" answers to these 5 questions. The auditing subjects were members of professional staffs from 5 firms, each of whom received the materials from a contact person from his /her own firm (either a partner, audit manager, or training managers).

Each contact person was further instructed to choose at random subjects to participate in the research, excepting only that about half should have had up to 3 years audit experience and half over 3 years audit experience. If a subject was unavailable because of a vacation or out-of-town clients, a replacement was chosen. A second request was made by the contact person to the subjects who failed to return the materials by the end of 2 weeks.

In terms of subject selection, this research study was more impartial than had been Ashton's. The sample selection for the research which is the subject of this thesis corresponded more closely to Ashton's. In essence, the subjects were those who were available

rather than a group which was randomly selected and then persuaded into completing the research instrument. This sample selection was for pragmatic reasons. The research which is the subject of this thesis required sixty four matched pairs of IAs and EAs (that is, 128 auditors determined by means of Kempthorne's $\frac{1}{4}$ replicate of 2^8 design) as well as a few additional ones to complete a research instrument which typically took between one and a half hours and four hours to do so in each case. The chances of finding so many respondents at random to complete this work were regarded as unrealistic. In addition, the requirement to work with matched pairs of IAs and EAs would have meant that entirely random selection would have required a much larger total number of subjects to complete the research instrument in order to arrive at 64 matched pairs. So many completed questionnaires would have had to be discarded. It is very improbable that selection of respondents by those initially approached within the firm of public accountants or within the internal audit department will have biased the data collected over such a large sample, addressing so many issues and where availability for selection was in part dictated by correspondence to conforming to the matched pairing requirements.

In Hamilton and Wright's research, of the 105 packets handed out, 73 were returned by the end of two weeks. The average reported completion time for the 32 cases was about 30 minutes.

Each subject's degree of consensus over the 32 cases was measured by the "average product-moment correlation" for a subject's judgements and the judgements for all other subjects within the subject's experience category.

As can be seen from Ashton's and Hamilton and Wright's studies, the auditors were asked to answer 32 cases in order to ascertain the judgement model of each individual auditor. This thesis requires each auditor (both EAs and IAs) to answer 8 cases⁵⁷ as it was thought to be just the right number before the auditors will get bored. However, the effect of having each auditor answering 8 cases only, was that the judgement model for each individual auditor cannot be determined but only the judgement model for each group of EA and IA was able to be determined. Since the objective of the thesis is to determine whether there are any differences between the two groups of auditors, it was thought to be appropriate.

Consistent with Ashton's work, it was found that there was a negative association between years of experience and consensus (-.20) using Spearman correlation. The amount of experience accumulated by auditors was also unrelated to judgement stability, but there was a positive association between self-insight and experience.

⁵⁷ The auditors were also required to answer two more questions besides the eight cases.

This could be due to the wider range of experience and relatively larger percentage of auditors with more than three years of experience. Furthermore, "inexperienced" in Ashton's research referred to auditors who were already working in the audit firm but in Hamilton and Wright's study, they referred to "auditing students". It could thus suggest that whilst "inexperienced" auditors in Ashton's study had formed rules of thumbs about what to look for in a good internal control system, "inexperienced" auditors in Hamilton and Wright might not have really understood or not aware of what constitutes a good internal control system.

Ashton and Brown (1980) extended Ashton's study by including 2 additional internal control questions and five times as many hypothetical cases. They also presented the internal control questions in different order. A $\frac{1}{2}$ replicate of 2^8 design was used which enabled all 28, two-cue interactions and all 56, three-cue interactions to be evaluated.

The subjects were thirty-one practising auditors from the Chicago, Dallas, Houston and San Antonio offices of "Big Eight" accounting firms. Like those of the original study (Ashton, 1974), virtually all (29) of these subjects had between one and three years of auditing experience. On average, there was a greater spread of experience than Ashton but lesser spread than Hamilton and Wright.

50 packets of materials were mailed to EAs who had been recruited through personal contacts by one of their associates. The packets contained a general description of the hypothetical company, the 128 cases resulting from a $\frac{1}{2}$ replication of 2^8 factorial design, and 32 repeat cases included for the purpose of assessing the stability (test-retest reliability) of judgements. Subjects had to evaluate 160 cases consisting of 128 principal cases and 32 repeat cases. The cases were arranged in random order and the same case order was used for all subjects. The repeats were always cases 129 through 160.

The findings suggest that interactions were quite unimportant in terms of explaining variance in auditors' judgements. The 2 original separation of duties cues explained much more judgement variance than did any one of the other cues. The mean w^2 values for the third separation of duties cue (new one) was only 4.3%, which was virtually identical to the average of the mean w^2 values for the remaining 5 cues (4.2%).

The mean total w^2 for the 3 separation of duties cues in the current study (50.9%) was very near the mean w^2 for the 2 separation of duties cues in the Ashton's study (51.4%). The two cue orders used in this study did not result in difference in importance of the 2 original separation of duties cues.

In this thesis, out of 8 internal control procedures (ICPs) or cues, there were 2 "separation of duties" cues. In addition, the 8 ICPs were divided equally into "administrative" and "accounting" controls of which both the 2 separation of duties cues formed part of the "administrative" controls. The 8 ICPs were then placed in three different orders at random. The rationale of doing this will be discussed in detail in Chapter 5.

Correlational statistics were used to assess insight, stability and consensus as in Ashton (1974). Values for judgement insight were high with a mean of 0.86 and values for judgement stability assessed by 32 repeat cases were also high, with each value being approximately .10 above those found by Ashton (1974). The results showed that experience differences in the 1 to 3 years category were not significant. Neither the addition of a third separation of duties cue in the current study, nor the decomposition of the 2 original cues into 3 simpler cues in the Hamilton and Wright (1977), significantly affected the proportion of judgement variance explained by the separation of duties.

Thus, although it may be feasible to present subjects with more complex experimental tasks (for example, to include a greater number of cues and/or cases), it appears to be unnecessary to do so. The results also showed a significant association for years of experience

and self insight as had been found by Hamilton and Wright (1977) but unlike Ashton' earlier study (1974).

Reckers and Taylor (1979) believed that part of the high consistency of the auditors in Ashton's (1974) study resulted from the fact that only six questions had been used. They therefore used 36 questions from an audit firm's questionnaire but used only 5 cases per auditor. They argued that the questionnaire that they used was more representative of the ones used by CPA firms. The cases required an hour or more to answer and they were mailed to the subjects. The subjects consisted of 30 auditors from 6 offices of four of the "Big Eight" and one of the "near Big Eight" firms working in Washington D.C., or Baltimore, Maryland with 7½ years average experience. The subjects were "not randomly selected"; instead, officials of the six firms were selected because of their willingness to cooperate and the officials were asked to distribute the case materials to personnel of all ranks - a selection method which corresponded closely with that used in the research which is the subject of this thesis. The subjects returned the case materials to the researchers directly by mail - again similar to this research.

Reckers and Taylor (1979) were concerned with the level of consensus among the reliability ratings made by their thirty auditor-subjects. Consensus was evaluated by

correlating the ratings given to the five cases by all pairs of auditors. The subjects were asked to evaluate internal control on a reliability rating scale of 0-100% which is an "interval" scale. This is the first time that an "interval" (continuous) rather than an "ordinal" (Likert) scale was used. As discussed in Chapter 6, ANOVA which is the technique used to determine the judgement model of the auditor works best with an "interval" rather than an "ordinal" scale.

The mean of these correlations across the thirty auditors was 0.1554, the mean for the fifteen auditors with less (more) than the median amount of experience (i.e. 7½ years) was 0.135 (.357). The fact that "none of the five cases represented extreme conditions" tended to bias the mean correlation downward. This number was considerably smaller than that found in any of the prior work.

The experience-related differences in consensus reported by Reckers and Taylor must be interpreted very cautiously until they are substantiated with a larger group of subjects. This is because Ashton conducted a statistical test on the Reckers and Taylor data to determine if the difference between the mean consensus index of the more experienced auditors and the less experienced auditors was statistically significant. He found that it was not significant even at the relatively liberal α level of 0.10 used by Reckers and Taylor .

In this thesis, the relationship between the variables examined were tested for significance using either one-way ANOVA or t-test. The variables were then examined using pearson correlation to examine their relationship to judgement consensus and judgement consistency.

Ashton and Kramer (1980) repeated the original study with a group of 30 auditing students. The results indicated that the internal control questions used explained a smaller amount of variance (65.6%) in the students' judgements than in those of auditors, that the average values of both consensus and insight were lower for the students than for the auditors, and that this could be traced to the fact that the 2 separation of duties questions were less important for the students. On average, these two questions accounted for only 36.9% of the variance in the students' judgements.

When the data from each subject were analysed via analysis of variance, the results showed a "high incidence of significant main effects" but very "low significant interactions". This indicates that the students' responses varied systematically with the answers to particular questions rather than to patterns of answers. There was a great deal of similarity in the overall cue utilization patterns of the two subject groups.

The two groups (auditing students and auditors) viewed questions 1 and 2 (separation of duties questions) as

more important than any other questions for both subject groups. The results indicated that the internal control questions used explained a smaller amount of variance (65.6%) in the students' judgements than in those of the auditors'. In addition, the average values of both consensus (0.66) and insight (0.77) were lower for the students than for the auditors.

Joyce (1976) examined the judgement process between preliminary data collection and audit program planning. As in Ashton's study, the independent variables were dichotomously scaled and manipulated in an orthogonal analysis of variance design. The research studied a different internal control sub-system (accounts receivable vs. payroll) and a different type of hypothetical firm (tyre wholesaler vs. air conditioning equipment manufacturer). It used practising auditors from public accounting firms as subjects and applied correlational studies to assess consensus and analysis of variance so as to model individual subjects' decision behaviour. Thirty-five practising auditors from four large, national public accounting firms served as subjects. Thirty-two worked in the Chicago offices of their respective firms and three worked in firm offices in Midwestern cities near Chicago. As with the research which is the subject of this thesis, subjects were "not selected at random" from each of the 4 firms as random selection was not feasible since the experiments were to

be carried out during the busy season for public accounting firms and the participation of randomly selected subjects could not be assured due to scheduling problems. Nevertheless, as with our research, there is no reason to believe that the lack of random selection would have led to a biased sample participating in the research.

Subjects were secured by contacting partners in each of the firms, explaining the nature of the proposed research, and requesting cooperation in the form of ten to fifteen auditors to perform the experiment. The selection of the subjects within each firm was made internally on the "basis of availability", as with the research which is the subject of this thesis. The only restriction placed on participants was that each subject should have had experience in audit programme planning for accounts receivable. In the research of this thesis it is similarly likely that respondents (whether IAs or EAs) would not have been unfamiliar with payrolls systems - the internal control subject chosen.

Two experiments were conducted. Experiment 1 was a $\frac{1}{2}$ replication of 2^5 factorial design and was performed by subjects from firms 1 and 2. Experiment 2 was a complete replication of a 2^5 factorial.

In experiment 1, subjects were required to make twenty judgements including four replicates. In experiment 2,

subjects were required to make thirty-six judgements, four of which were replicated in order to assess test-retest reliability. The research written up in this thesis similarly made use of replicate testing to test for judgement consistency.

Joyce's results showed a Pearson product moment correlation (.373) lower than Ashton (.70). Each subject's judgements on the original 4 stimulus combinations were correlated with his or her judgements on the duplicates in order to assess test-retest reliability. This was perhaps due to the study on a different internal control subsystem, that is accounts receivable as compared to payroll. The task given to the auditors were also different. Instead of requiring auditors to evaluate the quality of the internal control system directly, the auditors were asked to determine the budgeted hours that would be assigned to the various cases which would probably reflect an implicit internal control quality evaluation. However, Joyce did not take into account the fact that budgeted hours could also reflect different audit technologies and approaches used by the different firms of the respondents and the difference in the use of substantive tests.

Gaumnitz et al (1982) combined tasks from both Ashton and Joyce. They found results consistent with Ashton for the internal control judgements but found consensus to be

higher than did Joyce for the audit planning task. Gaumnitz et al. suggested that the requirement to provide an explicit judgement on the strength of internal control enabled their subjects to operationalize the inverse relationship, which resulted in a higher correlation as compared with Joyce's results.

Kaplan (1985) found no difference in the level of consensus between the subjects who made evaluations of internal control strength prior to their audit planning judgements and the subjects who made only audit-planning judgements as suggested by Gaumnitz et al. (1982). In addition, Kaplan found that his average correlation for audit hours was higher than that reported by Joyce (1976) but lower than reported by Gaumnitz et al. He also explored the effect of environmental stability on planned audit hours combined with both implicit and explicit evaluations of an internal control system. He found that the stability interacted with the strength of controls, and that auditors did distinguish between control strength in different environments.

Eggleton and Choo (1983) used different sub-control systems. The objective of their study was to assess the systematic effects of auditors' cognitive structures on their judgements. Instead of requiring auditors to evaluate a series of cases from one sub-system, as had been the usual practice in audit judgement experiments,

the auditors were required to assess the strength of internal control of 16 sets of cases. Each set comprised one case drawn at random from a $\frac{1}{2}$ replicate of 2^5 fixed effects ANOVA design (with repeated measure on all factors) for each of five accounting subsystems: namely, accounts receivable, payroll, investments, inventories and cash disbursements. Each auditor evaluated the same 16 sets of cases, with cases within sets always appearing in the aforementioned order.

However, the order of presentation of the sets of cases was independently randomized for each auditor. The format of cases was similar to that used in other comparable audit judgement experiments. Each case comprised five internal control features which were declared to be present (yes) or absent (no). The auditors were asked to record their evaluations (from "extremely weak" [1] to "adequate" [6]) by circling the appropriate number. A separate response booklet comprising 16 pages, one for each set of cases, was provided.

In this thesis, the presentation of the 64 sets of cases was also randomized for each pair of auditors (EAs and IAs). In addition, this study also randomize the ICPs in the 64 sets of cases. One difference is that while they used a "likert" scale, this study used an "interval" scale.

Sixty male auditors working in a large New Zealand city participated in the experiment. The mean (median) length of auditing experience was 6.2 (4.0) years.

It was found that the level of judgement consistency observed for the accounts receivable sub-system was significantly higher than reported by Joyce (1976), but that for payroll it was significantly lower than reported by Ashton (1974). The reason that it was higher than Joyce's could be because the respondents were asked to rate the quality of internal control instead of assigning budgeted hours as an indication of the quality of internal control. Comparisons with other audit judgement studies regarding levels of consensus however revealed similarities (Ashton, 1974; Gaumnitz et al., 1982; Hamilton and Wright, 1982). Correlations between consensus and consistency were positive and highly significant for all subsystems and confirmed those reported by Trotman, Yetton and Zimmer (1983). The absence of systematic associations between auditors' experience and both their level of cognitive complexity and related judgement attributes was consistent with most studies of audit judgements which have reported no significant correlations (Ashton, 1974; Ashton and Brown, 1980) or only occasional low significant correlations (Ashton and Kramer, 1980; Hamilton and Wright, 1977) between years of experience and various judgement attributes.

In summary, Eggleton and Choo had demonstrated that presenting the auditors with many subsystems do not have a major effect on the judgement of the auditors. Thus, in this thesis it was thought appropriate to just examine one internal control system and the results can then be generalized to the other subsystems.

As has already been discussed, most of the prior studies required auditors to make their response on a "Likert" scale which was "ordinal" in nature. Judgement model for the auditors were then computed using ANOVA. However (as discussed in Chapter 6), ANOVA works best with "interval" scale data. Based on this argument, this thesis use "visual analog scale" which is an "interval" scale to predict the judgement models of each group of EA and IA.

4.4.2 Research involving group judgements in the area of internal control evaluation

Trotman, Yetton and Zimmer (1983) found similar results with group evaluations. Similar to previous studies, subjects evaluated the internal control systems represented by thirty two audit checklists by circling a position on a six-point scale. Booklets of simulated checklists were compiled by adapting ten questions used in previous studies of internal control over payroll. Cues in the form of yes/ no answers to the questions were systematically varied from case to case in accordance with a 1/32 replication of a 2^{10} factorial design.

The subjects were 105 accounting majors in advanced auditing classes at the University of New South Wales. Over 80% of the subjects were part-time students with three or more years work experience. The study consisted of two phases. In phase 1, subjects were provided with the booklets at the beginning of a class in week 12 of a 14 week advanced auditing course. They were requested to judge the adequacy of each payroll system. After completing the thirty-two cases, subjects were given the opportunity to revise their initial responses. To indicate the differential importance of each cue to their judgements, subjects were then asked to distribute one hundred points across ten cues.

In phase 2, subjects were randomly allocated to either a two- or three-member group, leading to the formation of twenty-one groups of each size. Each group then repeated the evaluation task. The only difference in this repeat evaluation was that a group rather than an individual judgement was required.

The findings showed that the average consensus among individuals (0.56) was significantly less than among unit weight composites for both the two-member (.69) and three-member (.79) composite group judgements. In making their judgements, individuals used significantly fewer cues (5.24) than did the 2-and 3-member unit weight composites (6.47 and 7.85, respectively in both cases)

and acted with less consistency (.73) than 2- and 3-member unit weight composites (.89 and .91 respectively).

Self-insight for individuals (.58) was significantly less than for interacting groups (.69) as measured by the correlation between individuals subjective and objective cue weights.

Thus, experiments involving students showed that group consensus and consistency were higher than individual's.

Hall, Yetton and Zimmer (1982), extended the study to include 2 personality variables, that is tolerance of ambiguity and dogmatism. Subjects were auditors practising in the Sydney metropolitan area and participation was on a voluntary basis. Of approximately 65 questionnaires distributed, 26 responses were received. The range of experience was three months to ten years. The task was to assess the hypothetical internal control system represented by thirty-two abbreviated internal control checklists. The questions were precoded "yes" or "no", consistent with a one eighth replication of a 2^8 factorial design.

The auditors were given thirty-two cases to answer, which after completion, they were given the opportunity to review and revise their judgements and asked to complete two secondary instruments. In one, they indicated the

importance of each cue by allocating 100 points among the eight questions. The other consisted of a personality schedule for tolerance of ambiguity and dogmatism.

Amongst the findings were that there was a weak positive correlation between reliance on subdivision of duties questions and tolerance of ambiguity, self-insight was a negative function of dogmatism and that there was a weak but negative relationship between experience and individual consensus.

Hall, Yetton and Zimmer suggested that the reason why "there was a weak but negative relationship between experience and individual consensus" could have been because the task was viewed by the EAs as a "low stress" activity and thus the more experienced they were, the less they agreed to it as they might have taken the task not too seriously.

Again as can be seen research examining individual and group judgements used "ordinal scale" (likert scale) rather than "interval scale".

4.4.3 Research comparing EAs' and IAs' judgements in the area of internal control evaluation⁵⁸

Evaluation of internal accounting controls is a matter of

⁵⁸ Please refer to Chapter 6, Table 6.50 for comparison of the three studies.

critical importance to both IAs and EAs. EAs rely upon controls designed and maintained by IAs. Furthermore, with the new requirements in UK and US, increased reliance upon IAs is now likely to become even more important so that the external audit will be cost effective. Cooperation between IAs and EAs is likely to be even more beneficial to all parties.

A study conducted by Chang & Mann (1991) showed an interesting result regarding the personality of EAs and IAs. It showed that both IAs and EAs exhibited relatively high managerial ability and self-esteem, and above average faith and trust in others. The study also showed that IA were more responsible, cautious and higher in emotional stability than EAs but EAs were found to be higher in sociability.

Bailey (1981) was the first to investigate the similarity in EAs and IAs judgement in the area of internal control evaluation. The approach used was similar to Ashton's (1974) except that it was the cash receipts subsystem and the cases were not in accordance with any experimental design. There were 12 questions in the ICQ and the answers to the twelve questions were varied to produce eight different cases; each subject received only one of the eight cases. Subjects were asked to rate the importance of each of the twelve questions on the ICQ and rate the overall quality of the internal accounting

controls portrayed in the case. Five-point scales were used for all ratings. Responses were received from 107 IAs and 116 EAs, representing response rates of 72 percent and 82 percent, respectively.

The results showed that EAs were found to be higher (less strict) in their mean overall evaluations of the internal control systems. However, t-test did not show this to be significantly different. Consensus about the overall evaluations was found to be higher among EAs than among IAs. The judgement models could not be shown to differ significantly in either of two comparisons, using both the subjective ratings of the twelve questions on the ICQ and the empirical models developed by multiple regression analysis of the evaluation of the eight cases.

In the determination of the empirical model (or which he called predictive model) of the auditors, he had to exclude 6 out of 12 ICPs because as he admitted, it was due to the weakness of his experimental design (pg 108). Amongst the reasons stated were the small number of hypothetical cases that each auditor was required to answer (only one case) and the use of categorical data. In this thesis, the experiment was carefully designed in order to avoid these weaknesses.

Landry (1989) carried out an experiment to investigate the differences in consensus between EAs and IAs in the

evaluation of computer controls and to identify variables as possible explanation factors that would account for the particular level of consensus within each of the auditor groups. 33 EAs and 52 IAs were asked to evaluate computer controls in three areas: (a) separation of functions control; (b) program code change controls and (c) physical security access controls. They were also asked to rank and weight the control questions within the questionnaire.

Findings indicated that neither group of auditors was more consistent in their judgements than the other group. The group of EAs had more consensus among themselves than the group of IAs. The EAs' level of consensus was explained by the auditors' management level and the particular Big 8 firm to which the auditor belongs but IAs' differences in consensus level within the IAs group could not be attributed to experience, education background or management level. Significant differences between EAs and IAs were found primarily in the logical and physical access questions and lastly, very low consistency and consensus level was found maybe due to the nature of the task.

Moore (1993) in his research examining the similarity of judgements between EAs and IAs used a different approach. Instead of using only ICQ cases based on one scenario, he gave the respondents (consisting of 53 IAs and 44 EAs) 12

situations and each situation required a different kind of judgement: The judgement required involved: (a) selection of the best procedure that could achieve the internal control objective and vice-versa; (b) evaluation of the quality of internal control system; (c) procedure which best prevents error from occurring; (d) assess the risk of material misstatement and (e) the best management assertion that could be met by the control procedure and others.

These judgements were analysed within a framework that studied both the context (internal control test vs substantive test) and the nature (objective vs subjective of the audit judgements). The results of this study demonstrate that IAs and EAs do not make similar judgements. Judgements in areas involving substantive tests and subjective assessments were not similar.⁵⁹ However, similar judgements were made for judgements relating to internal control tests and objective assessments. The study identifies a consistent bias by IAs to not place as much reliance on the internal control structure as EAs. Experience, organisational independence, IIA membership and position level do not

⁵⁹ Evaluation of internal control system was categorized as "subjective assessment" in an internal control test". The auditors were given 3 cases and 2 out of the 3 cases showed that there is a significant difference between External auditors' and Internal auditors' judgements. Moore concluded that there "is a significant difference" between the judgements of External auditors and Internal auditors.

seem to explain the cause for the variation in judgements.

To date, none of the research involving both EAs and IAs in prior research had followed an experimental design as detailed or as thought out as this thesis. An experimental design would enable the researcher to examine all the variables which the researcher believes that would have an effect on the judgements of EAs and IAs. In this thesis, all the variables of interest were able to be examined.

4.4.4 Other relevant research in accounting

Tabor's (1983) study involved 109 auditors from Big Eight firms. The auditors were given 12 cases and amongst the judgements that they were required to make was judgements about the degree of reliability (7 point scale) of internal accounting controls, given background information on company, information on sales cycle and specific audit objectives. He found consensus levels similar to Ashton (1974) and Ashton & Brown (1980).

Basu's (1992) research objective was to investigate the influence of control environment attributes specified in SAS 55 (AICPA, 1985) on EAs' evaluation of the internal control structure. The study utilized an experimental methodology, similar to Ashton's (1974). Practising auditors from four Big Six public accounting firms were

assigned the task of evaluating the internal control structure of a hypothetical client. The only difference was that the case instrument contained internal control checklists where control environment attributes were manipulated as positive or negative instead of ICPs. The subjects' responses were statistically analysed using the Brunswick's lens model to determine how factors in a client's control environment affect the internal control reliability judgement of practising auditors. In addition, the study also examined differences in judgement between auditors, differentiated by levels of experience, position in organization and affiliation with public accounting firm.

This thesis also examined these issues in addition to educational level, types of independence, types of experience and independence level.

The results from Basu's study indicate that control environment attributes are considered important by practising auditors, and that not all attributes are assigned equal weights. The auditors' judgements with respect to control environment evaluations across various levels of experience were significantly different. However, no significant difference was detected when the auditors were grouped according to their ranks. The results also did not support the hypothesis that auditors from different public accounting firms would evaluate internal control environments differently. The findings

showed that experience level affect the auditor's judgements, but not firm size or position level.

Haskins (1984) investigates the need for a client control environment evaluation prior to the design of an EA's internal control tests. The purpose of the study was to determine what specific client attributes comprise a client's control environment and to investigate EA's perceptions regarding the importance of these attributes. In addition, auditor's insights regarding the attributes' relation to various notions of control and risk were explored. Interviews and questionnaires were used in order to investigate the importance of various control environment concepts for specific audit engagements. A total of 146 auditors, from all the "Big 8" CPA firms, responded to the questionnaires. Partners in both practice and Executive offices of several "Big 8" firms were interviewed. Research results indicate a consistent ranking of the control concepts across various auditor partitionings. Moreover, it was found that the more important control concepts were consistently labelled as "accounting control" and "control risk" related while the least important control concepts were viewed as "administrative control" and "inherent risk" related.

This thesis examines the same issues that is whether there are such labels as "accounting" and "administrative" controls and whether both types of

auditors would place different importance to the two types of controls. In addition, the thesis also examines whether "accounting" controls can better achieve "completeness, existence and valuation" objectives better than "administrative" controls.

Haskin found that auditors believed that more audit attention should be focused on these client attributes than was actually being given. Another major finding indicated that firm affiliation, years of audit experience, audit firm client specialty, management structure of the client, and client total assets exhibited some of the strongest associations with the various auditor responses. It was found that the AICPA "accounting/ administrative" control dichotomy was not a useful notion to auditors. Moreover, it appears that auditors do not distinguish between "inherent" and "control risk" elements.

Findings indicated that there were differences in the ratings along auditor and client's demographic variables. This suggests a need to tailor the audit in accordance to the type of client. Differences in ratings along auditor and audit firm demographic variables, however, could suggest a potentially dangerous lack of consensus among auditors and audit firms.

Han (1987), conducted a research which amongst the

objectives were: (a) to investigate individual vs. audit team judgements in internal control evaluation and audit program planning judgements; (b) to examine whether auditors who have different professional and/or cultural backgrounds (Korean versus US auditors) make similar judgements when placed in the same audit judgement setting; and (c) to examine experience and firm difference effects on auditor judgements. The experimental task and setting used here were similar to those used by Joyce (1976) and Gaumnitz et al. (1982).

It was found that audit team judgements groups exhibited significantly higher consensus than individual auditors but it was not statistically significant. The average consensus and stability shown by non-affiliated Korean auditors were similar to those shown by US-affiliated Korean auditors. Finally, results of this study exhibited no impact of experience and firm difference effects on consensus and stability measurements.

The study conducted by Mofeit (1985) examined the possibility that cognitive style (defined as the mode of processing which individuals use in their perceptual activities) could explain some of the variance in internal control judgements. The Myers-Briggs Type Indicator (MBTI) was used to measure the cognitive style of auditors. A second instrument, an audit judgement case, was prepared by the researcher to elicit (a) an

auditor's estimate of the reliability of internal controls in a computerized payroll application and (b) his assessment of the perceived relevance of case information to his reliability judgement. Ninety auditors attending training sessions completed the task. The participants were primarily senior-level auditors with three years' experience. The statistical methods used in this study included the t-test and ANOVA. Results of the study indicated "lack of consensus" in the "internal control reliability" estimates of the participants. The findings also indicated that the number of cues identified as important by the participants was not significantly related to their perceptual mode (sensing or intuitive) or to their internal control reliability judgement.

Geary (1982) wanted to find out why there was such diversity among auditor's judgements with respect to internal control evaluation and audit planning and why no close relationship between internal control evaluation and audit planning (as prescribed by GAAS) had been demonstrated. It was hypothesized that the degree of standardization, formalization, and specialization inherent in the audit processes of different audit firms (hereafter termed audit structure) was significantly related to variability among professional judgements pertaining to internal control evaluation and audit planning. Audit structure is relevant to the current

auditing environment since several firms have recently developed more structured audit methods. The major contention of the research is that a home firm environment in which audit planning and administration are structured, and by implication, the extent of individual judgement called for is decreased, will be associated with more uniform internal control evaluation and audit planning decisions, and a closer relationship between the two, than is found in less structured environments. An experiment was performed in which practising auditors were given basic interim audit information and asked to make decisions relating to internal control evaluation and subsequent audit planning. Significant findings may be summarized as follows: (a) in general, the evidence fails to indicate that more structured audit methods have led to the purported benefits; (b) it appears that a large percentage of auditors may not approach internal control evaluation in the fashion prescribed by GAAS and (c) the evidence fails to indicate the existence of the close relationship between internal control evaluation and audit planning called for by GAAS.

4.4.5 Other relevant research not in accounting

4.4.5.1 Psychology

Research by psychologists provides a frame of reference for evaluating the judgemental performance of auditors. It is in the psychological literature that justification

is found for the use of a linear regression or an ANOVA model, as opposed to a process-tracing, algorithmic model.⁶⁰ Studies by Rorer et al. (1967), Hoffman (1960) and Slovic, Fleissner and Bauman (1972) are some examples. These studies do not involve evaluation of internal control system but involve the use of experimental design to determine the judgement model of the participants. The two most important findings from the research were: a) large individual difference in the judgement model of the participants were found and b) overwhelming significance of main effects were found as compared to that of interactions.⁶¹

4.4.5.2 Organisational Behaviour

Meixner (1985) explored the judgement processes of professional government auditors (PGAs) in the evaluation of internal accounting control (IAC). The primary objective of this study was to determine whether the position of PGAs within the auditing organization had an effect on the level or degree of consensus in IAC

⁶⁰ ANOVA and linear regression models are two similar statistical techniques which may be used to explain the systematic variation in auditors' judgements in terms of information cues (independent variables) that the auditors are using to form their judgements. A process-tracing model replicated the sequential thinking of an auditor, rather than simply explaining the variation through statistical relationships. In this thesis, ANOVA is used to determine the judgement of EAs and IAs.

⁶¹ For further research done in psychology, please refer to Ashton (1973, 72- 82).

judgements among those auditors. One hundred and nine auditors participated in this study (employees of the State Auditor's Office, State of Texas). The major results of the study indicated that (a) these subjects exhibited a relatively high level of overall consensus; (b) judgement consensus appears to be related to position in the firm when measured within and among the hierarchical levels and chains of command of this auditing entity; (c) position seems to have a greater effect on judgement consensus than does experience with the firm; (d) judgement models support these findings and (e) these subjects have high insight into their decision process.

4.4.6 Research on reliance of IAs by EAs

According to Chambers, Selim & Vinten (1990, 223), the level of cooperation between external and internal audit has increased over the years. The purpose of this section is to examine the factors that EAs looked for before placing reliance on IAs.

Previous research on reliance of EAs made use of the factors that EAs should look for in their reliance of IAs as mentioned in SAS 9 or SAS 65. SAS 65 (AICPA, 1991a) superseded SAS 9 (AICPA, 1975a).

Whittington & Margheim (1993, 50-51), stated the difference between SAS 9 and SAS 65 as follows,

Whereas SAS 9 provided guidance primarily about assessing internal audit reliability, SAS 65 extends the guidance by including a discussion of how to determine the extent and type of usage of internal auditor work after a reliability decision has been made.

Ward and Robertson (1980) surveyed experience EAs and IAs to: (a) obtain evidence on the extent to and the manner in which EAs rely on IAs; (b) obtain evidence on the views of each group as to whether this extent and manner of reliance is sufficient; (c) elicit predictions of change from both groups.

The results from the survey showed that EAs indicated varying but typically substantial reliance on IAs. In addition, the results tended to indicate that EAs were relying on IAs to a greater extent in connection with tests of the company's control structure than for direct assistance in substantive testing. The results are also supported by the findings of Whittington and Margheim (1993) where it was found that EAs were willing to assign more "tests of control work" than "tests of substantive work" to IAs. In addition, Whittington and Margheim found that EAs assigned more procedures that would achieve "existence" and "rights" objectives as compared to the "valuation" and "disclosure" objectives.

In this thesis, analysis was also done to determine if EAs and IAs agree as to the procedures that would achieve these objectives.

Moizer et al. (1986) studied the use of IAs' work in the UK. Their study revealed that the extent of the use of

IAS' work was primarily affected by the level of materiality of the audit area. The results also indicated that EAs use some form of questionnaire to assess the reliability of internal audit function.

There are several research that examined the factors that EAs looked for in an IA before placing reliance on them.

Brown (1983), for example used a $\frac{1}{2}$ replication of the 2^6 factorial design to examine this. He found that there were two main factors that EAs looked at before placing reliance on IAs: (a) work of IAs during the previous audit and (b) whether the internal audit department reports to an organisational level to assure independence of operations". He also found a high level of consensus across auditors. The average correlation between ratings of all pairs of auditors was .70. Main effect accounted for 74% of the variance whereas interactions only accounted for 5%. Judgement insight was .64 and judgement stability was .79.

Schneider (1985) conducted three related experiments designed to obtain descriptive models of how EAs evaluate the internal audit function. The three factors recommended by SAS 9: (a) competence; (b) objectivity and (c) work were used in constructing various case profiles

of an internal audit function which were evaluated by 18 auditors. Findings from the study showed that auditors viewed the "work" factor as most important, followed by "competence" and then "objectivity". Degree of consensus with regards to internal audit evaluation was .734.

Margheim (1986) conducted an experimental study in which she examined whether EAs actually adjusted the nature and extent of audit procedures due to reliance on internal audit and if so, whether such reliance was related to internal audit competence/ work performance (these were combined) or objectivity. The experimental task for this study included the evaluation of an accounts receivable control system and the appropriateness of account balances. The results indicated that EAs did reduce planned audit hours if internal audit had a high level of competence/ work performance, but did not alter their tests in response to changes in the degree of IA's objectivity.

Other studies by Clark et al. (1980) and Margheim & Label (1990) have also made use of SAS 9 as a basis for their research. Generally, the results indicate that "competence" and "work performance" are considered to be the most important determinants of EAs' judgements about reliability. "Objectivity", while still significant, was not found to be as important.

Mills (1993) examined the role of cognitive style in an auditor's decision to rely on the IA's work. The auditors were divided into groups of various styles by means of results of two tests given to them prior to the experimental task. The findings showed that there is a relationship between auditors' cognitive processes and their decision processes. In addition overall consensus among auditors in the reliance decision is moderate with a correlation coefficient of 0.341.

4.5 SUMMARY

In summary, results of previous research have indicated that: (a) separation of duties factors (cues)⁶² are important in influencing judgement of auditors; (b) "order effects" of the factors (questions) in the ICQ, that is placing it in different orders do not seem to affect the judgement of auditors; (c) including more "separation of duties" questions in the ICQ does not affect the judgements of auditors; (d) two-cues and three-cues factor interactions do not seem to have an influence on the judgement of auditors; (e) mixed results of the variables "experience level, position level, educational level, size of firm, independence of IAs" on judgement consensus, consistency and insight; (f) judgement consensus, stability and insight of students or auditing professors were lower than auditors and (g)

⁶² Referred to as "ICPs" in this thesis.

groups' consensus, consistency and insight is much higher than individuals'.

Methodology used in the previous research were as follows: (a) sample was chosen on "availability" through contact persons; (b) substitution of sample was done if the original auditor could not participate in the study for various reasons; (c) experimental design was used to determine judgement model of participants in the study; (d) similar cases were used to assess "judgement consensus" amongst all auditors; (e) repeat cases were used to assess "judgement consistency" within himself; (f) judgement insight was determined by comparing weights allocated by the participants to the importance of the factors (cues) in the ICQ and the weights of the importance of the factors (cues) from the judgement model; (g) questionnaires were sent through mail or administered directly in the place of study. If mailed, the questionnaires were either directly mailed to participants or mailed to the contact persons and (h) use of ICQ with "Yes" indicating the presence of the controls and "No" indicating the absence of the controls.

Statistical techniques used in past research were as follows: (a) correlational statistics were used to assess insight, stability and consensus; (b) omega squared (w^2) was used to measure the extent to which each auditor utilized each of the 6 ICQs (and their interactions) in

formulating internal control judgements.

With regard to the research on reliance of EAs on IAs, it was found that EAs perceived "objectivity" of IAs to be the least important factor compared with "work" and "competence" of IA when deciding to rely on IAs. This differs from the finding of Rittenberg (1977)⁶³ which involved investigating whether IAs can make important electronic data processing design-phase audit contributions to an organisation without impairing independence. IAs rated "objectivity" the highest, followed by "competence" and lastly by "work" factor (referred to as "economic and other influences" in his study). Thus, as can be seen, the ratings of EAs and IAs of the three factors differ.

As mentioned in Chapter 2, for the purpose of this thesis, the importance of the three factors is based on Rittenberg's study, as it is thought to be more appropriate.

This thesis also examines judgement of IAs and EAs using other approaches of evaluation, namely "control objectives" (CO) and "control risk" (CR) approaches in addition to "ICQ" approach. An experimental design is used in the determination of judgement model of each group of auditor and a mail questionnaire was used. The

⁶³ Please refer to Chapter 2, Section 2.11.2 for details of the study.

variables, experience, educational, position level, independence of IAs and size of firm were examined to see if they have any effect on two measures of judgement, i.e "judgement consensus and consistency".

CHAPTER 5

RESEARCH METHODOLOGY - EXPERIMENTAL DESIGN

5.1 INTRODUCTION

This chapter identifies the reasons for choosing the payroll system, the phases of the research, the sampling method used, judgement model of the auditors and statistical analysis used in the research. Justification is also given for the choice of the 8 ICPs used in the study.

5.2 DESCRIPTION OF STUDY

This study is an extension of Ashton's (1974) study. There are several ways in which the current study differs from Ashton's.

First and foremost, this study investigated the judgement of IAs in addition to EAs. However, it investigated the judgement of "each group" of EAs and IAs instead of examining the judgements of every auditor in each group. This is because it was thought to be more appropriate as examining each individual auditor's judgement would require an enormous amount of cases to be answered by the auditors.

Secondly, in determining the judgement model of each group of auditor, an "interval" scale data was used instead of "ordinal" data. Further discussion regarding this is made in section 6.4 of chapter 6.

Four more variables, that is "position level, educational level, independence of IAs and types of independence" of IAs were included to see whether they could account for the variation in judgement in addition to "experience level, length of experience and firm size" investigated by Ashton.

As for "experience" variable, the categories of experienced auditors differed from those of Ashton's. The study has three categories of experience level:

(a) inexperienced auditors are those with less than three years of auditing experience; (b) moderately experienced auditors are those with more than three but less than six years of auditing experience and (c) very experienced auditors are those with more than six years of auditing experience. Ashton did not categorize "experience level" in this manner but had just reported the "actual" length of auditing experience that the auditors had.

More open ended questions were included that gave a chance to the auditors to explain their response. For example, the auditors were asked to explain the factors that they considered before giving their judgements

regarding the quality of the internal control system and whether they think that the cases do portray a good internal control system.

Two more cases besides the eight cases which the auditors were required to answer were included. The two cases were represented by means of "control objectives" (CO) and "control risk" (CR) approach, whereas the eight cases were presented by means of the "internal control questionnaire" (ICQ) approach. The objective of including the two cases was to look at whether the auditors would come to the same conclusion when they were asked to judge the cases by means of three different approaches, that is "ICQ", "CO" and "CR".

Other modifications include changing some specific background data and the factors (or ICPs) to be included in the questionnaire. There were 8 ICPs which were divided equally into "administrative" and "accounting" controls compared to Ashton's 6 ICPs which comprised of only "accounting" controls. The reason was to determine whether there were any differences attached to the "two types" of controls by both groups of auditors. Amongst the findings that the researcher was interested to see were whether EAs would place more importance on "accounting controls" rather than "administrative" controls and vice-versa for IAs because of their differing audit objectives and secondly was to determine

if the auditors perceived "accounting controls" more able to achieve "completeness, existence and valuation" objectives compared to "presentation and disclosure and rights and obligations" objectives.

Two questions in Ashton's (1974) study were excluded and they are; "Is the payroll audited periodically by IAs and "Was the internal control over payroll found to be satisfactory during previous examination?" as it is believed that if the answer to either or both the questions was "Yes" it may already be an indication that the internal control system is strong and would result in the subjects paying less attention to the other questions.

5.3 THE EXPERIMENTAL TASK

5.3.1 Evaluation of a Subsystem

It is generally accepted in the auditing literature that the system of internal control cannot be evaluated as a whole. Instead, its various "subsystem" or "segments" must be evaluated. As Mautz and Sharaf (1985) state:

Although we speak of the internal control as a 'system', our evaluation must be more concerned with the parts or divisions of that system than with the system as a whole.
(Mautz and Sharaf 1985, 149).

According to Arens & Loebbecke (1991, 148-151), there are two approaches to evaluate the "subsystems" and they are: (a) transaction cycle's approach and (b) individual account's approach.

The two approaches were discussed in chapter 2, section 2.7. Currently, there is an inclination towards using the "transaction cycle's approach". It divides the audit in such a way as to keep closely related types of transactions and account balances in the same segment.

Typically, there are 5 types of transaction cycles:

- a) sales and collection;
- b) acquisition and payment;
- c) payroll and personnel;
- d) inventory and warehousing
- and e) capital and acquisition.

5.3.2 Selection of the payroll subsystem

In order to prevent the experimental task from becoming too complex, it deals with only one internal control subsystem; that pertaining to payroll. This is because, previous research has shown that (Eggleton and Choo, 1983) including various sub-systems in the study do not show varying results and furthermore as discussed in chapter 3, Section 3.2.2, too much information (in this case presenting the auditors with various or more difficult sub-systems) would result in poor decisions.

The choice of system was not a straightforward matter.

It was necessary to choose a system which both IAs and

EAs would relate to in the sense that they would both be likely to have a good level of understanding about the nature, purpose and potential for effectiveness of the internal controls (or features⁶⁴ of the system). Without this pre-requisite being in place, differences in auditors' judgements might have been due, wholly or in part, to misconceptions caused by respondents' unfamiliarity with the subject system rather than being due to one or more of the potential influencing factors which this research was set up to explore.

It would have compounded the complexity of the research to have had to attempt to "control" for varying degrees of familiarity with the subject system between those who helped with this research. The research instrument was complex enough (and very demanding of those who used it) without extending it to provide the means of measuring degrees of familiarity with the subject system of different respondents. Had the research instrument been so extended, the statistical analysis would have been much more complex and the results correspondingly less reliable.

To reduce the risk of unfamiliarity it was necessary to choose a subject system which exists generally within all businesses and thus potentially within the programmes of

⁶⁴ Referred to as internal control procedures (ICPs) in this thesis.

all auditors - internal and external. It was essential to choose a system which both IAs and EAs were likely to be familiar, would be relevant to meeting both internal and external audit objectives and would be likely to be within the scope of both internal and external audit plans.

Specialisation in auditing means that not all auditors (and therefore not all respondents who used the research instrument of this thesis) are likely to have the same degree of familiarity with any possible subject system. For instance, EAs early in their career are likely to be set to work on less complex aspects of the audit - such as the audit of cash or the audit of payroll. Those in management positions of an external audit assignment are likely not to have had recent "hands-on" experience of detailed audit work (such as compliance testing) especially in the more straightforward aspects of auditing. Nevertheless these more "senior" EAs are likely to have had earlier auditing experience of the detail associated with payroll systems and they now have payroll system perspective of an audit partner or an audit manager. It would thus be interesting to see if there is consensus between the "junior" and "senior" audit staffs regarding the quality of an internal control system.

In selecting a subject system it was necessary to guard

against the risk that some auditors might have had no first hand experience of the subject system - as it may never have featured in their day-to-day audit work, nor in their training. The judgement was made that this was unlikely to be so in the case of the payroll system - either for IAs or EAs. Furthermore, in the unlikely event that it were so, the interface which all employed people have with at least one payroll system guarantees a certain level of familiarity with payroll systems - which, for an auditor with general audit training and general audit experience, could be put to good effect in assisting with this research. As can be observed from Table 6.6, all the auditors participating in the study have experienced auditing the payroll system before.

The researcher was, of course, aware that other seminal research on internal control evaluation had used payroll as the subject system (Ashton, 1974; Hamilton and Wright, 1977 and others as discussed in chapter 4). This had been the case even when the research focussed on EAs alone with IA judgements being outside the scope of the research. There were advantages for the research of this thesis in building on earlier research, for instance with respect to choice of factors (ICPs) to be included within the research instrument of this research.

Criticisms of selecting payroll as the subject system might revolve around the potential of a research study

oriented around this system to tease out differences in judgement between auditors (for instance between IAs and EAs) which might show up, or show up more clearly, in research focussed on other subject systems. This may be so and it is an area for further research. We must be cautious about the generalisability of the research conclusions of this thesis to the evaluation of any other system of internal control, or to internal control in general. Much research in many subject areas consists at least in part of testing the replicability of earlier research findings to other subject areas. Nevertheless, it is not immediately apparent why and in what ways the conclusions drawn from this research might have been different if a different subject area had been chosen.

In view of the different objectives of internal and external audit, there are few subject areas which could have been chosen for this research which would not have presented the problem of disproportionate degrees of familiarity between the respondents. EAs subject areas can be regarded as the lines on the balance sheet and profit and loss account. IAs subject areas can be regarded as the systems of internal control within the enterprise. This research needed to be based on a subject area likely to be present in all enterprises and familiar to all auditors. Payroll was the strongest candidate. Not even "Fixed Assets" qualified so strongly. It was considered that only one system was needed for the

research. Accounts receivable could have been the chosen subject for this research, but payroll had the advantage of being likely to be more familiar to all of the respondents. The structure of the payroll system is usually similar across firms as compared with other cycles, maybe due to the relatively slight degree of interactions with other cycles which in turn should make the results of the experiment more generalizable. It would also be easier to find auditors who would be willing to participate in the study.

Also, payroll, not being a balance sheet item in itself, was also likely to be viewed by both IAs and EAs more from the perspective of achieving the same operational objectives. On the other hand, EAs would have been likely to have majored on true and fair balance sheet statement objectives for accounts receivable whereas IAs would not have done, or would not have done to the same extent. This likely difference between the two groups of auditors would have made it more difficult for us to use the research to compare and contrast between the two audits for the issues which this research addresses.

The evaluation of payroll internal control subsystem (or transaction cycle) is less difficult than the evaluation of many other transaction cycles as evidenced in practice. Therefore, if the judgements of the auditors in this experiment reveal large individual differences (a

great degree of inconsistency) or indicate that the auditors have little insight into their own judgement processes, it may be expected that these conditions would be more pronounced in the evaluation of more complex subsystems. This could also be an area for further research.

5.4 PAYROLL ERRORS AND IRREGULARITIES

The audit of the payroll transaction cycle attempts to establish the credibility of the accounting records and to ascertain the reasonableness of expense and liability account balances. Some of payroll errors and irregularities that can happen are (Mautz 1964, 399-400):

1. inclusion of fictitious employees on the payroll. This results in the preparation of cheques or pay envelopes for people not actually working. The person responsible for this type of error must then obtain the cheques or pay envelopes and convert them to his own use.

2. continuance of employees who have left. When an employee leaves his job permanently, sometimes it is possible still to have a cheque written under his name. The person responsible must obtain the payroll cheque and convert it to his own use.

3. conversion of unclaimed wages. When employees serve their employment during a pay period, they sometimes neglect to return the following pay day to obtain

their pay cheques or to make other arrangements to obtain their final pay. Therefore, it is possible for someone to obtain those cheques and convert them to his own use.

4. overfooting of payroll sheets. Under most payroll systems, a separate bank account is used to disburse payroll cheques. This is desirable in order that special provisions for cheque signing less strict than for general cash cheques, can be established. The amount to be deposited in the payroll account is generally the net pay, that is gross pay less deductions for income and social security taxes, any hospitalization or insurance costs.
5. overstated rates, overstated hours and erroneous extension (multiplication of rate by hours).
6. erroneous extension. Multiplication of rate by hours is done wrongly.
7. understatement of deductions.

5.5 STEPS IN PAYROLL VERIFICATION

Much has been written concerning the auditing procedures necessary to detect the errors in the accounts that are caused by these payroll irregularities. Mautz (1964) has condensed the verification of payroll into ten steps.

1. foot payroll sheets and tie net payroll in to disbursement record
2. trace names on payroll sheets to personnel files for authenticity
3. trace names on payroll sheets to social security reports
4. compare returned cheques with payroll examining amounts, payees' signatures and endorsements
5. trace rates on payroll sheets to wage rate authorizations in personnel file, to union contracts, or to some other reliable source
6. trace hours shown on payroll sheets back to time clock cards to paymaster's reports, or to some other reliable source
7. verify extensions by recomputations
8. trace all payroll amounts, gross pay, net pay and deductions into the books of original entry and the general ledger, scrutinizing entries for propriety
9. reconcile payroll bank account
10. supervise distribution of payroll cheques to employees and follow up any unclaimed cheques (Mautz 1964, 401).

Attwood & Stein (1989) list an example of a "good" questionnaire that ensure that the payroll and personnel transaction cycle can be achieved. They consist of "key" and "subsidiary" questions. It is recommended that the auditor personally answers the subsidiary questions and refers to the client's staff only if further clarification becomes necessary. All answers to key questions should be supported by explanations and appropriate cross-references both to the relevant flowcharts and subsidiary questions. If for any reason, the subsidiary questions were not able to be answered, it could be an indication of a weak internal control.

The questions are as follows:

Key question:

1. Can employees be paid for work not done?

Subsidiary questions:

- a) Are time clocks supervised by a responsible official?
- b) Are time records and piecework sheet and other

- source documents,
- i) controlled by persons independent of the payroll department?
 - ii) approved by a responsible official before being processed?
- c) Are time records, piecework sheets and other source documents checked before processing by the payroll department for;
- i) appropriate authorization as to their correctness?
 - ii) casts and calculations?
- d) Are proper controls exercised over adjustments for lateness, sickness and absenteeism(holidays, etc)?
- e) Are separate payroll bank accounts operated, credited with the exact amount required and regularly reconciled?
- f) Are adequate safeguard operated over wages and salaries and paid to employees in cash and over unclaimed wages?
- g) Are adequate controls operated over the processing of payrolls into the accounting records?

Key question:

2. Can the payroll be inflated in any way?

Subsidiary questions:

- a) Are individual personal records (including contracts of employment) maintained independently of the payroll department?
- b) Are written authorizations required for all,
 - i) employees added to the payroll?
 - ii) changes in rates of pay?
 - iii) employees take off the payroll?
- c) Is the payroll section effectively notified by the personnel department of any changes?
- d) Are payrolls checked,
 - i) with clock cards or other relevant time records?
 - ii) for salesmen's commissions based on periodic sales?
 - iii) for correct rates applied?
 - iv) for casts and calculations?
- e) Are payrolls and payroll summaries approved and initialled by a responsible official?
- f) Are all payments for casual labour approved and made against proper documentation?
- g) Are payrolls periodically checked against the independent personal record?
- h) Is written authorizations required for overtime, and are rates clearly laid down?
- i) Are movements between successive payrolls reconciled in terms of numbers and values?
- j) Are wages and salaries regularly compared with budgets costing records or other management information and significant variances are investigated?

- k) Are payroll deductions reconciled with the nominal ledger?
- l) Is the cash for payroll kept entirely separate from any other sources of cash (example sales, petty cash)?
- m) Are all payroll deductions settled by cheques?

Key question

3. Can other errors occur in payroll calculations?

Subsidiary questions

- a) Are there proper authorizations for all payroll deductions other than statutory deductions?
- b) Does the system provide adequate safeguards for dealing with PAYE statutory deductions and are these reconciled regularly?
- c) Are the gross wages or salaries and total tax deducted agreed with PAYE returns to the inland revenue?
- d) Is the issue of luncheon vouchers satisfactorily controlled?

The record of the systems and the information obtained from completing the ICQ provides the basis for a preliminary evaluation of the extent of internal control with the system. Such evaluation should be each key control question. It will be this preliminary evaluation which will determine the nature and extent of the audit tests planned.
(Attwood and Stein 1989, 119-121)

5.6 INTERNAL CONTROL OF PAYROLLS

The extent of application of these verification steps is determined by the quality of internal control over payroll that exists in the company.

Mautz (1964) summarizes the control procedures in a payroll and personnel transaction cycle that indicate the existence of a "good" internal control system. They are;

1. use of cheques for all disbursements as it would be an evidence the moment it is written up for payment
2. review and approval of payrolls, including hours worked, rates of pay, overtime hours, deductions and the like, before payment so that any flagrant attempts at padding or misstating essential facts maybe discovered. If the payroll consists of a great number of employees it maybe necessary to have different individuals review the payroll for

- different departments or sections
3. preparation of an independent payroll bank account reconciliation monthly. This is required for payroll cash as well as for general cash. If the payroll transactions are handled through a general bank account instead of through a special account, no additional reconciliation is required. Its use cannot be said to affect seriously the internal control over payroll disbursements.
 4. adequate separation of duties with respect to:
 - a) hiring employees and establishing rates of pay
 - b) approval of hours worked
 - c) payroll preparation including listing employees, entering hours and rates, extending and footing
 - d) cheque signing
 - e) cheque distribution and
 - f) bank reconciliation
- (Mautz 1964, 430-431)

Ingredients of a good internal control system over payroll which an auditor can rely on were mentioned in Chapter 2, Section 2.4 and comprise of "organisation, segregation of duties, physical, authorization and approval, arithmetical and accounting, personnel, supervision and management".

5.7 Internal Control Procedures (ICPs) Selected for this Experiment

For this experiment, 8 ICPs were selected to be dealt with explicitly, as an experimental study cannot deal with all the ICPs⁶⁵ relevant to an evaluation of payroll internal control.

Some ICPs may be more important than others and this may

⁶⁵ It would require more auditors to participate in the research if more internal control procedures were included. Discussion regarding this matter can be found further on in the chapter under section 5.11.2.

differ among auditors; such differences in judgement are investigated in this thesis. The 8 ICPs⁶⁶ are listed below:

- Q.1 Are time cards and other source documents checked before processing by the payroll department for casts and calculations?
- Q.2 Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?
- Q.3 Is there adequate physical security over personal files?
- Q.4 Are the duties of those preparing the payroll rotated?
- Q.5 Are the names on the payroll checked periodically against the active employee file of the personnel department?
- Q.6 Are the tasks of both payroll preparation and payment of employees adequately separated from the tasks of payroll bank account reconciliation?
- Q.7 Are management reports used to monitor the reliability of financial data through comparisons with budgets and following up of variance reports?
- Q.8 Are formal procedures established for changing names on the payroll, pay rates and deductions?

⁶⁶ ICPs 2,6, and 8 are taken from Ashton's (1973) study.

An example of one of the 8 cases that was given to subjects to evaluate is shown in Figure 5.1.

Internal controls	Yes	No
1. Are time cards and other source documents checked before processing by the payroll department for casts and calculations?		
2. Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?		
3. Is there adequate physical security over personal files?		
4. Are the duties of those preparing the payroll rotated?		
5. Are the names on the payroll checked periodically against the active employee file of the personnel department?		
6. Are the tasks of both payroll preparation and payment of employees adequately separated from the tasks of payroll bank account reconciliation?		
7. Are management reports used to monitor the reliability of financial data through comparisons with budgets and following up of variance reports?		
8. Are formal procedures established for changing names on the payroll, pay rates and deductions communicated to the employees?		

Figure 5.1 : Case number 1

The 8 ICPs can be divided into "accounting" and "administrative"⁶⁷ controls as follows:

⁶⁷ Definitions of "accounting" and "administrative" controls was discussed in chapter 2, section 2.4. The sub-category under both types of controls, such as "physical, segregation of duties" have also been discussed in Chapter 2, under the same section.

ACCOUNTING CONTROLS:

A. Arithmetical and accounting

Q.1 Are time cards and other source documents checked before processing by the payroll department for casts and calculations?

Q.4 Are the duties of those preparing the payroll rotated?

Q.5 Are the names on the payroll checked periodically against the active employee file of the personnel department?

B. Physical

Q.3 Is there adequate physical security over personal files?

ADMINISTRATIVE CONTROLS:

A. Segregation of duties

Q.2 Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?

Q.6 Are the tasks of both payroll preparation and payment of employees adequately separated from the tasks of payroll bank account reconciliation?

B. Management and Supervision

Q.7 Are management reports used to monitor the reliability of financial data through comparisons with budgets and following up of variance reports?

Q.8 Are formal procedures established for changing names on the payroll, pay rates and deductions properly communicated to the employees?

As has been mentioned earlier, the main intention of dividing the 8 ICPs into "administrative" and "accounting" controls is to see whether EAs and IAs place a different emphasis on the importance of the 2 types of internal controls. It is assumed that EAs would place more importance on the "accounting" controls since they might be of the opinion that this type of controls would better ensure the true and fair view of the financial statements than administrative controls. On the other hand, IAs might think that the "administrative" controls are more important for a more efficient running of the organisation. Thus their opinion might differ because of their differing objectives in evaluating the internal control system.

As discussed in Chapter 1, COSO (Internal Control-Integrated Framework) and UK Final Guidance suggested that "effectiveness" of internal control is a subjective judgement resulting from an assessment of whether the five components (control environment, monitoring, risk assessments, information and communication & control activities)⁶⁸ are present and functioning effectively. Their effective functioning provides reasonable assurance regarding achievement of one or more of the stated categories of objectives. For example when considering

⁶⁸ For detail discussion of the five components, please refer to chapter 2, section 2.4.

any one category of objectives: "control over financial reporting", all five criteria must be satisfied in order to conclude that internal control over financial reporting is effective.

Factors selected for this experiment also tried to include all the five components. Question 7 and 8 represents "control environment" but specifically question 7 relates to "monitoring"; question 8 represents "information and communication"; question 1, 2, 3, 4, 5 and 6 represents "control activities".

If an attempt to match COSO's definition with the definition given earlier regarding internal controls is made, "control activities" can be said to comprise of both "accounting and administrative" controls. The other four components represent "administrative" controls.

In this thesis, a case with all 8 ICPs present is included to ascertain whether the existence of the 8 ICPs comprising "administrative and accounting" controls would result in a good internal control system. Previous studies have only concentrated on "accounting" controls.

5.8 JUDGEMENT MODEL

The judgement model is shown in Figure 5.2. As can be seen from the model, the main thrust of the study is to determine whether EAs and IAs will make similar

judgements ("judgement consensus") when given similar cases to evaluate and whether they will make consistent judgements ("judgement consistency") when evaluating the same case over time.⁶⁹

If there is "judgement consensus" and "judgement consistency" between EAs and IAs, there could be increased reliance on IA's report by EAs and vice-versa. On the other hand, if there is no "judgement consensus" and "judgement consistency" between EAs and IAs, training programmes for both auditors explaining the importance of certain variables could be encouraged. This could increase professionalism of both auditors.

Internal control variables in the model refer to the ICPs contained in each ICQ.

⁶⁹ In this thesis however, judgement consistency is investigated through a repeat cases.

INTERNAL AND EXTERNAL AUDITORS' MODEL OF INTERNAL CONTROL EVALUATION

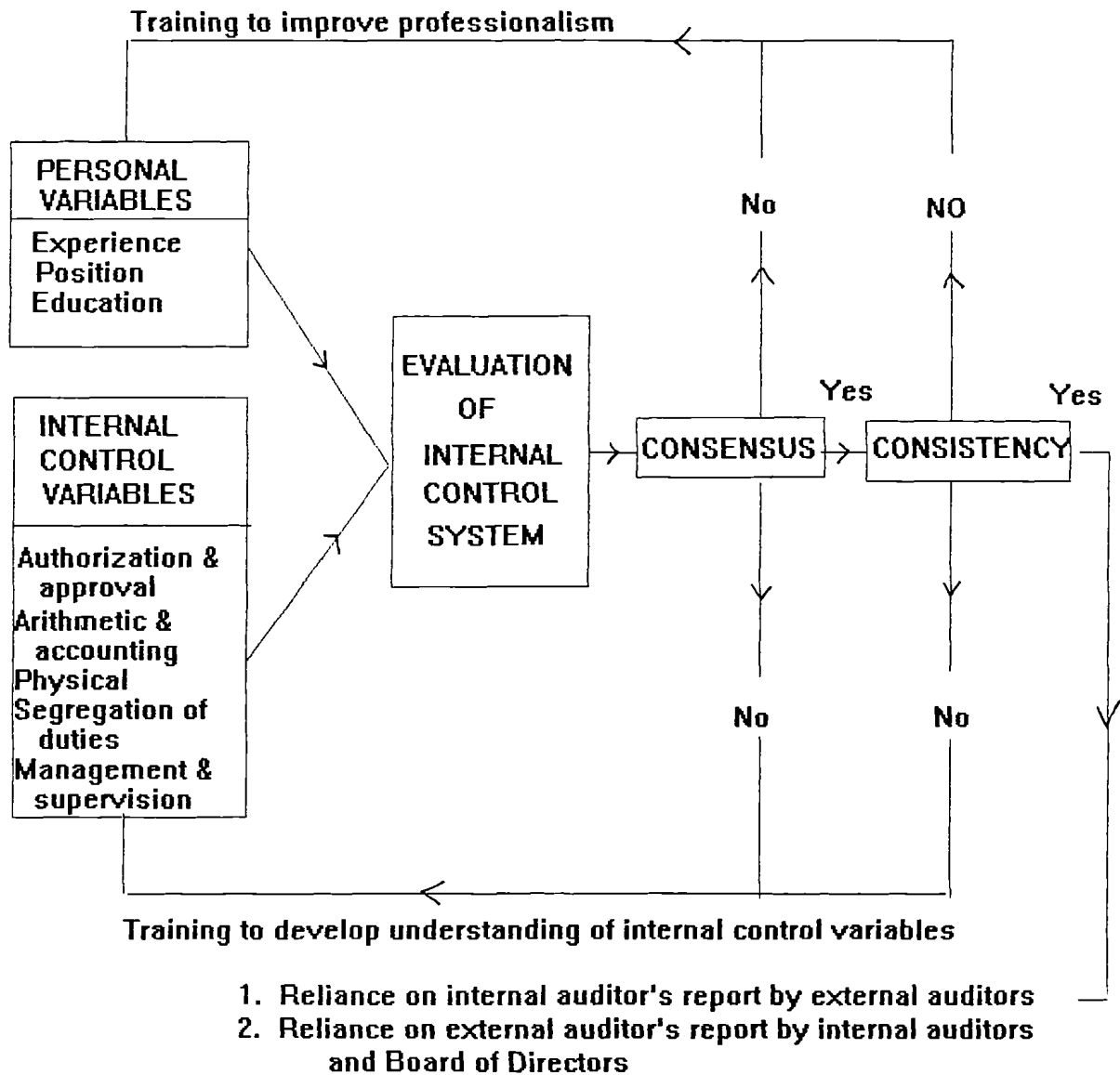


Figure 5.2: Internal and external auditors' judgement model of internal control evaluation

The following definitions are made for the purpose of matching IAs and EAs in order to conduct statistical analysis.

Personal variables in the research model have the following meaning:

1. Education: Consists of auditors who have "professional qualifications in accounting" and those that do not. In this thesis, "professional" and "non-professional" qualifications are defined as follows:

(a) Professional qualification: Auditors who have completed and passed at least one of United Kingdom's accounting or internal auditing professional examinations which consist of: CACA, CIMA, CIA, CA, MIIA and CIPFA.

(b) No professional qualification: Auditors who have passed "all other examinations" such as AAT, CISA, QICA, ACIB, ACII and others are excluded. The researcher realized that these examinations are also tough but after a deliberation on this issue, it was concluded that the syllabuses of the examinations are not considered to be as thorough or in depth as those considered as "professional examinations" and they do not include a lot of "accounting" subjects.

2. Experience: Consists of three categories which are as

follows:

- (a) Very experienced : Auditors who have a length of auditing experience of above 6 years.
- (b) Moderately experienced : Auditors who have a length of auditing experience of between 3 to 6 years, and
- (c) Inexperienced : Auditors who have a length of auditing experience of between 0 to 3 years.

The interval period of 3 years was thought to be appropriate because it takes an average of 3 years before an auditor can pass his professional qualification. Usually, a junior auditor will be promoted to a senior position when the junior auditor has passed his professional qualification which is approximately three years. Promotion to manager level maybe a further 3 years.

From the perspective of the research, it is enough to point out that the researcher has taken three different durations of experience: the labels that have been assigned to each level of experience are of secondary importance.

3. Position levels

- a) Position levels of IAs: Starting from the top of the organisation consist of: (i) Head and Deputy Head; (ii) Audit Manager; (iii) Senior Internal Auditors and (iv) Internal Auditors.

b) Position levels of EAs: Starting from the top of the organisation consist of: (i) Partner; (ii) Manager; (iii) Senior and (iv) Junior. Position level of both types auditors were matched according to the hierarchy level in the organisation i.e manager (EAs) will be matched with audit manager (internal auditor) and so on.

Other terms which are relevant to the thesis but not included in the model are defined in the following manner:

4. Types of qualifications: Auditors were grouped into three categories: (a) strong on external audit training; (b) strong on company accounting and (c) strong on internal audit training. Auditors who are strong on external audit training are said to have passed professional qualifications ICAEW, ICAS, ICAI. Auditors who are strong on company accounting are said to have passed CIMA, CACA and CIPFA. Auditors who are said to be strong on internal auditing are said to have passed MIIA and CIIA.

5. Firm size: Audit firms and internal audit organisations were categorized into: a) large and b) others (which includes small to medium sized). "Large" firms/ organisations are those with turnover worldwide, net assets worldwide and annual profit worldwide of more than £100 million and total number

of auditors working at the firm/ organisation of more than 100 people as at 31 December 1993. "Others" are firms/ organisations not falling in these categories. Information regarding size of firms/ organisations were gathered through the questionnaire (please refer to Appendix 5cii); list supplied by IIA and FAME (Financial Analysis Made Easy).

Firms are only categorized into "large" and "others" because there were not enough firms that belong to the small to medium sized firms.

6. Types of independence of IAs: There are three types of independence: (a) organisational independence; (b) economic and other influences and (c) individual mental state of mind which is referred to as "competency" in this thesis. Definition is based on Rittenberg's (1977) suggestion. Details are discussed in chapter 2, section 2.11.2. In this thesis the three categories are defined in the following manner:
- "Organisational independence" which refer to the level of reporting of the internal auditor;
- "economic and other influences" which refer to auditors' involvement in either compliance testing, making recommendations in improvement in internal control systems, implementation of control changes or administering or operating any internal controls and "competency" which refer

to whether the auditors are professionally qualified and the length of auditing experience that they have. Please refer to Figure 5.3 for the factors that determine these three categories.

Figure 5.3 shows the "calculation of types of independence" and the "categorisation of independence level" for "each type" of independence.

Starting with most important:

1. Organisational independence

It was decided that if IAs report to FC(financial controller), he is considered to have "least organisational independent" and thus would be given the minimum score. Organisational independence of IAs increases as the auditor moves down the line. IA is seen to have the "most organisational independence" when he reports to an audit committee.

50	51	52	53	54	55	56	57	58	59	60 points
FC	FC	FC	FC	FC	CE	CE	CE	BOD	BOD	AC
	&	&	CE	BOD		&	BOD	&		
	CE	AC	&	&		AC	&	AC		
			AC	AC			AC			
01	05	06	10	08	02	07	11	09	03	04 value codes

The abbreviation stands for the following:

	<u>Value</u>	<u>Frequency</u>
Finan cont (FC)	01	17
Chief exec (CE)	02	3
Board of drs (BOD)	03	4
Audit Comm (AC)	04	12
Finan cont & chief exec(FC&CE)	05	3
Finan cont & audit comm(FC&AC)	06	12
Chief exec & audit comm(CE&AC)	07	4
Finan cont,board of drs & audit comm(FC,BOD&AC)	08	2
Chief exec,board of drs & audit comm(CE,BOD&AC)	09	1
Finan cont,chief exec & audit comm(FC,CE&AC)	10	5
Board of drs &audit comm(BOD&AC)	11	<u>1</u>
TOTAL		<u>64</u>

Figure 5.3 : Calculation of "types of independence" of IAs

Figure 5.3 continued ...

2. Competency

IA will be given the appropriate points according to the experience and educational level that the auditor has.

35	40	45		0	45 points
_____			_____		
Inexp	Modexp	Veryexp		No	Yes
(1)	(2)	(3)		(2)	(1) value codes
Experience level				Have prof qualifctns	

3. Economic & other influences

Similarly with the above two types of independence, IAs will be given the appropriate points in accordance to which activity (work) he does.

1	2	3	4	5	6	7	8	9	10	10	10	11	11	11	points
_____			_____			_____			_____			_____			
Y	P	N *	Y	P	N	Y	P	N	Y	P	N	Y	P	N	
1	3	2	1	3	2	1	3	2	1	3	2	1	3	2	value codes
involve admn			involve implement			involve design			involve recommen			involve compl			

*Y P N -Yes,partly,no

It was decided that if the score of:

1. Organisational independence was "50 thru 54" then the auditors were considered as "least independent"; a score of "55 thru 57, means that the auditors are "moderately independent" and a score of more than 58 mean that the auditors are "very independent".
2. Competency was "35 thru 40" then the auditors were considered as "least independent"; a score of "40 thru 85", means that the auditors are "moderately independent" and a score of more than 85 means that the auditors are "very independent".
3. Economics & other influences was "33 thru 34" then the auditors were considered as "least independent"; a score of "34 thru 36", means that the auditors are "moderately independent" and a score of more than 36 means that the auditors are "very independent".

7. Level of independence of IAs: IAs were divided into three categories: (a) very independent; (b) moderately independent and (c) not independent, based on the total points they obtained from the three types of independence. The higher the point, the more independent they are.

Calculation of points that determine the "three types" of independence and in turn the "three levels" of independence for "each type" is shown in Figure 5.3. This means that each "type" of independence has these three "levels" of independence, i.e for "organisational independence" there are "least, moderately and very independent" auditors and so on.

The purpose of calculating the "three types" of independence and the "three levels" of independence is to determine the correlation coefficient of the "three types" and "three levels" of independence of IAs so that their relationship to "judgement consensus" and "judgement consistency" can be determined.⁷⁰

In order to calculate the correlation coefficient of the "three types" of independence, the number of auditors for each type of independence had to be determined first through the calculation shown in Figure 5.3. Then by means of pearson correlation, the correlation coefficient for each type of independence was calculated.

⁷⁰ This is also true for determining the other variables namely: a) education level; b) experience level; c) position level; d) types of qualification and e) firm size.

As for correlation coefficient of the "three levels" of independence, they were determined by multiplying the correlation coefficient of "each type" of independence by a "factor weight". Organisational independence was assigned a "factor weight" of 3 (the highest since it is the most important); competency with a "factor weight" of 2 (second most important) and economics and other influences with a "factor weight" of 1 (least important).

The "factor weights" were assigned to the "three types" of independence based on Rittenberg's findings. His findings indicated that "in priority of importance, organisational factors were rated the highest, competency was rated moderately important and there were varied ratings for economic and other influences."

For example in order to determine the correlation coefficient of "least independent auditors", assuming that the correlation coefficient of the "three types" of independence were given, would be as follows:

<u>Least independent auditors:</u>			
1. Organisational	.79	* 3 =	2.37
2. Competency	.80	* 2 =	1.60
3. Econs & Other influences	.71	* 1 =	.71
Total			<u>4.68</u>
Coefficient correlation of least independent auditors		= 4.68/6	= <u>.78</u>

For detail calculation, please refer to Chapter 6, Section 6.5.3.

5.9 RESEARCH OBJECTIVES AND HYPOTHESES

As mentioned in Chapter one, the research question "Do IAs and EA make similar judgements?" has 4 main objectives, which were to examine:

- 1) whether EAs and IAs reached the same consensus as to the quality of a given internal control system
- 2) whether EAs and IAs were consistent in the ratings of two similar internal control systems
- 3) the effect of certain factors on judgement consensus and judgement consistency, and
- 4) the judgement model of both groups of auditors

Consensus of EAs and IAs which was the main thrust of the study, was looked at in 6 ways:

- 1) consensus in the ratings of the 6 similar cases given to both groups of auditors
- 2) consensus in the ratings of a case using different techniques/ approaches of evaluation
- 3) consensus in the ratings of whether ICPs were able to achieve control objectives
- 4) consensus in the ratings of the ability of the ICPs to detect or correct material errors (control risk)
- 5) consensus in the weights (i.e relative importance) given to the ICPs and
- 6) consensus in the ratings and relative weights given by the auditors to the "accounting controls" and "administrative controls"

Findings will be discussed according to these four main issues (i.e consensus, consistency, factors affecting consensus and consistency and judgement model of auditors).

Summary of the hypotheses to be tested relating to the four issues are shown in Table 5.1 to 5.6.

ISSUES	HA: THERE IS A SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSENSUS BETWEEN IAs AND EAs
1) Similar cases	H1a: There is a significant difference in the ratings of the 6 similar cases between EAs and IAs
	H1b: There is a significant difference in the variation of judgement of the 6 similar cases between EAs and IAs
	H1c: There is a significant difference in the mean ratings of the 6 cases between EAs and IAs
	H1d: There is a significant difference of consensus level on the 6 cases between EAs and IAs
2) Techniques of evaluation	H2a ¹ : There is a significant difference in the ratings of EAs and IAs using "ICQ" as compared to "CO" approach
	H2a ² : There is a significant difference in the ratings of EAs using "ICQ" as compared to "CO" approach
	H2a ³ : There is a significant difference in the ratings of IAs using "ICQ" as compared to "CO" approach
	H2b ¹ : There is a significant difference between the ratings of EAs and IAs using "ICQ" as compared to "CR" approach
	H2b ² : There is a significant difference between the ratings of EAs using "ICQ" as compared to "CR" approach

	H2b ³ : There is a significant difference in the ratings of IAs using "ICQ" as compared to "CR" approach
	H2c ¹ : There is a significant difference in the ratings of EAs and IAs using "CO" as compared to "CR" approach
	H2c ² : There is a significant difference in the ratings of EAs using "CO" as compared to "CR" approach
	H2c ³ : There is a significant difference in the ratings of IAs using "CO" as compared to "CR" approach
3) Whether ICPs achieve COs	H3a: There is a significant difference in the ratings of each ICP's ability to achieve each CO between EAs and IAs
	H3b: There is a significant difference of consensus level to achieve COs between EAs and IAs
	H3c: There is a significant difference in the ratings of the overall internal control system's ability to achieve each CO between EAs and IAs
	H3d ¹ : There is a significant difference in the mean ratings of each ICP and the ratings of the overall internal control system's ability to achieve each CO amongst EAs
	H3d ² : There is a significant difference in the mean ratings of each ICP and the ratings of the overall internal control system's ability to achieve each CO amongst IAs
4) Level of CR of ICPs	H4a: There is a significant difference in the ratings of the level of CR for each ICP between EAs and IAs
	H4b: There is a significant difference of consensus level on the ratings of CR between EAs and IAs
	H4c: There is a significant difference in the ratings of CR for the overall internal control system between EAs and IAs

	H4d ¹ : There is a significant difference in the mean ratings of CR for each ICP and the mean ratings of CR for the overall internal control system amongst EAs
	H4d ² : There is a significant difference in the mean ratings of CR for each ICP and the mean ratings of CR for the overall internal control system amongst IAs
5) Importance of ICPs	H5a: There is a significant difference in the total points allocated to overall internal control system between EAs and IAs
	H5b: There is a significant difference in the mean points for each ICP between EAs and IAs
6) Types of controls	H6a ¹ : There is a significant difference in the mean weighting of "accounting" and "administrative" control amongst EAs
	H6a ² : There is a significant difference in the mean weighting of "accounting" and "administrative" control amongst IAs
	H6b: There is a significant difference in the mean weighting of "accounting" controls between EAs and IAs
	H6c: There is a significant difference in the mean weighting of "administrative" controls between EAs and IAs
	H7a ¹ : There is a significant difference in the ratings of "accounting" and "administrative" control for the 5 control objectives amongst EAs
	H7a ² : There is a significant difference in the ratings of "accounting" and "administrative" control for the 5 control objectives amongst IAs
	H7b: There is a significant difference in the ratings of "accounting" controls for the 5 control objectives between EAs and IAs
	H7c: There is a significant difference in the ratings of "administrative" controls for the 5 control objectives between EAs and IAs

	H8a ¹ : There is a significant difference in the ratings of control risk of "accounting" and "administrative" controls amongst EAs
	H8a ² : There is a significant difference in the ratings of control risk of "accounting" and "administrative" control amongst IAs
	H8b: There is a significant difference in the ratings of control risk of "accounting" controls between EAs and IAs
	H8c: There is a significant difference in the ratings of control risk of "administrative" controls between EAs and IAs

Table 5.1: Summary of hypotheses on "judgement consensus"

ISSUES	HB: THERE IS A SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSISTENCY BETWEEN IAs AND EAs
1) Repeat cases	HB1: There is a significant difference in the ratings of case 1 and case 7 between EAs and IAs
	HB2: There is a significant difference in the variation of judgement of the 2 repeat cases between EAs and IAs
	HB3 ¹ : There is a significant difference in the ratings of case 1 and case 7 amongst EAs
	HB3 ² : There is a significant difference in the ratings of case 1 and case 7 amongst IAs

Table 5.2: Summary of hypotheses on "judgement consistency"

VARIABLES	HC: THERE IS A SIGNIFICANT DIFFERENCE OF CONSENSUS LEVEL BETWEEN AUDITORS WITH RESPECT TO THE FOLLOWING 7 VARIABLES LISTED BELOW USING THE "ICQ" APPROACH
1) Experience	HC1: There is a significant difference of consensus level between auditors of various experience levels using the "ICQ" approach
2) Have prof qualifctns	HC2: There is a significant difference of consensus level between auditors who have passed the professional examinations and those that have not using the "ICQ" approach
3) Types of qualifctns	HC3: There is a significant difference of consensus level between auditors of various "types of qualifications", i.e those who are strong on external audit training, strong on company accounting and strong on internal auditing using the "ICQ" approach
4) Position levels	HC4: There is a significant difference of consensus level between auditors of various position levels using the "ICQ" approach
5) Size of firms	HC5: There is a significant difference of consensus level between auditors from different size firms/ organisations using the "ICQ" approach
6) Levels of independence of IAs	HC6: There is a significant difference of consensus level between IAs of various "levels of independence" using the "ICQ" approach
7) Types of independence of IAs	HC7: There is a significant difference of consensus level between IAs of different "types of independence", i.e organisational, competency, economic and other influences, using the "ICQ" approach.

Table 5.3: Summary of hypotheses on effects of variables on "judgement consensus" (ICQ)

VARIABLES	HD: THERE IS A SIGNIFICANT DIFFERENCE OF CONSENSUS LEVEL BETWEEN AUDITORS WITH RESPECT TO THE FOLLOWING 7 VARIABLES LISTED BELOW USING "CR" APPROACH
1) Experience	HD1: There is a significant difference of consensus level between auditors of various experience levels using "CR" approach
2) Have prof qualifctns	HD2: There is a significant difference of consensus level between auditors who have passed the professional examinations and those that have not using "CR" approach
3) Types of qualifctns	HD3: There is a significant difference of consensus level between auditors of various "types of qualifications", i.e those who are strong on external audit training, strong on company accounting and strong on internal auditing using "CR" approach
4) Position levels	HD4: There is a significant difference of consensus level between auditors of various position levels using "CR" approach
5) Size of firms	HD5: There is a significant difference of consensus level between auditors from different size firms/ organisations using "CR" approach
6) Levels of independence of IAs	HD6: There is a significant difference of consensus level between IAs of various "levels of independence" using "CR" approach
7) Types of independence of IAs	HD7: There is a significant difference of consensus level between IAs of different "types of independence", i.e organisational, competency, economic and other influences using "CR" approach.

Table 5.4: Summary of hypotheses on effects of variables on "judgement consensus" (CR)

VARIABLES	HE: THERE IS A SIGNIFICANT DIFFERENCE OF CONSENSUS LEVEL BETWEEN AUDITORS REGARDING THE WHO HAVE AND THOSE THAT DO NOT HAVE THE CHARACTERISTICS LISTED BELOW USING "CO" APPROACH
1) Experience	HE1: There is a significant difference of consensus level between auditors of various experience levels using "CO" approach
2) Have prof qualifctns	HE2: There is a significant difference of consensus level between auditors who have passed the professional examinations and those that have not using "CO" approach
3) Types of prof qualifctns	HE3: There is a significant difference of consensus level between auditors of various types of professional qualifications ,i.e those who are strong on external audit training, strong on company accounting and strong on internal auditing using "CO" approach
4) Position levels	HE4: There is a significant difference of consensus level between auditors of various position levels using "CO" approach
5) Size of firms	HE5: There is a significant difference of consensus level between auditors of different size firms/ organisations using "CO" approach
6) Level of independence of IAs	HE6: There is a significant difference of consensus level between IAs of various "levels of independence" using "CO" approach
7) Types of independence of IAs	HE7: There is a significant difference of consensus level between IAs with different "types of independence", i.e organisational, competency, economic and other influences using "CO" approach.

Table 5.5: Summary of hypotheses on effects of variables on "judgement consensus" (CO)

VARIABLES	HF: THERE IS A SIGNIFICANT DIFFERENCE OF CONSISTENCY LEVEL BETWEEN AUDITORS WITH RESPECT TO THE FOLLOWING VARIABLES LISTED BELOW
1) Experience	HF1: There is a significant difference of consistency level between auditors of various experience levels
2) Have prof qualifctns	HF2: There is a significant difference of consistency level between auditors who have passed the professional examinations and those that have not
3) Types of prof qualifctns	HF3: There is a significant difference of consistency level between auditors of various types of professional qualifications ,i.e those who are strong on external audit training, strong on company accounting and strong on internal auditing
4) Position levels	HF4: There is a significant difference of consistency level between auditors of various position levels
5) Size of firms	HF5: There is a significant difference of consistency level between auditors from different size firms/ organisations
6) Level of independence of IAs	HF6: There is a significant difference of consistency level between IAs of various "levels of independence"
7) Types of independence of IAs	HF7: There is a significant difference of consistency level between IAs of different "types of independence", i.e organisational, competency, economic and other influences.

Table 5.6: Summary of hypotheses on effects of variables on "judgement consistency"

Amongst the factors that were found to have an influence on "judgement consensus" and "judgement consistency" in previous studies (as discussed in Chapter 4) were: a) size of firm; b) education level; c) position level and

d) experience level of the auditors. Specifically for IAs, "independence of IAs" would also be examined to see its effect on the consensus level of IAs. Only one study (Moore, 1993) has examined the effect of "independence" of IAs to date.

As for the judgement model of each group of auditor the main concern is to see if the 8 ICPs and the three covariates (educational, experience and position level) do affect the ratings of the auditors.

5.10 DESCRIPTION OF ANALYSIS TO BE DONE

Parametric test was carried out on the testing of hypotheses. Detail reasoning for its use will be discussed in section 6.4, chapter 6.

The main statistical tests used were: a) a paired t-test; b) analysis of variance (ANOVA) and c) analysis of covariance (ANCOVA).

A paired t-test was done on the hypotheses that involve one 2-level independent variable; a one-way ANOVA was done on the hypotheses that involve more than 2-level independent variables and ANCOVA was done on hypotheses that involve several independent variables simultaneously.

Consensus level was calculated by correlating the

responses for all pairs of auditors. Consensus level for the "ICQ" approach was calculated based on the ratings for the 6 similar cases; the "CO" approach was calculated based on the 40 ratings for the control objectives and the "CR" approach was calculated based on the 8 ratings for determining the level of control risk. A t-test based on the consensus level was then carried out. Consistency level was calculated by correlating the 2 repeat cases for all pairs of auditors. Spearman and Pearson correlation was done to see whether the variables were significantly related.

The judgement model of each group of IAs and EAs were based on Kempthorne's design of $\frac{1}{4}$ replicate of 2^8 design. The dependent variables were the responses on a visual analog scale given by the auditors using the ICQ approach and the independent variables were the 8 ICPs and the three covariates (educational, experience and position level). Analysis of variance with covariates using regression approach was used in the analysis.

5.11 PHASES OF THE RESEARCH

There were roughly three phases involved in the thesis; pilot study, list of voluntary participants with their profiles⁷¹ and primary study.

⁷¹ Profiles referred to the 3 covariates; educational, position and experience level.

5.11.1 "First phase"-pilot study

The draft questionnaires were sent out to 4 EAs and 4 IAs on the 28th September 1993.⁷² The draft questionnaires were returned in late October. Comments from the respondents were taken into consideration and the primary questionnaires were then prepared.

One of the comments from the pilot study was that there is usually no internal control system that can be rated "strong" or "very strong".⁷³ Thus, the response scale was changed from an ordinal scale to a continuous scale with "extremely weak" on one end and "extremely strong" on another. Please refer to Appendix 5cii) for an illustration. This is so because had the ordinal scale been used, there would be a tendency that the scale marked strong onwards would not be chosen.

In the pilot questionnaire, there was a poor response to the questions that asked for net assets, net profit and number of employees. The auditors were required to provide these information by filling in a on a "blank line" that was provided. The primary questionnaire still

⁷² KPMG Peat Marwick and Cattle's (Holdings) plc took part in the pilot test.

⁷³ The auditors were required to mark their response on a 7 point rating scale as follows:

extremely	very	weak	adequate	strong	very extremely
weak	weak				strong strong

included these questions but had provided a "range of answers" for the auditors to put a "tick" against it in the hope that it would encourage more response.

Comments were also obtained from an academician and a statistician with regards to the presentation of the questionnaire. They suggested asking the background information first prior to the questions pertaining to the evaluation of the internal control systems, in order to encourage more response. The objective was to present to the auditors the "easy" questions first before requesting their help on the more "difficult" questions. The primary questionnaire thus follows this format.

The other comment was to include more "open-ended" questions so that the auditors could explain what their views were. Thus the inclusion of 2 more "open-ended" questions in the primary questionnaire. Please refer to Appendix 5c(ii) for the primary questionnaire.

5.11.2 "Second phase" -list of auditors who were willing to participate

The second phase was to send out a list to the "large" external audit firms and organisations where the internal audit department was thought to be quite "large" (based on the number of auditors). The list was sent out to a "contact person" in the firm who would then help to find the auditors who would be willing to participate. The

names, addresses (if different from the firm's organisation)⁷⁴ and their personal information such as their position levels in the firm, their qualifications and length of auditing experience were also requested. These variables were looked into as they were thought to be most influential on the judgements of the auditors. Please refer to Appendix 5a(i) to 5a(v) for the letters and lists sent to both EAs and IAs.

The total number of EAs requested were at least 8 auditors each from the "partner" and "manager" levels and at least 12 auditors from each of the "senior" and "junior" levels and total number of IAs requested were at least 3 auditors each from the "Head and Deputy Head of Internal Audit" and "Audit Manager" levels and at least 6 auditors from each of the "Senior Internal Auditor" and "Internal Auditor" levels. The numbers varied because it was thought there would be more EAs working in an audit firm compared with IAs that worked in an organisation.

The list was sent out to 17 contact persons in different external audit firms and to 40 contact persons in different organisations that were thought to be "medium to large" organisations so that roughly the same number of IAs and EAs could be obtained. The list was obtained

⁷⁴ The contact person can help to find auditors not only in his/ her firm but also in other divisions/ offices of the firm.

through personal contacts of the researcher's supervisor, as it was recognised that if the list had been sent out at random to the firms, the response would be very poor.⁷⁵ The list was sent out by the end of January 1994 and a follow-up letter was sent out in March 1994.

The contact person from each firm/ organisation had to fill in the names of auditors who would be willing to participate in the study. The list requires the contact person to fill in the "length of experience, position level and whether the auditors have passed professional qualifications". Please refer to Appendix 5aiv) for illustration. The number of EAs and IAs who were willing to participate in the study was noted. This number is the deciding factor on whether to use a " $\frac{1}{2}$ replicate of 2^8 design" or a " $\frac{1}{4}$ replicate of 2^8 design" or for that matter whether to use a " $\frac{1}{4}$ replicate of 2^9 design".

A " $\frac{1}{2}$ replicate of 2^8 design" or a " $\frac{1}{4}$ replicate of 2^9 design", would require 128 auditors from each group and a " $\frac{1}{4}$ replicate of 2^8 design" would require the use of 64 auditors .

⁷⁵ Although the process of selecting which firms would be willing to participate was "not random", the process of assigning the questionnaires to the list of available auditors who were willing to participate was "random". The results would therefore be from a "random" sample. Previous researchers in this area, as discussed in Chapter 4 have all used "sampling on availability" as they recognised that random selection would be difficult to obtain.

By 20th February 1994, there were 194 IAs but only 95 EAs. Please refer to Appendix 5fi) for the number of EAs and IAs available for selection. An attempt was made to seek help from further firms to participate but to no avail. Thus a "¼ replicate of 2⁸ design" was used in this research.

The IAs and EAs were then grouped according to the three variables (or personal variables) and they were then matched using SPSS (Statistical Package for the Social Sciences). For example, an EA who is "very experienced", who is "a partner" and who has "a professional qualification" will be matched with an IA who is also "very experienced", who is a "head or deputy head" of internal audit and who has a "professional qualification". Please see Appendix 5f(i) and 5f(ii) for the grouping and selection of pairs of the 2 groups.

5.11.3 "Third phase" -primary questionnaire

By 31st March 1994, the primary questionnaires were then mailed direct to the individual auditor (unless requested otherwise by the contact person) so as to ensure that the auditor would get the correct set number meant for him/her.

The subjects were required to complete the task individually without any discussion with one another. They were required to complete the materials within 2 or

3 weeks. Please see Appendix 5ci) and 5cii) for the letter and the primary questionnaire.

5.11.3.1 Contents of the questionnaire

The response for the evaluation of cases were made on a visual analog scale. Visual analog scale is a direct estimation method and is designed to elicit from the auditors a direct quantitative estimate of the magnitude of an attribute. According to Streiner & Norman (1991),

The visual analog scale (VAS) is the essence of simplicity- a line of fixed length, usually 100mm, with anchors like 'no pain' and 'pain as bad as it could be' at the extreme ends, and no words describing intermediate positions.

(Streiner & Norman 1991, 23)

The method has been used extensively in medicine to assess a variety of constructs; pain (Huskisson, 1974), mood (Aitken, 1969) and functional capacity (Scott and Huskisson, 1978), among others.

Most of the internal control evaluation research that used ANOVA models⁷⁶ had made use of a 6 point "likert scale". These judgements were interpreted as having "interval scale" properties, i.e, the auditors' assignments of numerical values to the external audit profiles were interpreted such that "equal distances between the numbers assigned represented equal differences in the strength" of internal auditing, as

⁷⁶ Except for Reckers & Taylor, 1979 who made use of a numerical point rating scale.

represented by the profiles. However, this may not be true. First, the descriptive phrases (e.g., "mostly reliable") may have different meanings for different auditors; and second any given auditor may not perceive the intervals as being equally distant in terms of audit strength. According to Siegel (1956, 19), it is preferable to use "continuous or interval data" with ANOVA. However, Andersen (1961, 310) disagrees with this.⁷⁷

Besides evaluation of cases based on the "ICQ" approach, auditors were also required to answer a case based on the "CR" and "CO" approach. Other questions include assigning weights to each ICP out of 20 points according to their relative importance. The auditors were also asked to answer demographic and personal information about themselves.

5.12 EXPERIMENTAL DESIGN

A $\frac{1}{4}$ replicate of 2^8 based on Kempthorne's design (1952, Table 20.5, 403) which is a factorial design was chosen because although the number of auditors who had volunteered to participate in the study exceeded 64, it was less than 128 auditors.

⁷⁷ For details, please refer to Norman H. Andersen. 1961. Scales and Statistics: Parametric and Nonparametric. Psychological Bulletin, Vol. 58, No.4: 305-316.

In this design, all main effects and all 28, two cue, interactions are estimable. 3 cue interactions are not intended to be measured as previous studies have indicated that they account for none or negligible interaction. The design involved 63 degrees of freedom: one degree of freedom is used in testing each of the 8 main effects and 28 two factor interactions. The remaining 27 are to test other higher order interactions or other explanatory factors thus totalling 63 degrees of freedom. Combination of "Yes's" and "No's" answers for the 64 cases according to Kempthorne's $\frac{1}{4}$ replicate of 2^8 design are shown in Table 5.7. Please note that only case 1 follows this design. The design of the other 6 cases is shown in Table 5.10.

Case Number	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1	N	N	N	N	N	N	N	N
2	Y	Y	N	N	N	N	N	N
3	N	N	Y	N	Y	N	N	N
4	N	N	N	Y	Y	N	N	N
5	Y	N	Y	N	N	N	N	Y
6	N	Y	Y	N	N	N	N	Y
7	Y	N	N	N	Y	N	N	Y
8	Y	N	Y	Y	Y	N	N	Y
9	Y	N	N	N	Y	Y	N	N
10	N	Y	N	N	Y	Y	N	N
11	Y	N	Y	N	N	Y	N	N
12	Y	N	N	Y	N	Y	N	N
13	N	N	Y	N	Y	Y	N	Y
14	Y	Y	Y	N	Y	Y	N	Y
15	N	N	N	N	N	Y	N	Y
16	N	N	Y	Y	N	Y	N	Y
17	N	Y	N	Y	N	N	N	Y
18	Y	N	N	Y	N	N	N	Y
19	N	Y	Y	Y	Y	N	N	Y
20	N	Y	N	N	Y	N	N	Y
21	Y	Y	Y	Y	N	N	N	N
22	N	N	Y	Y	N	N	N	N
23	Y	Y	N	Y	Y	N	N	N

Case Number	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
24	Y	Y	Y	N	Y	N	N	N
25	Y	Y	N	Y	Y	Y	N	Y
26	N	N	N	Y	Y	Y	N	Y
27	Y	Y	Y	Y	N	Y	N	Y
28	Y	Y	N	N	N	Y	N	Y
29	N	Y	Y	Y	Y	Y	N	N
30	Y	N	Y	Y	Y	Y	N	N
31	N	Y	N	Y	N	Y	N	N
32	N	Y	Y	N	N	Y	N	N
33	N	Y	N	N	Y	N	Y	N
34	Y	N	N	N	Y	N	Y	N
35	N	Y	Y	N	N	N	Y	N
36	N	Y	N	Y	N	N	Y	N
37	Y	Y	Y	N	Y	N	Y	Y
38	N	N	Y	N	Y	N	Y	Y
39	Y	Y	N	N	N	N	Y	Y
40	Y	Y	Y	Y	N	N	Y	Y
41	Y	Y	N	N	N	Y	Y	N
42	N	N	N	N	N	Y	Y	N
43	Y	Y	Y	N	Y	Y	Y	N
44	Y	Y	N	Y	Y	Y	Y	N
45	N	Y	Y	N	N	Y	Y	Y
46	Y	N	Y	N	N	Y	Y	Y
47	N	Y	N	N	Y	Y	Y	Y
48	N	Y	Y	Y	Y	Y	Y	Y
49	N	N	N	Y	Y	N	Y	Y
50	Y	Y	N	Y	Y	N	Y	Y
51	N	N	Y	Y	N	N	Y	Y
52	N	N	N	N	N	N	Y	Y
53	Y	N	Y	Y	Y	N	Y	N
54	N	Y	Y	Y	Y	N	Y	N
55	Y	N	N	Y	N	N	Y	N
56	Y	N	Y	N	N	N	Y	N
57	Y	N	N	Y	N	Y	Y	Y
58	N	Y	N	Y	N	Y	Y	Y
59	Y	N	Y	Y	Y	Y	Y	Y
60	Y	N	N	N	Y	Y	Y	Y
61	N	N	Y	Y	N	Y	Y	N
62	Y	Y	Y	Y	N	Y	Y	N
63	N	N	N	Y	Y	Y	Y	N
64	N	N	Y	N	Y	Y	Y	N

Table 5.7: 64 combinations of the factor levels

Source: Kempthorne, O. 1952. The Design and Analysis of Experiments, Table 20.5, pg 403. New York: John Wiley and Sons, Inc.

The purpose of using a "factorial design" is so that the effects of a number of different variables are investigated simultaneously. According to Cochran & Cox (1968)

...the single-factor approach is likely to provide only a number of disconnected pieces of information that cannot easily be put together. In order to conduct an experiment on a single factor A, some decision must be made about the levels of other factors B, C, and D, say, that are to be used in the experiment ... The experiment reveals the effects of A for this particular combination of B, C, and D, but no information is provided for predicting the effects of A with any other combination of B, C, and D. With a factorial approach, on the other hand, the effects of A are examined for every combination of B, C, and D that is included in the experiment. Thus a great deal of information is accumulated both about the effects of the factors and about their interrelationships.
(Cochran & Cox 1968, 151).

According to Ashton (1973),

Factorial designs are advantageous when the objective is (1) to obtain a broad picture of the effects of various numerous variables or (2) to study interactions among different variables.
(Ashton 1973, 117).

The effect of various variables indicates the degree of influence each variable has upon the final judgement. This is also known as the "main effect" of each variable. In the case of the internal control evaluation, it would be the effect of the eight ICPs and the three covariates (experience, educational and position level) on the final rating on the "visual analog scale" by the auditors.

The effect of interactions among different variables indicates the effect of a combination of 2 or more of the variables upon the final judgement. This is called

"interaction effect". In the case of the internal control evaluation, it would be the effect of a combination of two or more of the independent variables (eight ICPs and the three covariates) on the dependent variable, i.e the final rating of the auditors on the "visual analog scale". In other words, the importance of each independent variable depended upon the answer given to the other independent variables.

64 IAs and 64 EAs were chosen on a voluntary basis. Each IA and EA will be given 1 set of cases (consisting of 8 cases) in addition to the rest of the questions to answer. Thus, there will be 64 sets of cases for both IAs and EAs to answer. Out of the 8 cases, there will be 2 repeat cases which will always be placed as case 1 and case 7⁷⁸.

⁷⁸ Case 1 made use of the combination of "Yes's" and "No's" from Kempthorne's $\frac{1}{4}$ replicate of 2^8 design. Case 7 was the exact duplicate of case 1 but the ICPs were arranged differently in the hope that it would not be too obvious to the auditors that they were "repeat cases". Thus each pair of auditors had a unique set of cases 1 and 7. The objective of having case 1 and case 7 is to test for "judgement consistency", i.e, given 2 similar cases, would an auditor rate the 2 cases in a similar manner? The objective of having case 1 is to determine the "judgement model" of each group of EA and IA.

The rest of the 6 cases⁷⁹ were cases which could not be found in $\frac{1}{4}$ replicate of 2^8 design which is the source from where the combination of repeat cases is taken. The reason for choosing the 6 cases outside the model of $\frac{1}{4}$ replicate of 2^8 design is to avoid making an error of including 2 or more repeat cases in a questionnaire.

In order to camouflage the "repeat" cases, the ICPs of the cases were placed in 3 different orders.

5.13 ORDER OF CASES

Using a random number table (Ott, 1977, Table 8 of the Appendix, 690), the 8 ICPs were placed in the 3 different orders as shown in Table 5.8.

⁷⁹ The 6 cases were chosen based on 2 conditions:

- i) the cases should consist of combinations of "Yes's" and "No's" other than those found in Kempthorne's $\frac{1}{4}$ replicate of 2^8 design
- ii) the number of ICPs with a "Yes's" should increase. The objective of increasing the number of "Yes's" was to find out if the quality of internal control system was judged based on the "quantity" of the ICPs present and not based on the "type" of ICP present.

All auditors had the same 6 cases included in their questionnaire. The objective of having the 6 cases was to test for "judgement consensus", i.e to find out whether given the same cases, the auditors would give the same rating.

Case 4 for has all the ICPs present. The objective of having case 4 was to find out 2 things:

- i) whether with all the 8 ICPs present, the auditors would perceive the internal control system as "strong".
- ii) since case 4 was presented by means of "ICQ" approach, the rating given to it would represent the evaluation of an internal control system using the "ICQ" approach. This rating could then be compared to the rating given to the same internal control system when it is presented by means of a "CO" or a "CR" approach.

Order 1	Order 2	Order 3
Q1 Time crds	Q2 Task tkeepng & pymnt	Q5 Names checked
Q2 Task tkeepng & pymnt	Q5 Names checked	Q3 Physical security
Q3 Physical security	Q6 Task pyrollpreptn & pymnt	Q1 Time crds
Q4 Duties rotated	Q7 Mgmnt reports	Q2 Task tkeepng & pymnt
Q5 Names checked	Q4 Duties rotated	Q8 Formal procedures
Q6 Task pyrollpreptn & pymnt	Q1 Time crds	Q7 Mgmnt reports
Q7 Mgmnt reports	Q3 Physical security	Q4 Duties rotated
Q8 Formal procedures	Q8 Formal procedures	Q6 Task pyrollpreptn & pymnt

Table 5.8: Three different orders of the 8 "ICPs"

Again using a random number table from the same source, case 1,2 and 8 were placed in the first order, case 4 and 6 were placed in order 2 and case 3,5 and 7 were placed in order 3.⁸⁰ The results were as shown in Table 5.9.

ORDER 1	ORDER 2	ORDER 3
case 1	case 4	case 3
case 2	case 6	case 5
case 8		case 7

Table 5.9: Three different orders of the 8 "cases"

⁸⁰ Previous research (Ashton and Brown, 1980) has shown that the "different orders" will not affect the ratings of auditors. Please refer to Chapter 4 for details.

5.14 METHOD OF CHOOSING THE 6 CASES

The 6 cases were chosen so that the number of yes's (presence of ICPs) increases. Case number 4 was a case with all the ICPs present. The combination of the factor levels of the 6 cases were then compared with the combination of the factor levels of the model of $\frac{1}{4}$ replicate of 2^8 design (as shown in Table 5.7) so as to avoid including the "repeat" cases in the 6 cases. Please refer to Table 5.10 for the combination of the factor levels for the 6 cases.

Case 2	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
	N	N	N	N	Y	Y	N	N
Case 3	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
	N	N	N	N	Y	Y	Y	N
Case 4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
	Y	Y	Y	Y	Y	Y	Y	Y
Case 5	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
	N	N	N	N	Y	Y	Y	Y
Case 6	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
	N	N	N	Y	Y	Y	Y	Y
Case 8	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
	N	N	Y	Y	Y	Y	Y	Y

Table 5.10: Combination of the factor levels of the 6 cases

The objective of giving the same case (the repeat cases being case 1 and 7) to the same auditor was to determine whether they would make "consistent judgements" regarding

the quality of the internal control system.

The objective of giving the same cases (the 6 cases being case 2, 3, 4, 5, 6 and 8) to all the auditors was to determine whether all the auditors would make the same "judgement (consensus)" regarding the quality of the same internal control system.

The objective of having case 4 (i.e with all the ICPs present) was to determine whether the auditors would be of an opinion that if all the 8 ICPs were present it would indicate that the internal control system was "strong". The other reason for having case 4 was to find out whether the auditor would come out with the same judgement regarding the quality of the internal control system if asked to evaluate the internal control system by means of a different technique or for that matter if the same case were presented differently, i.e. by means of "ICQ", "CO" and "CR" approach.

The 6 cases would then be given together with the 2 "repeat" cases to the 64 pairs of auditors for them to evaluate the quality of the internal control system.

A $\frac{1}{4}$ replicate of 2^8 design is used on the assumption that all interactions involving 3 or more factors are zero and thus would not be determined. All main effects and 2 factor interactions are assumed to be important and are

measurable. For further discussion please see Kempthorne (1952, 401-403).

The combination of 8 cases for the 64 sets thus consists of Case 1 which follows Kempthorne's $\frac{1}{4}$ replicate of 2^8 design, Case 2, 3, 4, 5, 6, 8 were the similar cases given to the auditors and Case 7 was a repeat of case 1 but arranged in a different sequence. For example, Set 1 of the questionnaire, after taking the "design rules" into consideration will be as shown in Table 5.11.

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Case 1 #	N	N	N	N	N	N	N	N
Case 2 *	N	N	N	N	Y	Y	N	N
Case 3 *	N	N	N	N	Y	Y	Y	N
Case 4 *	Y	Y	Y	Y	Y	Y	Y	Y
Case 5 *	N	N	N	N	Y	Y	Y	Y
Case 6 *	N	N	N	Y	Y	Y	Y	Y
Case 7 #	N	N	N	N	N	N	N	N
Case 8 *	N	N	Y	N	Y	Y	Y	Y

Table 5.11: Combination of the factor levels of the 8 cases for Set 1

* "Similar" cases given to "all auditors". Case 4 has all the ICPs present.

"Unique" cases given to "each pair of auditors" (one EA and one IA). Case 1 follows $\frac{1}{4}$ replicate of 2^8 design. Case 7 is a repeat case of case 1.

5.15 MATCHING PROCESS

The various firms were assigned a number whereby the external audit firm was given a number starting with a "1" and the internal audit organisation was given a

number starting with a "2". Each auditor was assigned a number according to the page number on which their names had been filled in. For example, if an external audit firm was given the number 104 and the auditor who volunteered to participate had his name filled in on page 10, then he would be assigned number 10410.

The various auditors were first of all grouped into EAs and IAs. They were then grouped according to the 3 variables, i.e position level in firm, whether they possessed professional qualifications and their length of auditing experience.

The assumptions made in order to make this process possible was to:

- i) assume that all EAs and IAs in each position level will behave in the same manner
- ii) assume that the position levels of EAs and IAs are the same and comprise 4 levels:

<u>EAs</u>	<u>Equivalent to</u>	<u>IAs</u>
a) Partner	----->	Head of dept/ Deputy head of dept
b) Manager	----->	Audit Manager
c) Senior	----->	Senior Internal Auditor
d) Junior	----->	Internal Auditor

- iii) assume that IAs belonging to a position level of the internal audit organisation will act in the same manner as EAs belonging to the same position level

in the external audit firm.

- v) assume that auditors having professional accounting /auditing qualifications would behave in the same manner.
- vi) assume that auditors having the same length of auditing experience would behave in the same manner.

The length of auditing experience was classified into 3 levels, inexperienced (auditors having less than 3 years of auditing experience); moderately experienced (auditors having more than 3 years but less than 6 years of auditing experience) and very experienced (auditors having more than 6 years of auditing experience).

After the auditors were matched up according to the 3 personal variables/ profiles (length of experience, position level and whether they have passed professional qualification), there were 15 groups of EAs and 19 groups of IAs. Please refer to Appendix 5f(i). The 64 auditors to be chosen was dependent on the availability of EAs since the number of EAs who volunteered was much lesser. Thus, it had to be limited to only 15 groups.⁸¹

The auditors were then arranged in "ascending order"

⁸¹ The 4 groups of auditors which are available in IAs but not in EAs were: (a) very experienced, audit manager, non-professional; (b) very experienced, internal auditor, professional; (c) very experienced, internal auditor, non-professional and (d) moderately experienced, audit manager, non-professional. Thus, the auditors belonging to this group of profiles could not be selected.

based on the auditor number that they were assigned to. For example, after selecting the auditors in the appropriate group to be chosen, i.e, auditor number 10213, 10125 and 11401 who represent EAs and 22503, 22314 and 21718 who represent IAs, they would then be arranged in ascending order as shown in Table 5.12.

EA	IA
10125	21718
10213	22314
11401	22503

Table 5.12: Arrangement of EAs and IAs in ascending order

After that, the auditors would be assigned the set number randomly by means of a random number table (Ott, 1977). An example is shown in Table 5.13.

External number	Internal number	Set number
10125	21718	4
10213	22314	64
11401	22503	19

Table 5.13: Assignment of set numbers to three pairs of auditors

The same steps were done in the assignment of the 64 sets of cases to the 64 matched pairs of auditors. Please refer to Appendix 5f(iii).

5.16 AUDITORS' RESPONSE

The response from the auditors was quite slow. There were

4 follow-up letters written by the supervisor and the researcher between the periods from 29th April and 21st July 1994. Please see Appendix 5d(i) to 5d(iv) for the sample of the letters. Besides the letters, follow-up calls were also made. To determine the effects of a "non-response" bias, the method suggested by Oppenheim (1966) was used.

... it has been found that respondents who send in their questionnaire very late are roughly similar to nonrespondents. We have open two methods to find out whether and in what way a bias has been introduced: first, by comparing respondents with nonrespondents on the original sampling list (in terms of geographical location, birth, sex, ...), and second by comparing early respondents with late respondents (in terms of their answers to the questionnaire). (Oppenheim 1966, 34)

In this thesis, the second method was used. The auditors were divided into "early" and "late" responding groups based on the date the questionnaires were received. The questionnaires received before 31st May 1994 was grouped as "early" respondents and those received after that date but before 21st July 1994 (when non-random selection was done) was grouped as "late" respondents. Their ratings to the 8 cases were then compared. No significant difference was found. Please refer to Appendix 5gi) for the results. Comparison of demographic profiles of "early" and "late" respondents through observation also showed no differences.

After a lengthy discussion with a statistician and several other academic staff, it was then decided that a "random method" of selection was no longer feasible and

the respondents who did not answer had to be substituted by either:

- a) auditors who had not been previously selected from the list of voluntary participants. It was decided that if there were respondents who were not able to return the questionnaire for various reasons (has retired, on secondment or were very busy), it was decided that the same questionnaire set number could be sent to another auditor in the same group as the auditors belonging to the same group were assumed to behave in a similar manner. This assumption had to be made in order to get 64 matched pairs so as to be able to draw some reasonable conclusions from the data.
- b) any EAs from the top 50 audit firms in UK.⁸²
- c) any IAs from the members of Institute of IAs who were known on a personal basis by the researcher's supervisor.

A "profile list" containing personal characteristics of the respondents who had to fill in the questionnaire was attached to the questionnaire requesting only persons having that profile to fill it in. If none of the auditors available fitted the profile, it was requested

⁸² List was given by IIA, which was taken from Accountancy Magazine as at July 1994.

that the questionnaire be returned. The letter was addressed to the senior partner of each firm. Please refer to Appendix 5e(i) and 5e(ii) for the letter and the profile list.

As a result of the approach we took, there were set numbers that were answered by more than a pair of auditors. For example, instead of being answered by one EA and IA, the set numbers were answered by more than 1 auditor from each group. The method of choosing which auditor to be included in the sample was by means of firstly, the "most complete" basis . If all were completed, then it would be on a "first received" basis. Only by middle of December 1994, were we finally able to obtain the 64 matched pairs of auditors.⁸³ Using the same approach as comparison of "early" and "late" respondents as suggested by Oppenheim (1966), the answers given by "randomly" selected and "nonrandomly" selected auditors were compared.⁸⁴ Again, no significant difference was found. Please refer to Appendix 5g(ii) for the results.

Thus, it can be said that the method of selection that we took was "random" at first but it had to be changed to "non-random" later for practical reasons.

⁸³ There were 9 extra auditors comprising 6 EAs and 3 IAs whose response we did not include in the 64 matched pairs of auditors.

⁸⁴ "Randomly" selected auditors are those whose questionnaires were received before 21st July 1994 and "nonrandomly" selected auditors were those whose questionnaires were received after that date.

5.17 SUMMARY

This chapter summarizes the research process. It explained the inclusion of the questions in the questionnaire and explained the operational definition of the concepts to be measured. To sum up, there are 4 issues that are being investigated in this thesis, i.e judgement consensus, judgement consistency, factors that might influence judgement consensus and consistency and judgement models of each group of IAs and EAs.

CHAPTER 6
RESEARCH FINDINGS

6.1 INTRODUCTION

This chapter presents a description of the sample. Research findings will be discussed by means of four main issues, i.e, judgement consensus, judgement consistency, the factors that might influence judgement consensus and judgement consistency and judgement model of each group of EAs and IAs. Prior to discussion of each issue, a chart showing the statistical methods used and an overall conclusion will be presented in the hope that it will aid discussion. The results of this study were also compared against the results of previous research.

6.2 DEMOGRAPHIC INFORMATION

Tables 6.1 and 6.2 summarizes the mean length and mean range of audit experience of the auditors. Names of firms that have participated in the research are also included.

Organisations	No of respondents	Mean age	Age range	Mean length of experience	Experience range
102 (Stoy Hayward)	2	23	22-24	2.50	1-4
103 (Clark Whitehill)	7	31.43	27-42	8.79	5-18
104 (Coopers & Lybrand)	19	31.26	25-47	8.24	1-23

Organisations	No of respondents	Mean age	Age range	Mean length of experience	Experience range
108(Hays Allan)	4	30.50	23-41	8.88	1.5-20
110(Price Waterhouse)	8	34	28-47	11.69	6-22
113(Sam Rogoff)	3	39	34-44	17.33	5-27
114(Neville Russell)	4	38.75	30-54	13.63	6-20.5
116(Grant Thornton)	7	31	20-49	11.07	1-32
151(Kidsons Impey)	1	28	28-28	7	7-7
152(Moore Stephens)	1	22	22-22	4	4-4
153(Robson Rhodes)	1	26	26-26	5	5-5
158(Saffery Champness)	1	24	24-24	2	2-2
161(Hacker Young)	2	28.50	27-30	7.50	6-9
162(Casson Beckman)	2	30.50	24-37	9	2-16
180(Touche Ross)	1	29	29-29	6	6-6
181(Arthur Andersen)	1	43	43-43	14	14-14
EAs	64	35.45	22-52	9.48	1-32
IAs	64	31.77	20-54	8.58	1-20
Both groups	128			9.03	1-32

Table 6.1 : Demographic information of EAs and "names of external audit firms" that have participated in the study

Organisations	No of respondents	Mean age	Age range	Mean length of experience	Experience range
232(Comet plc)	3	33.33	30-39	3.83	1.5-7
233(Arjo Wiggins Appleton)	2	38	34-42	13.50	13-14
237(HM Treasury)	3	40.33	34-44	9.67	5-14
238(Girobank plc)	2	36.50	35-38	8.50	6-11
239(Leeds Permanent Building Society)	3	40.33	27-54	11.33	4-18
240(Legal and General Assurance Society Ltd)	4	28.75	26-34	5.45	3-11
241(Intervention Board)	3	39	33-49	5.67	5-6
244(Burmah Castrol House)	1	38	38-38	16	16-16
246(Post Office)	3	38	25-55	10	4-18
247(North West Water Group)	5	31.80	27-39	7.10	3-10
248(Woolwich Building Society)	3	30.33	26-34	3	1-5
249(Aire Valley Internal Audit Consortium)	4	32.25	24-37	9	3-12
250(Wrekin District Council)	2	47.50	45-50	9.50	4-15
252(Lord Chancellor's Department)	5	40.80	36-51	9.40	5-14
253(Cattle's Holdings plc)	2	44	42-46	20	20-20
254(Reckitt & Colman)	2	37.50	22-53	12	10-14

Organisations	No of respondents	Mean age	Age range	Mean length of experience	Experience range
255(Cooperative Bank)	2	41.50	41-42	12.50	11-14
259(Chemical Banking Corporation)	3	35.67	31-43	11.33	9-13
260(Portman Building Society)	1	33	33-33	11	11-11
264(British Waterways)	1	31	31-31	7	7-7
267(British American Tobacco Co.)	5	28.60	24-37	4.20	2-6
268(Devonport Management Ltd)	1	39	39-39	18	18-18
269(Courage)	2	26	26-26	5	5-5
300(Commission for the New Towns)	2	32.50	27-38	4.50	3-6
IAs	64	31.77	20-54	8.58	1-20
EAs	64	35.45	22-52	9.48	1-32
Both groups	128			9.03	1-32

Table 6.2: Demographic information of IAs and "names of organisation" of IAs that have participated in the study

As can be seen from Tables 6.1 and 6.2, the age range of EAs and IAs is about the same. However, there is a wide spread of length of auditing experience amongst the auditor; EAs' range is 1-32 and IAs' is from 1-20.

Tables 6.3, 6.4 and 6.5 summarize the position level, experience level and professional qualifications of the

auditors respectively.

Position	EAs	IAs	Total	
			Qty	%
Partner / Head or deputy head of dept	16	16	32	25%
Manager / Audit manager	13	13	26	20%
Senior / Senior internal auditor	20	20	40	31%
Junior / Internal auditor	15	15	30	24%
Total	64	64	128	100%

Table 6.3: Position level of the 64 matched pairs of auditor

Although mainly "juniors" are involved with the actual auditing of the payroll system, auditing is a team's effort. Partners, managers and seniors are responsible to oversee that the payroll system is being audited in a correct manner. Thus, it is also the objective of this thesis to find out if there is a consensus of views of partners, managers and seniors with the views of "junior" auditors regarding the quality of a given payroll system.

From Table 6.3, it can be seen that the majority of auditors who participated in the study were in the "senior" position level.

Length of experience	EAs	IAs	Total	
			Qty	%
Very experienced	33	33	66	52%
Moderately experienced	22	22	44	34%
Inexperienced	9	9	18	14%
Total	64	64	128	100%

Table 6.4: Experience level of the 64 matched pairs of auditors

From Table 6.4, it can be seen that the majority of auditors who participated in the study were in the "very experienced" category.

Have Professional qualification?	Types of auditors	Total	CACA	CIMA	CA	CIPFA	MIIA	CIMA& CIPFA
Yes	EAs	52	2		49	1		
	IAs	52	3	7	15	6	20	1
	Total	104	5	7	64	7	20	1
No	IAs	12						
	EA	12						
	Total	24						

Table 6.5: Professional qualification of the 64 matched pairs of auditors

From Table 6.5, it can be seen that majority of EAs were "CAs" (Chartered Accountants) and none of them had "CIMA" qualification. IAs however were mostly MIIAs but they also have the same qualification as EAs. It can be said that EAs and IAs who participated in this study had quite similar background. Figure 6.1 compare the "types of professional qualifications" of EAs and IAs.

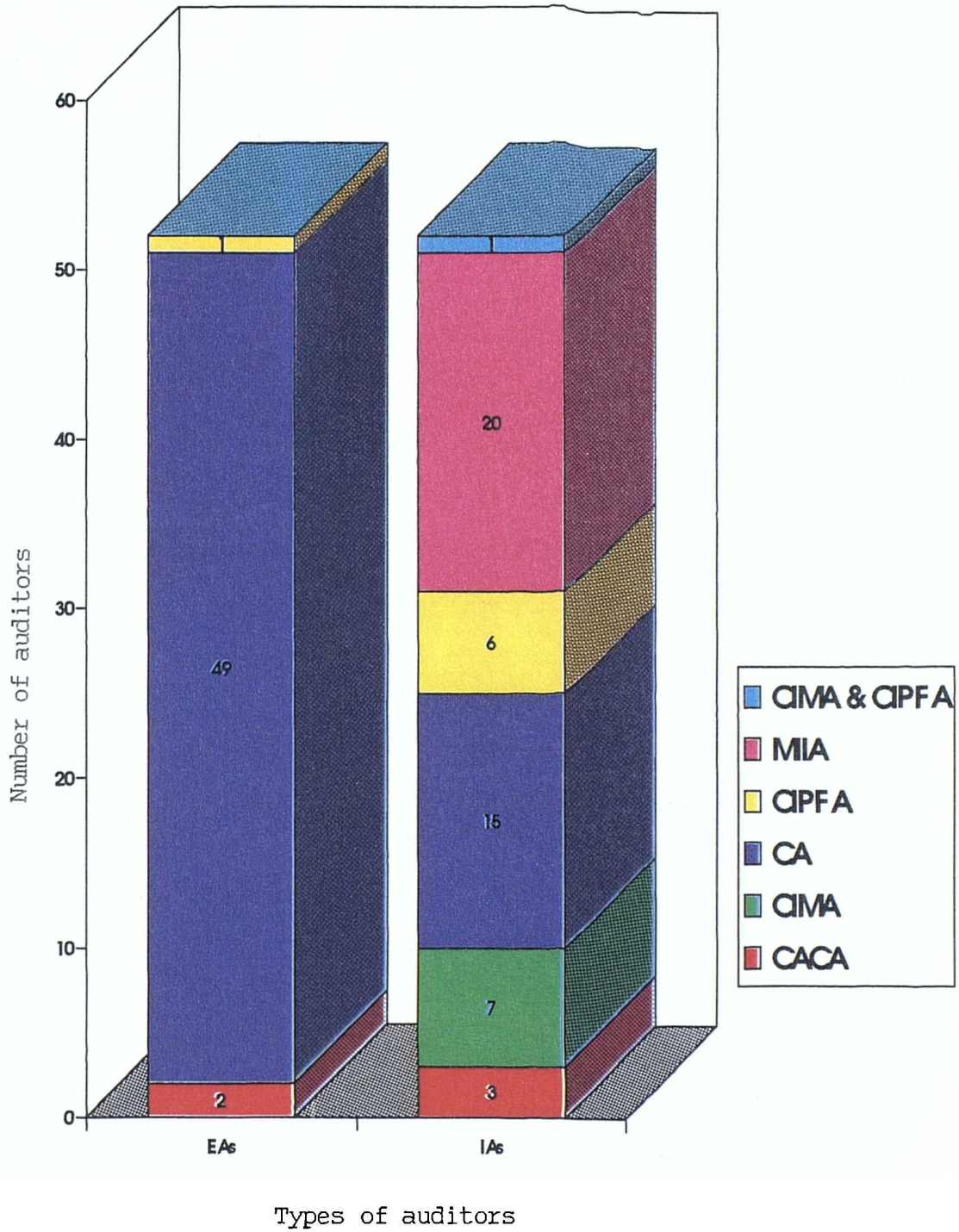


Figure 6.1: Types of professional qualifications of EAs and IAs

Table 6.6 compares the experience level of auditors with the number of times they have audited the payroll system whilst Table 6.7 summarizes the number of IAs that report to the various levels.

Experience levels	Number of times EAs have audited the payroll system					Total
	1-3	4-6	6-8	8-10	>10	
very experienced	1	1	2	2	26	32
moderately experienced	2	3		1	17	23
inexperienced	2	2	1	1	3	9
Total	5	6	3	4	46	64

Table 6.6: Table comparing experience level of EAs and number of times they have audited the payroll system

It can be seen that all the respondents have experienced auditing the payroll system before with the very experienced auditors having audited it the most number of times.

Reporting levels	Number of IAs
Financial controller	17
Financial controller & chief executive	3
Financial controller & audit committee	12
Financial controller ,chief executive & audit committee	5
Financial controller,board of Directors & audit committee	2
Chief executive	3
Chief executive & audit committee	4

Reporting levels	Number of IAs
Chief executive, board of directors & audit committee	2
Board of Directors & audit committee	1
Board of Directors	4
Audit Committee	12
Total	64

Table 6.7: Number of IAs reporting to the different level of reporting (starting with the least independent)

Tables 6.8 and 6.9 summarize EAs and IAs with prior internal and external audit experience. There were more IAs who were EAs before as compared to EAs who were IAs before.

Organisations	No. of respondents	EA with NO prior IA experience	EA with prior IA experience		
			Audtrno	% of length of audit experience as an IA	No. of respondents
102	2	2			
103	7	7			
104	19	17	10416 10428	27% 80%	2
108	4	4			
110	8	7	11010	5%	1
113	3	3			
114	4	4			
116	7	7			
151	1	1			
152	1	1			

Organisations	No. of respondents	EA with NO prior IA experience	EA with prior IA experience		
			Audtrno	% of length of audit experience as an IA	No. of respondents
153	1	1			
158	1	1			
161	2	2			
162	2	2			
180	1	1			
181	1	1			
Total	64	61			

Table 6.8: Number of EAs with and without prior internal auditing experience

As can be seen from Table 6.8, only 3 EAs have prior internal audit experience and their percentage of length of audit experience as an IA ranges from 5% to 80%.

Organisations	No. of respondents	IA with NO prior EA experience	IA with prior EA experience		
			Audtrno	% of length of audit experience as EA	No of respondents
232	3	2	23204	71%	1
233	2	1	23306	46%	1
237	3	2	23711	20%	1
238	2	2			
239	3	2	23904	50%	1
240	4	3	24005	64%	1
241	3	3			
244	1		24407	63%	1

Organisations	No. of respondents	IA with NO prior EA experience	IA with prior EA experience		
			Audtrno	% of length of audit experience as EA	No of respondents
246	3	3			
247	5	1	24701 24704 24707 24709	90% 95% 79% 83%	4
248	3	2	24813	40%	1
249	4	3	24909	33%	1
250	2	2			
252	5	3	25204 25214	21% 50%	2
253	2	2			
254	2	2			
255	2	2			
259	3	3			
260	1		26001	36%	1
264	1	1			
267	5	3	26706 26712	60% 17%	2
268	1		26801	44%	1
269	2		26907 26908	80% 90%	2
300	2	1	30002	50%	1
Total	64	43			21

Table 6.9: Number of IAs with and without prior external auditing experience

As can be seen from Table 6.9, 21 IAs have prior external audit experience and their percentage of length of audit experience as an EA ranges from 17% to 95%.

As shown in Table 6.10 and 6.11, with regard to the ability of the internal control system (ICS) in achieving the control objectives, EAs rated it as 81.2% and IAs rated it as 65.6%. As to the internal control system's ability to detect or prevent material errors, EAs rated it as 87.5% and IAs rated it as 73.4%. These figures indicate that on the whole, the respondents had confidence that the internal control system presented to them was quite strong but IAs were more sceptical than EAs.

Ability to achieve the control objectives	EAs	IAs
Yes	81.2%	65.6%
No	18.8%	34.4%

Table 6.10: Comparison of EAs and IAs as to whether the internal control procedures are able to achieve the control objectives

Ability to detect errors	EAs	IAs
Yes	87.5%	73.4%
No	12.5%	23.4% #

Table 6.11: Comparison of EAs and IAs as to whether the internal control procedures are able to detect or prevent material errors

3.2% missing

6.3 THE DESIGN OF THE CASES

Chapter 5 discussed the ICPs that are included in each

case. Below is a review of the 8 ICPs to assist discussion. The 8 ICPs are shown in Table 6.12:

Internal control procedure(ICP)	Content
ICP1(tcrd)	Are time cards and other source documents checked before processing by the payroll department for casts and calculations?
ICP2(tkpg)	Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?
ICP3(adesc)	Is there adequate physical security over personal files which contain information relevant to the audit?
ICP4(dutro)	Are the duties of those preparing the payroll rotated?
ICP5(namck)	Are the names on the payroll checked periodically against the active employee file of the personnel department?
ICP6(pyrase)	Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?
ICP7(mgtre)	Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?
ICP8(forpr)	Are formal procedures established for changing names, payrates and deductions?

Table 6.12: Explanation of the 8 ICPs

Throughout this thesis reference to "ICP1" or "tcrd" would refer to the ICP as stated in the "contents" column. The same follows for the rest of the ICPs.

8 cases with varying combination of the 8 ICPs were given to each IA and EA to evaluate. The 8 cases were designed as in Table 6.13.

CASES	Number of ICPs present
Case 1	using Kempthorne's $\frac{1}{4}$ replicate of 2^8 design.
Case 2	ICP5 and ICP6 present
Case 3	ICP5, ICP6 and ICP7 present
Case 4	ALL ICPS PRESENT
Case 5	ICP5, ICP6, ICP7 and ICP8 present
Case 6	ICP4, ICP5, ICP6, ICP7 and ICP8 present
Case 7	repeat case of case 1 (but presented in a different order)
Case 8	ICP3, ICP4, ICP5, ICP6, ICP7 and ICP8 present

Table 6.13: Number of ICPS present in the 8 cases

Case 1 and Case 7 were repeat cases given to the auditors in order to test for judgement consistency. A pair of auditors (one EA and one IA) received a particular set of case 1 and case 7 and there were 64 sets altogether which were equivalent to 64 pairs of auditors. Each set followed the design of Kempthorne's $\frac{1}{4}$ replicate of 2^8 design. Configuration of the 64 sets of cases was shown in Table 5.7 of Section 5.12 of Chapter 5.

A judgement model for each group of auditor was constructed by means of ANOVA with covariates. The model was based on case 1.

As discussed in Chapter 4, Bailey used ANOVA with covariates as one of the means to determine the judgement model of the auditors. However, he only took into

account, the types of auditors (whether EA or IA), covariate "experience" but did not take into account the effect of the 12 ICPs in each case. In this research, ANOVA with covariates took into account the types of auditors, the three types of covariates; "experience, educational and position level" as well as the effect of the 8 ICPs.

Case 2, case 3, case 4, case 5, case 6 and case 8 were "similar" cases given to all auditors to test for judgement consensus. The configuration of cases was carefully chosen so that they are not the same as those found in Kempthorne's design, so as to avoid duplication.

6.4 METHOD OF ANALYSIS

Parametric tests was used in this thesis both for data with an "interval" scale (which refers to the ratings of the 8 cases based on the visual analogue scale) and for data with an "ordinal" scale. Examples of these parametric tests are the t-test and f-test. Parametric tests are recommended for data involving "interval" data.

Conover (1971, 66) has stated that the "interval" scale involves the concept of a unit of distance, and that the distance between any two measurements may be expressed as a number of units, for example, degrees of the scale by which temperature is measured. He further stated that "ordinal" scale measurements refers to measurements where

in essence only the comparisons "greater, less than, or equal to" are relevant. The numeric values of the measurements are used only as a means of arranging the elements being measured in order from the smallest to the largest. It is this need to "order" the elements on the basis of the relative size of their measurements that gives the name to the "ordinal" scale.

As can be seen in Appendix 5cii), data involving questions 1, 3, 6b and 9b⁸⁵ of Section B, involved "interval" data and thus parametric tests can legitimately be used to examine them.

However, questions 4, 5, 7 and 8⁸⁶ of Section B, involved "ordinal data" but parametric tests were still used on these data. This is because the researcher considered in these cases that parametric tests had greater power and versatility than non-parametric tests. In studying the statistics literature, it was concluded in these cases that the "type of measuring scale used had little relevance to the question of whether to use parametric or

⁸⁵ This questions relate to the ratings by auditors for the 8 cases and ratings of the overall internal control system using the "CR" and "CO" approach.

⁸⁶ The questions relate to the ratings of ICP's and the overall internal control system's ability to achieve the control objectives and the ability to detect or correct material misstatements.

non-parametric tests" (Anderson 1961, 316).⁸⁷ Thus t-tests were carried out to test the hypotheses that involved the "ordinal" data.

Lord (1953) pointed out that:

"The statistical test can hardly be the cognizant of the empirical meaning of the numbers with which it deals. Consequently, the validity of a statistical inference cannot depend on the type of measuring scale used."

Andersen (1961, 310-311) illustrated an example where two students P and Q were assigned to investigate a process (a ball rolling on a plane). The students made the same observations, except that they used different measuring scales. Both used "interval" scales; P measures the process using "time interval" and Q measures the process using "speed of the process" (example feet per second). Since both of them used "interval" scales, they used "means" and applied parametric tests in writing up their lab report. However, they found considerable differences in their descriptive statistics and graphs. Anderson thus concluded that using parametric tests on "interval" data does not guarantee that results will be the same. The point he was trying to make was that a research should

⁸⁷ Previous research (Ashon, 1974 and his followers) as discussed in Chapter 4 had used likert scale or ordinal data but used parametric statistics.

not be overly concerned as to the type of data being used before deciding to use parametric or non-parametric tests because as he had shown applying parametric statistics on two types of "interval" data regarding the "same experiment" does not guarantee similar results.

Anderson (1961, 309) in fact presented an example of the use of the F-test (which is a parametric test) with a 7 step "attitude towards church" scale (which is an ordinal scale).

Eventhough the researcher of the study which is the subject of this thesis could have converted the questions that used "ordinal" data into "interval" data, it was not thought to be appropriate in particular because doing so would have made more difficult the task of evaluation for the responding auditors. This is because the questions were judgemental in nature and involved questions such as determining the ability of ICPs to achieve control objectives and determining whether the ICPs could detect or correct material misstatements. Thus, weighing the pros and cons of using "ordinal" data and bearing in mind the arguments put forth by Anderson, the researcher considered the use of parametric tests with "ordinal" data to be appropriate on balance.

However, to test whether the results from parametric and

non-parametric tests were the same, the researcher also conducted a "parallel" non-parametric test.

For example, besides conducting a t-test for "matched pair" on the ordinal data, an equivalent non-parametric test was also done using the "Wilcoxon matched-pairs signed ranked test". The results were the same for both t-test and the Wilcoxon matched-pairs signed-rank tests. Please refer to Appendix 6aiv).

Cohen (1982) states,

"The Wilcoxon matched-pairs signed-rank test is appropriate ... to assess the significance of difference between two samples consisting of matched pairs of subjects. Matched pairs of subjects would, of course, include two measures taken on the same subject. The Wilcoxon test is the non-parametric counterpart of the t-test for correlated data."
(Cohen 1982, 193-194).

Cohen (1982, 190) defines t-test for correlated data as t-test for "two matched samples on one occasion".

In most parametric tests, one of the stated and main assumptions is that the variable being examined has a normal distribution. Other assumptions are based on the type of parametric test chosen. A paired t-test and ANOVA for example, has a further added assumption of having the same variance between the populations investigated.⁸⁸

⁸⁸ Hypothesis H1b which test the variation in judgement of the auditors for the similar cases and hypothesis HB2 which test the variation in judgement for the repeat cases shows that the assumption of the same variance between the population is met.

Using SPSS (Statistical Package for the Social Sciences) "normal probability plots" were done on the difference in mean to check on the normality assumption. Please refer to Appendix 6ai).

Norussis (1991), suggested the use of Shapiro-Wilks and Liliefors test as the two tests to be commonly used to check the normality assumption. In this thesis, the "Liliefors test" was carried out. If the test indicates a "small observed significance level, it indicates that the distribution is not normal". If the distribution is normal, the "normal plot should fall, more or less, on a straight line".

According to them,

It is almost impossible to find data that are exactly normally distributed. For most statistical tests, it is sufficient that the data are approximately normally distributed.
(Norussis 1991, 102).

The plots showed that most of the times the distribution is normal. Thus it is decided that parametric tests could be carried out on the hypotheses.

Conover (1971, 85) supported this by saying that what is required is "approximate normality" and not "absolute normality".

Main method of testing hypotheses in this theses was through a paired t-test.

A paired sample is used because the intention is to test a "matched pair" of IAs' and EAs' ratings. The auditors were matched according to their length of auditing experience, current position and whether they have completed and passed any of the researcher's listed professional examinations. Thus, if there is any significant difference, it is most likely due to the "type" of auditor, that is external or internal.

Other methods of analysis were through simple plots, graphs, correlation, t-tests group, one-way analysis of variance (ANOVA) and analysis of covariance (ANCOVA).

Graphs were initially plotted to have an overall view of the data. Graphs comparing the 2 groups of auditors ratings on the 8 cases were plotted. Since definite patterns were not easily seen from the graphs, the difference of any 2 ratings was plotted against the mean of that 2 ratings. Please refer to Appendix 6aii).

Bland and Altman (1986, 308) suggested this idea.

A simple plot of the results of one method against those of the other ... is a useful start but usually all the data points will be clustered near the line and it will be difficult to assess between-method differences. A plot of the "difference between the methods against their mean" may be more informative.

Besides the "plots", "overlay plots" were also done to compare the ratings of cases between IAs and EAs. Please see Appendix 6aiii).

6.5 DISCUSSION OF HYPOTHESES

The 4 main objectives of the study were to examine:

- 1) whether EAs and IAs reached the same consensus as to the quality of a given internal control system
- 2) whether EAs and IAs were consistent in the ratings of two similar internal control systems
- 3) the effect of 7 variables on judgement consensus and judgement consistency, and
- 4) the judgement model of both groups of auditors

Findings will be discussed according to these four main issues. In order to present a clearer view of how the four issues are going to be tested and in order to ease understanding of discussion of findings, a chart will be presented that depicts the "method, statistical techniques used and the general conclusion of the tests that have been conducted". The chart will be presented for each issue that is tested.

6.5.1 CONSENSUS

HA: THERE IS A SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSENSUS BETWEEN IAs AS A GROUP AND EAs AS A GROUP.

Agreement in the evaluation of internal controls is very important due to increased reliance to be placed on IAs by EAs. According to Felix and Kinney (1982,245), the financial statement audit should be carried out using the same process regardless of whether the auditor is internal, independent (external) or governmental. An integral part of the financial statement audit is the evaluation of internal control system.

Consensus of EAs and IAs which was the main thrust of the study, was looked at in 6 ways (as shown in Figure 6.2):

- 1) consensus in the ratings of the 6 similar cases given to both groups of auditors
- 2) consensus in the ratings of a case using different techniques/ approaches of evaluation
- 3) consensus in the ratings of whether ICPS were able to achieve control objectives
- 4) consensus in the ratings of the ability of the ICPS to detect or correct material errors (CR)
- 5) consensus in the weights (i.e relative importance) given to the ICPS and
- 6) consensus in the ratings and relative weights given by the auditors to the "accounting" and "administrative" controls.

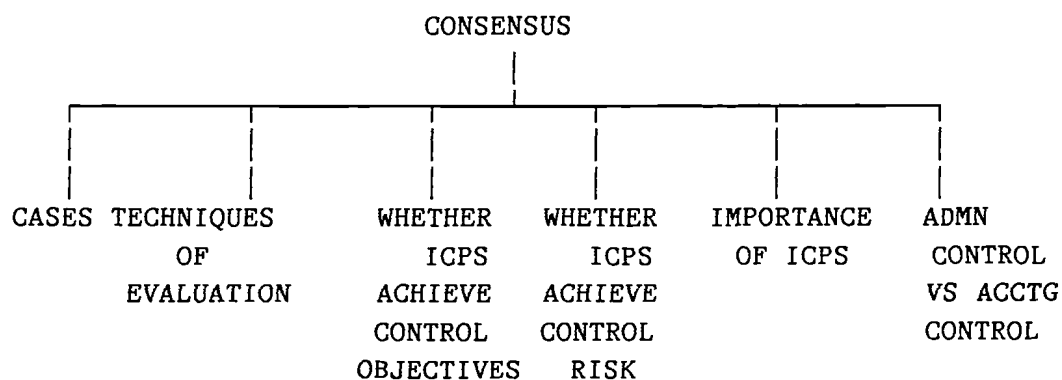


Figure 6.2: Summary of types of consensus examined in this study

6.5.1.1 Cases

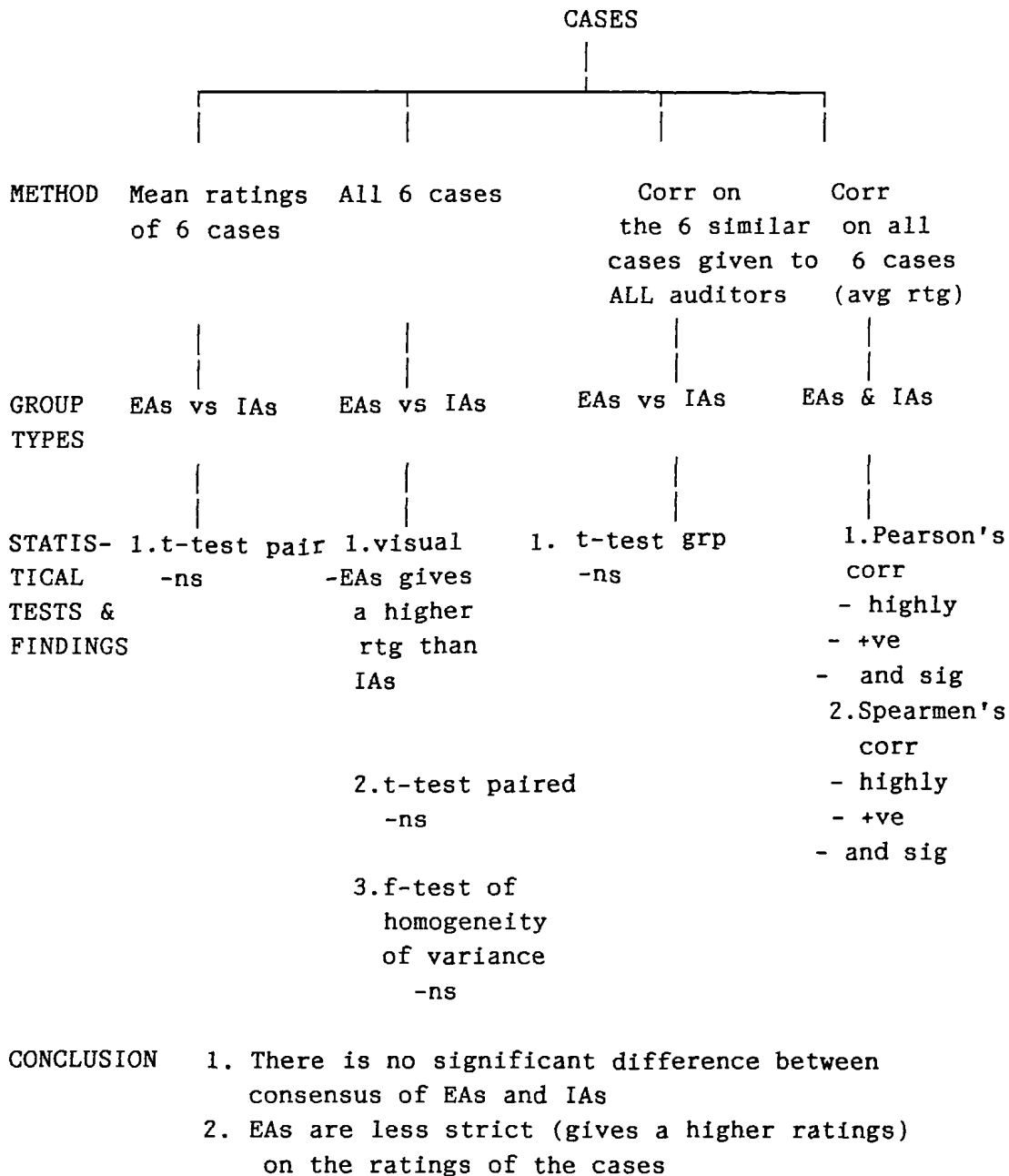


Figure 6.3: Summary of findings on cases

H1a: There is a significant difference in the ratings of the 6 similar cases between EAs and IAs

A paired sample t-test was used on two occasions. Firstly, to test whether the ratings given by the pairs of auditors were the same for the 6 similar cases. Secondly, to test whether the mean ratings for the 6 cases were similar between IAs and EAs. The results are

as shown in Table 6.14.

a) Ratings of the 6 similar cases

CASE	FINDINGS							
Case 2- ICP5 and ICP6 present	EAs(excn2)			IAs(incn2)			t val	sig
	n	mean	sd	n	mean	sd		
	64	.7163	.539	64	.8609	.629	-1.49	.141
Case 3- ICP5, ICP6 and ICP7 present	EAs(excn3)			IAs(incn3)			t val	sig
	n	mean	sd	n	mean	sd		
	64	1.7025	.948	64	1.6725	.951	.19	.853
Case 4- All ICPs Present	EAs(excn4)			IAs(incn4)			t val	sig
	n	mean	sd	n	mean	sd		
	64	4.7047	.679	64	4.7222	.749	-.14	.891
Case 5- ICP5, ICP6, ICP7 and ICP8 present	EAs(excn5)			IAs(incn5)			t val	sig
	n	mean	sd	n	mean	sd		
	64	2.3903	1.113	64	2.2427	.971	.83	.411
Case 6- ICP4, ICP5, ICP6, ICP7 and ICP8 present	EAs(excn6)			IAs(incn6)			t val	sig
	n	mean	sd	n	mean	sd		
	64	2.6577	1.011	64	2.5627	1.059	.49	.624
Case 8- ICP3, ICP4, ICP5, ICP6, ICP7 and ICP8 present	EAs(excn8)			IAs(incn8)			t val	sig
	n	mean	sd	n	mean	sd		
	64	2.9094	.967	64	2.7851	.74	.63	.465

Table 6.14: Consensus in ratings of cases by IAs and EAs

Conclusion: Reject H1a. There is no significant difference in the ratings of the 6 similar cases between EAs and IAs.

As can be seen from Table 6.14, the greater the number of

ICPs present, the higher is the mean rating for the cases for both EAs and IAs. Thus, IAs and EAs could very well based their ratings on the "quantity" of the ICPs present. However, out of 128 auditors who were asked to explain the factors they considered when rating the cases, only one auditor who answered said that the "number of yes's" had influenced his/ her ratings.

Figure 6.4 compares EAs' and IAs' ratings for the 6 cases. IAs seem to have rated case 2 higher than EAs, but lower for case 5, case 6 and case 8. For the other 2 cases, the 2 groups of auditors were quite similar in their ratings. Overall, it can be said that EAs were less strict (gave a higher rating) in the evaluation of the cases.

One reason for why EAs are seen to be more lenient than IAs could be because of IAs' preoccupation with the compliance on the controls. Thus, they were more cautious with giving a higher rating to the cases.

Another reason could be that IAs realizing the potential for independence concerns, may over-compensate in such assessments. Correspondingly, IAs may also recognize their lack of competence in internal control evaluation area and select the more conservative response.

Examples of answers given by respondents when asked to

explain the factors that they considered before rating the cases were,

"I ranked the controls in order of importance and then assessed how these fitted into my 'extremely weak versus extremely strong' framework, taking into account the 'yes and no' answers given."

"I assigned rough weights to the factors".

"I matched the ICPs' ability to detect errors, such as avoiding ghost employees..."

"Controls were prioritized on a risk basis and weaknesses in some controls carried a greater weighting than others."

"I took into account risk of material error, risk of fraud, segregation of key tasks and supervisory controls."

Other factors that the auditors took into account in their ratings of the cases were that the controls were:

- a) able to prevent fraud and error;
- b) ability of the controls to achieve control objectives;
- c) whether there were any compensating controls that can offset the controls which to their mind were not effective;
- d) the importance of the controls and
- e) whether there were any separation of duties controls.

From the answers given by the auditors, it can be observed that they made use of control objectives approach and control risk (CR) approach in evaluating the internal control system.

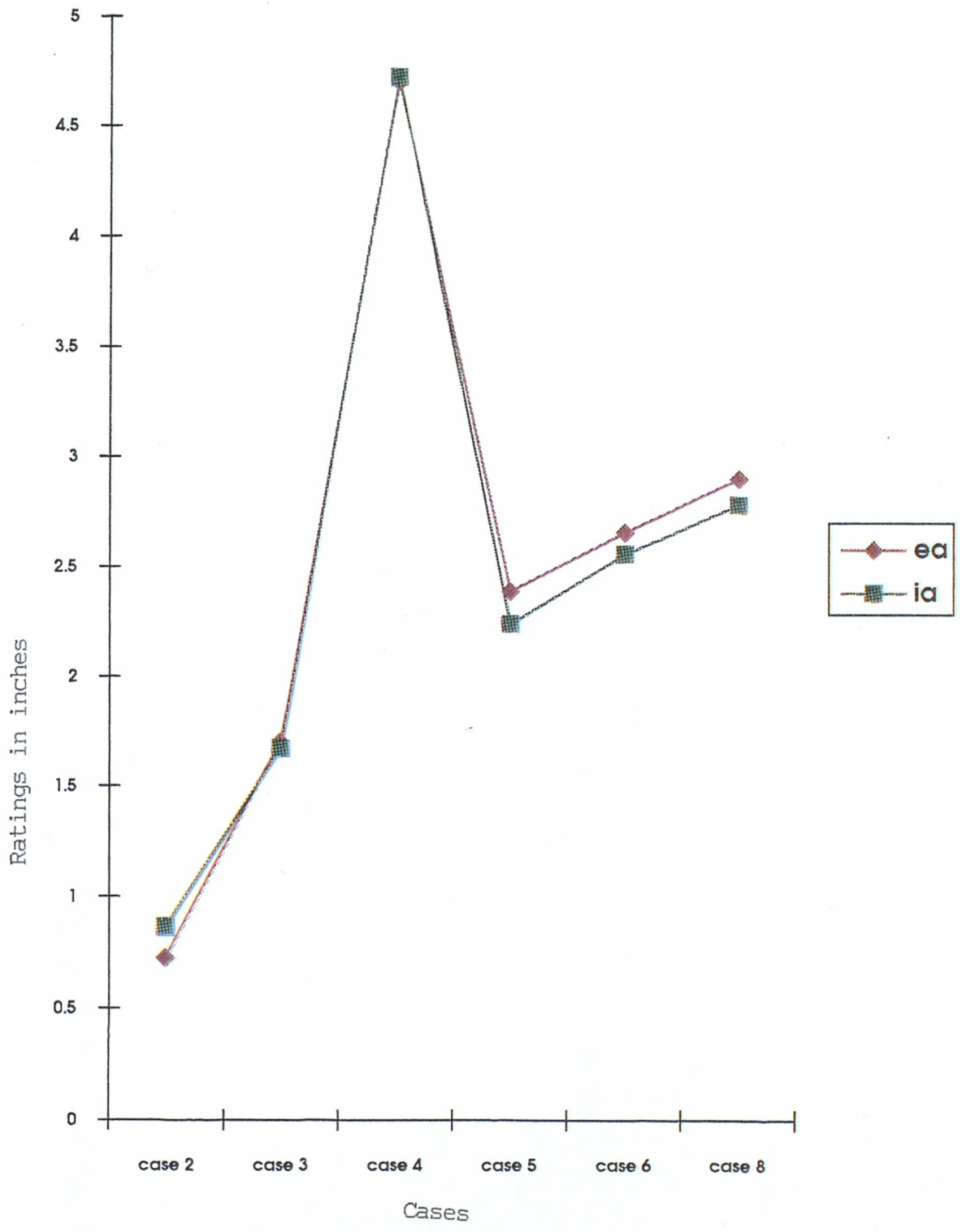


Figure 6.4: Evaluation of the 6 similar cases by EAs and IAs

b) F-test of variation in judgement consensus of the cases

H1b: There is a significant difference of variation in judgement consensus of the cases between EAs and IAs

The objective of this hypothesis is to find out if there is any significant difference in the spread of the answers of the "similar" cases between EAs and IAs.

An F-test is to compare whether the sample variance for the 2 groups of auditors is the same and which of the 2 groups has a greater variance. At the same time, the results from this test can help to determine whether one of the assumptions of a t-test and ANOVA, i.e, whether the sample variance of the 2 groups is the same can be tested.

According to Lyman Ott (Ott 1985, 348-349), rules in using an F-test are as follows:

(a) If F observed value = $\frac{s^2 \text{ larger}}{s^2 \text{ smaller}}$, is > F table value

where s^2 larger is the sample variance of the group having the larger sample variance, and s^2 smaller is the sample variance of the group having the smaller variance, then one can say that the sample variance is different.

(b) If there is a significant difference between the 2 samples' variance, the sample variance which is larger has a higher variability/ spread than the sample with a lower sample variance.

To prove the hypothesis, F tests were conducted on both

the individual cases as well as on the mean of the 6 cases.

Referring to table 4 (Ott, 1977, 662-663) with α of 0.05 of the same reference, only the F table values for the degrees of freedom of 60 and 120 were given. Thus, interpolation was done.

$$F=1.53_{(df1=df2=60)} \quad \text{and} \quad F=1.47_{(df1=60 \quad df2=120)}.$$

Thus for a degree of freedom of 63 (applicable to the case at hand), it was calculated as follows:

$$0.06 \text{ ----- } 60 \text{ df}$$

$$3 \text{ df} = 0.06 * 3/60 = 0.003.$$

$$\text{Thus for } 63 \text{ df} = 1.53 - 0.003 = 1.527$$

<u>Variable</u>	<u>Variance</u>	<u>Observed value</u>	<u>Reject/AcceptH2.</u>
Case2-EAs	.291	.396 / .291	< 1.527
-IAs	.396	=1.3608	Not sig
Case3-EAs	.898	.904 / .898	< 1.527
-IAs	.904	=1.0067	Not sig
Case4-EAs	.460	.561 / .460	< 1.527
-IAs	.561	=1.2196	Not sig
Case5-EAs	1.238	1.238 / .944	< 1.527
-IAs	.944	=1.3114	Not sig
Case6-EAs	1.023	1.122 / 1.023	< 1.527
-IAs	1.122	=1.0968	Not sig
Case8-EAs	.934	1.308 / .934	< 1.527
-IAs	1.308	=1.400	Not sig
Mean -EAs	.421	.472 / .421	< 1.527
cases -IAs	.472	=1.121	Not sig

Conclusion: Reject H1b. There is no significant difference of variation in judgement between IAs and EAs. The results also show that the sample variance of the 2 groups are the same, thus fulfilling one of the assumptions of the t-test and ANOVA.

Since the mean variance of IAs is greater than that of EAs, it can be said that the variability of IAs is greater than EAs.

c) Mean ratings of the 6 cases

H1c: There is a significant difference in the mean ratings of the 6 cases between EAs and IAs

Consensus in the mean ratings of cases was as follows:

EAs(exmncn)			IAs(inmncn)			t	val	sig
n	mean	sd	n	mean	sd			
64	2.5135	.649	64	2.4743	.687	.35		.729

Conclusion: Reject H1c. There is no significant difference in the mean ratings of the 6 cases between IAs and EAs.

Mean of the difference between the pairs of auditors ratings on the 6 cases were as follows:

	<u>Mean diff</u> <u>in rtgs</u>	<u>Std Dev</u>	<u>Min</u>	<u>Max</u>	<u>N</u>	<u>No of ICPs</u> <u>present</u>
Case 2	.14	.78	2.40	1.06	64	2 ICPs present
Case 3	.03	1.29	4.03	3.37	64	3 ICPs present
Case 4	.02	1.02	2.22	3.69	64	ALL ICPs present
Case 5	.15	1.43	3.59	3.38	64	4 ICPs present
Case 6	.10	1.54	3.25	3.63	64	5 ICPs present
Case 8	.12	1.35	2.66	3.72	64	6 ICPs present

Mean difference between the pairs of auditors' ratings showed that there was greatest consensus between pairs of

auditors when all the ICPs were present (i.e Case 4). However, consensus between EAs and IAs does not increase with increase in the number of ICPs present eventhough the mean ratings of the cases did increase with increase in the number of ICPs present (as shown in Table 6.14). This means to say that both groups of auditors placed different degree of importance on the ICPs.

d) Correlation on the 6 similar cases

H1d: There is a significant difference of the consensus level on the cases between EAs and IAs

Previous research on internal control evaluation (Ashton, 1974; Reckers & Taylor, 1979; Hamilton & Wright, 1977; Bailey, 1981 and others) has measured consensus by correlating the ratings of each auditor with the ratings of each other auditor.

In this study, each EA's ratings to the 6 cases were correlated with every other EA's ratings to all the cases using Pearson correlation coefficient. A mean level of consensus was then calculated for each EA. This procedure was repeated for all IAs. A t-test pair was then performed to see if the mean consensus between the 2 groups of auditors was significant. The result was as follows:

EAs(econcs)			IAs(iconcs)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
64	.8241	.064	64	.8053	.099	1.29	.201

Conclusion: Reject H1d. The test showed that there is no

significant difference of the consensus level on the cases between EAs and IAs. It also showed that the mean consensus of EAs (.8241) is much higher than that of IAs (.8053).

Although hypothesis H1b has shown that there is no significant difference between the spread of the ratings of the similar cases between EAs and IAs, it is interesting to observe the spread of their ratings by means of a frequency distribution.

Table 6.15 summarizes the frequency distribution of the different consensus level for EAs and IAs based on the case ratings. The higher the consensus level, the more the auditors agree with each other.

Consensus level	EAs		IAs	
	Number of auditors	%	Number of auditors	%
0.91 -1.00				
0.81- 0.90	47	73	43	67
0.71- 0.80	10	16	17	27
0.61- 0.70	7	11	2	3
0.51- 0.60			1	1.5
0.41- 0.50				
0.31- 0.40				
0.21- 0.30			1	1.5
0.11- 0.20				
0.0- 0.10				
Total	64	100	64	100

Table 6.15: Comparison of consensus level of IAs and EAs based on the cases ratings

It can be seen from the table that the spread of consensus level was "tighter" for EAs than IAs. EAs' consensus level was between .61 to .90. IAs' lowest consensus level was .21 but with only one auditor in this category. The rest of the auditors fall in the range of between .51 to .90.

Table 6.16 lists down the consensus level of previous research. As can be observed, compared with previous research, the range of consensus in this study was much tighter with less dispersion. The mean consensus level of this study was also higher. Bailey did not report the exact consensus level of EAs and IAs but reported a relationship (measured through correlation) between EAs' and IAs' ratings of the cases of .7468.

Previous research	Avg.level of consensus	Range of consensus
<u>EAs:</u>		
<u>Internal control evaluation</u>		
Ashton (1974)	.70	.06 to .93
Hamilton & Wright (1977)	.70	
Ashton & Brown (1980)	.67	
Reckers & Taylor (1979)	.1554	
Gaumnitz et al (1982)	.617	
Students and others:		
<u>Internal control evaluation</u>		
Ashton & Kramer (1980)	.66	
Trotman, Yetton & Zimmer (1983)	.56(individual) .69(2 group team) .79(3 group team)	
<u>EAs:Other types of research</u>		
Joyce (1976)	.373	-.687 to .937

<u>Other types of research not in accounting:</u> Hoffman et al. (1968)- radiologists	.38	
<u>Reliance on IAs:</u> Brown (1983) Schneider (1985) Mills (1993)	.70 .734 .341	
<u>IAs and EAs: Evaluation of:</u> a) EDP control system- Landry (1989)	Ext EDP .49 Int EDP .44	.30 to .60 .25 to .60
b) Cash receipts system- Bailey (1981)	EA to IA .7468	

Table 6.16: Summary of judgement consensus in previous studies

6.5.1.1.1 DISCUSSION OF THE FINDINGS ON THE RATINGS OF THE SIMILAR CASES

Contrary to US findings, this research indicates that EAs and IAs in UK shows no significant difference in their ratings of the similar cases or in their consensus level. There was also no significant difference in the spread of their answers to the 6 similar cases.

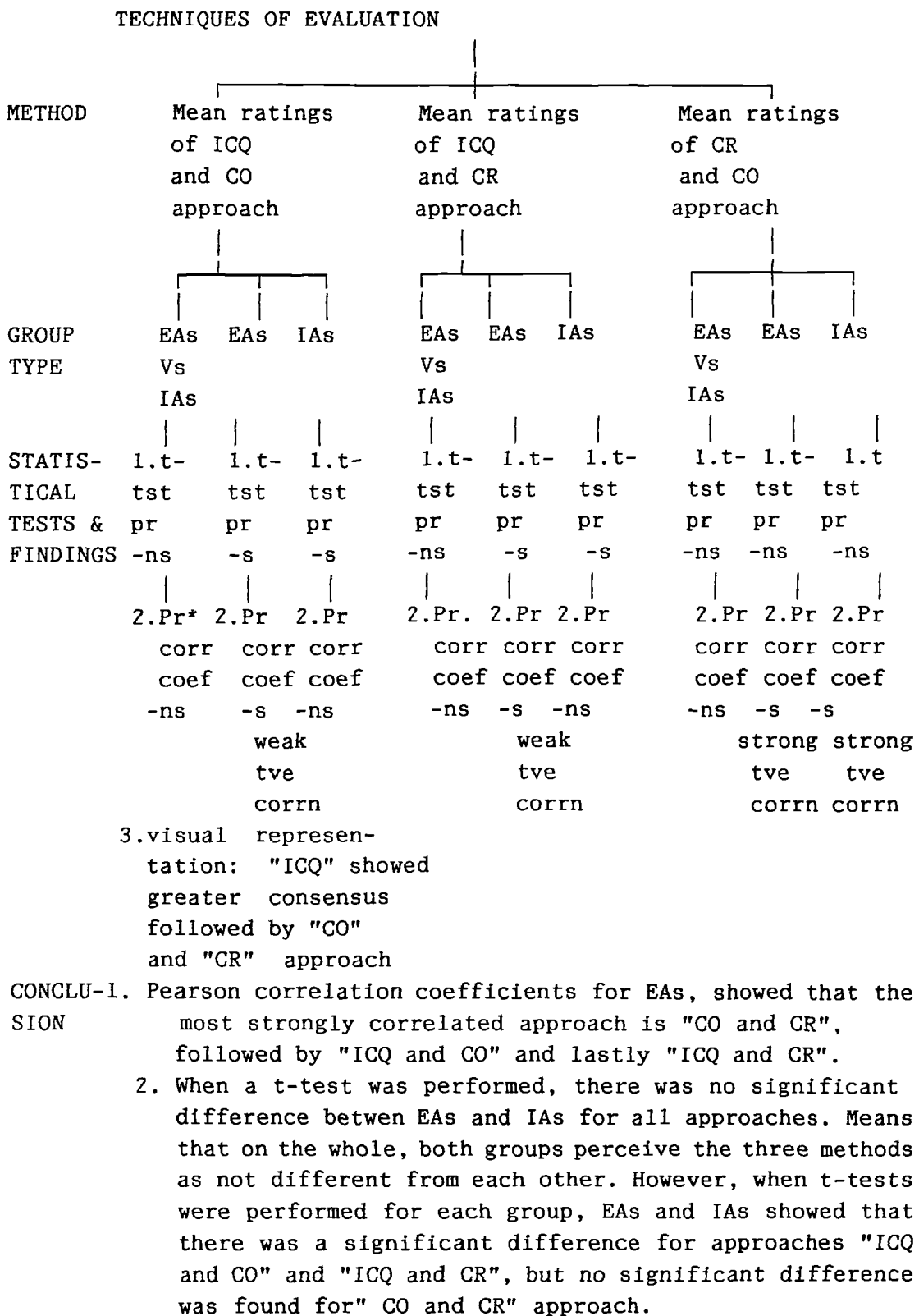
A possible explanation could be a relatively more similar educational background, and type of professional qualifications possessed by the auditors in the UK as shown in Table 6.5 and Figure 6.1. This must be the subject of further research. Certainly, impressionistic "evidence" suggests that the MBA qualification is rather more of a standardised qualification for business in the US whereas the professional accounting qualification to

a large extent is the equivalent qualification in the UK. A higher proportion of qualified CPAs in the US are more likely to work in professional accounting practices than their UK-accounting-qualified equivalent. A higher proportion of IAs in the UK are likely to be professionally qualified accountants than in the US where a higher proportion are likely to be MBA graduates.

Furthermore, IAs who participated in the study are likely to have behaved more like EAs because 21 IAs had prior external audit experience and their length of audit experience as EAs ranged from 17% to 95% as shown in Table 6.9.

As for EAs, only 3 EAs had prior internal audit experience and their percentage of length of audit experience as IAs ranged from 5% to 80%.

6.5.1.2 Techniques of evaluation



*Pr Pearson

Figure 6.5: Summary of findings on techniques of evaluation

Different approaches or techniques of internal control evaluation should come to the same conclusion regarding the quality of a given internal control system. Most of the previous research has examined the use of the "ICQ" approach only, but there is a change in trend to turn to other approaches as well. The two common approaches to date are the "control objectives" approach (or the "CO" approach referred to in this thesis) and the "control risk" approach (or the "CR" approach referred to in this thesis). The auditors who participated in the study also indicate that they do use these two approaches in their evaluation of the internal control system (as discussed earlier in Section 6.5.1.1).

The "CO" approach requires the internal control procedures (ICPs) in an internal control system to be matched with the control objectives (CO) which the ICPs can achieve. There are different levels of achievement of control objectives and the ICP/ICPs that can achieve the most control objectives is said to be the most important in an internal control system. Please refer to section 2.8.2, chapter 2 for further details.

The "CR" approach makes use of the audit risk model where an auditor has to ascertain the level of audit risk first before the auditor embarks on any audit. The components of an audit risk model are control risk, inherent risk and detection risk as discussed in Section 2.8.3 in

Chapter 2. The auditor is required to determine the control risk of an internal control system before the auditor can say that the internal control system is satisfactory. Control risk is the risk that the internal control system is not able to detect or prevent any material errors from occurring. The "higher" the ability of the internal control system in preventing or detecting fraud, the "lower" the control risk" is.

Thus, the current study examined whether the auditors would come out with the same conclusion about the quality of a given internal control system, using the three different techniques of evaluation, and which of the technique gave the highest consensus.

As discussed earlier, case 4 represents the "ICQ" approach because it represents a situation where all the 8 ICPs are present, which is similar to the case being evaluated by means of the "CO" and "CR" approach.

a1) Ratings using ICQ as compared with CO approach between EAs and IAs

H2a¹: There is a significant difference in the ratings of EAs and IAs using "ICQ" as compared with "CO" approach

The difference in ratings of EAs and IAs using "ICQ" is compared with difference in ratings of EAs and IAs using "CO" for the purpose of testing this hypothesis. The result is as follows:

ICQ(exindicq)			CO(exindco)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
64	-.0175	1.016	64	.1252	1.466	-.71	.482

Conclusion: Reject H2a¹. There is no significant difference in the ratings of EAs and IAs using "ICQ" as compared with "CO" approach.

a2) Ratings using ICQ as compared with CO approach amongst EAs

H2a²: There is a significant difference in the ratings of EAs using "ICQ" as compared with "CO" approach

ICQ(exicq)			CO(exco)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
64	4.7047	.679	64	3.5028	.947	10.11	.000

Conclusion: Accept H2a². There is a significant difference in the ratings of EAs using "ICQ" as compared with "CO" approach.

a3) Ratings using ICQ as compared with CO approach amongst IAs

H2a³: There is a significant difference in the ratings of IAs using "ICQ" as compared with "CO" approach

ICQ(inicq)			CO(inco)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
64	4.7222	.749	64	3.3777	.919	9.69	.000

Conclusion: Accept H2a³. There is a significant difference in the ratings of IAs using "ICQ" as compared with "CO" approach.

b1) Ratings using ICQ as compared with CR approach between EAs and IAs

H2b¹: There is a significant difference in the ratings of EAs and IAs using "ICQ" as compared with "CR" approach

ICQ(exindicq)			CR(exindcr)			t val	sig
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
64	-.0175	1.016	64	.1959	1.477	-1.04	.302

Conclusion: Reject H2b¹. There is no significant difference in the ratings of EAs and IAs using "ICQ" as compared with "CR" approach.

b2) Ratings using ICQ as compared with CR approach amongst EAs

H2b²: There is a significant difference in the ratings of EAs using "ICQ" as compared with "CR" approach

ICQ(exicq)			CO(excr)			t val	sig
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
64	4.7047	.679	64	3.6016	.820	10.16	.000

Conclusion: Accept H2b². There is a significant difference in the ratings of EAs using "ICQ" as compared with "CR" approach.

b3) Ratings using ICQ as compared with CR approach amongst IAs

H2b³: There is a significant difference in the ratings of IAs using "ICQ" as compared with "CR" approach

ICQ(inicq)			CO(inco)			t val	sig
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
64	4.7222	.749	64	3.4056	1.071	8.45	.000

Conclusion: Accept H2b³. There is a significant difference in the ratings of IAs using "ICQ" as compared with "CR" approach.

c1) Ratings using "CO" as compared with "CR" approach between EAs and IAs

H2c¹: There is a significant difference in the ratings of EAs and IAs using "CO" as compared with "CR" approach

CO(exindco)			CR(exindcr)			t val	sig
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
64	.1252	1.466	64	.1959	1.477	-.68	.497

Conclusion: Reject H2c¹. There is no significant difference in the ratings of EAs and IAs using "CO" as compared with "CR" approach.

c2) Ratings using CO as compared with CR approach amongst EAs

H2c²: There is a significant difference in the ratings of EAs using "CO" as compared with "CR" approach

ICQ(exco)			CO(excr)			t val	sig
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
64	3.5028	.947	64	3.6016	.820	-1.37	.175

Conclusion: Reject H2c². There is no significant difference in the ratings of EAs using "CO" as compared with "CR" approach.

c3) Ratings using CO as compared with CR approach between IAs

H2c³: There is a significant difference in the ratings of IAs using "CO" as compared with "CR" approach

ICQ(inco)			CO(incr)			t val	sig
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
64	3.3777	.919	64	3.4056	1.071	-.40	.694

Conclusion: Reject H2c³. There is no significant difference in the ratings of IAs using "CO" as compared

with "CR" approach.

Thus it can be said that the EAs and IAs view all the three approaches to be quite similar. However, for a group of auditors, be it EAs or IAs, the group only views "CO and CR" approach to be quite similar compared with "ICQ and CO" and "ICQ and CR" approach.

To examine how strongly the variables were correlated, Pearson correlation was calculated since it involves a continuous variable.

Approach/ Techniques of evaluation	Pearson corr.coef	
	EAs	IAs
ICQ and CO	.3524*	.1251
ICQ and CR	.3394*	.0955
CO and CR	.7964**	.8494**

Table 6.17: Coefficient correlation comparing the three different techniques of evaluation

* signif at .01 level ** signif at .001 level

From the table it can be seen that the approaches "ICQ and CO" and "ICQ and CR" are weakly correlated for the group of EAs but are not related at all for the group of IAs. However, there is a strong and significant relationship for the approach "CO and CR" for each group of auditors.

The reason for this could be that EAs have more practice in the use of these approaches in their audit work and

are more aware of the internal control evaluation techniques that exist to date, and their potential. While internal control evaluation is at the heart of the purpose of internal audit (while being only a means to a different end for the EA) in general, most of the most sophisticated tools for internal control evaluation have been, and are being, developed and used within external audit firms rather than within internal audit functions. The research believes this to be a function of the much greater level of resources available for technical research, development and training in the large firms of public accountants compared with the almost infinitely smaller internal audit function. Furthermore, the well developed practice of recruiting into the big firms of public accountants direct from universities and then investing heavily in the development and training of those recruits means that EAs may be more open to training needs than may be internal audit functions.

Figure 6.6 compares the evaluation of the internal control system using different techniques of evaluation between EAs and IAs. As can be seen from the graph, their ratings are most closely related using the "ICQ" approach, followed by the "CO" approach and lastly by the "CR" approach.

This could be due to the fact that "ICQ" technique were the initial technique used in the evaluation of internal

control before the "CO" approach became popular in early 1980s and the "CR" approach which was used in the late 1980s. Please refer to Chapter 2 for a detail discussion of these three techniques. The 1990s, also saw the development of other techniques that could be used for internal control evaluation such as the use of "Chernoff faces" or the use of "computer programs".

Because of this, the auditors may have associated the "CR" and "CO" techniques closely than they would have done with the "ICQ" and these two methods.

6.5.1.2.1 DISCUSSION OF FINDINGS ON TECHNIQUES OF EVALUATION

As discussed earlier, figure 6.6 (on page 355) also shows that EAs and IAs were closest in their ratings (in agreement) using "ICQ" technique, followed by "CO" technique and then "CR" technique. Familiarity with "ICQ" and "CO" techniques better than "CR" technique could have contributed to this based on when the techniques were introduced.

Another reason could be that amongst the 3 techniques, "CR" technique is the most "subjective" technique and hence resulted in the least agreement between EAs and IAs.

As one respondent said,

"This question is too subjective ... risks as defined are 'too subjectively put'."

Another reason could be that EAs and IAs might have different views of what is considered as "material errors". As discussed in chapter 2, section 2.8.3.1, the materiality levels of EAs and IAs might also differ; IAs' materiality level being much lower than EAs'.

Figure 6.6 shows that no matter what technique was used, EAs always gave a higher rating than IAs. EAs' leniency in ratings could also be observed in Figure 6.4. Thus, EAs could be said to be more lenient in their ratings than IAs.

Looking at each group of auditor, there was a significant difference in the ratings of the case for each group of EA and IA using "ICQ and CO" and "ICQ and CR" technique though there was no significant difference between "CO and CR" technique. This again confirms that each group of auditor thinks that there is a relationship between "CO and CR" technique.

Results from pearson correlation coefficient shows that there is a weak significant correlation for EAs' ratings of the case using "ICQ and CR" and "ICQ and CO" technique but showed no relationship for IAs. Again, it could be due to the fact that EAs were more familiar with the techniques of internal control evaluation as compared to IAs.

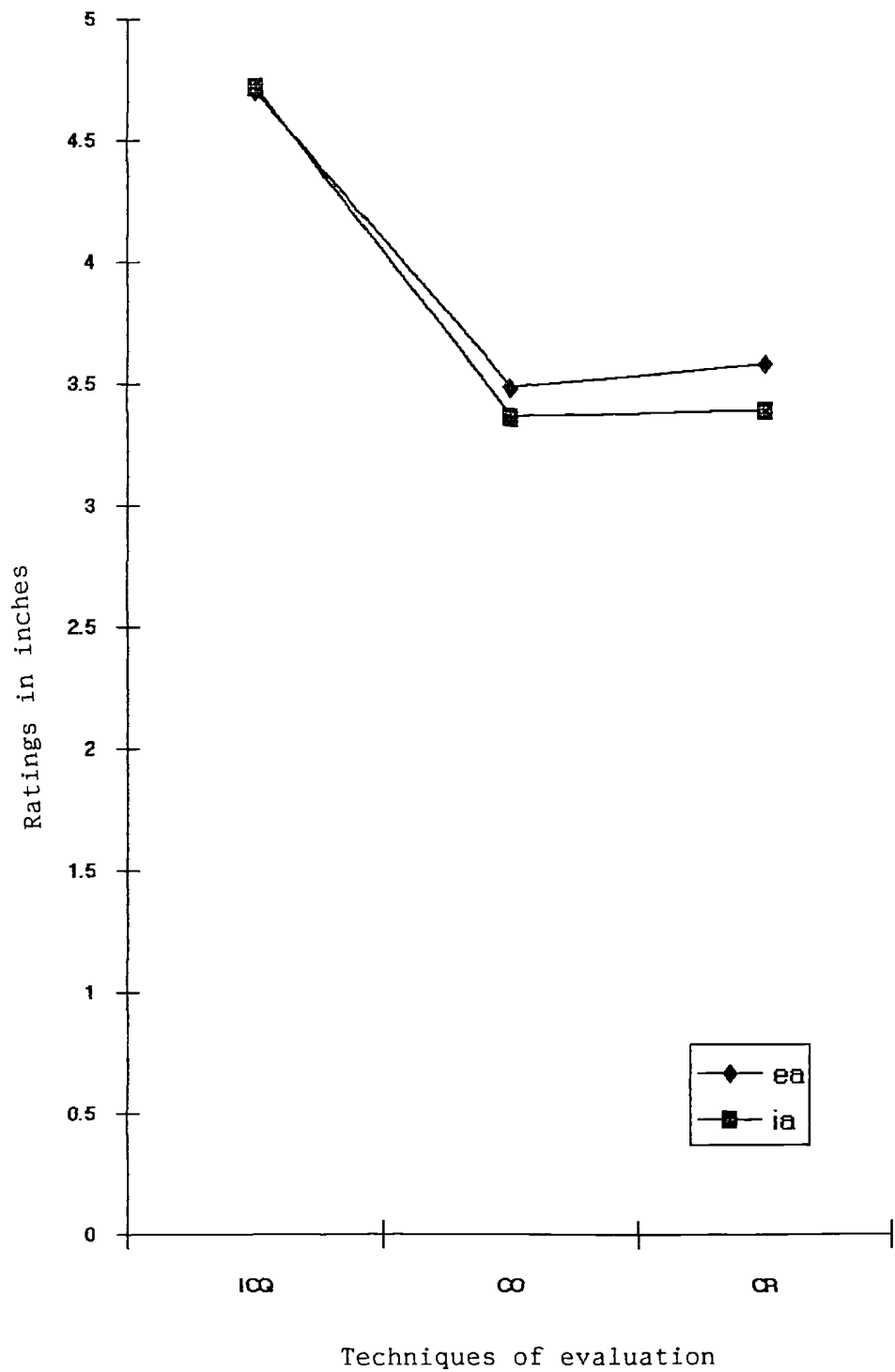


Figure 6.6: Evaluation of internal control system using different techniques of evaluation by EAs and IAs

6.5.1.3 Whether internal control procedures (ICPs) and internal control system (ICS) achieve control objectives (CO)

WHETHER INTERNAL CONTROL PROCEDURES(ICPS) AND ICS ACHIEVE CONTROL OBJECTIVES(CO)

METHOD	Mean rtgs on each ICP's ability to achieve each CO	Corr on 40 rtgs#	Rtgs on overall Internal Control System's(ICS) ability to achieve each CO	Mean rtgs on each ICP Vs overall ICS's ability to achieve each CO
GROUP TYPES	EAs Vs IAs	EAs Vs IAs	EAs Vs IAs	EAs Vs IAs
STATISTICAL TESTS & FINDINGS	1.t-tst pair -7 out of 40 is s.	1.t-tst group -s	1.t-tst pair -ns	1.t-tst pair -s
			2.sprmn corr -ns	2.sprmn corr -s except "Existence" objective
CONCLUSION	<p>2.visual representation-EAs think ICP less able to achieve COs but ICS more able to achieve COs</p> <p>1.Using corr as a measure of consensus, it was found that there was a significant difference between the consensus level of EAs and IAs.</p> <p>2. Both groups of auditors agreed as to which CO could be achieved by the overall internal control system.</p> <p>3. There was a significant difference between the mean ratings of each ICP's ability to achieve each CO and the ratings of the overall internal control system's ability to achieve each CO.</p>			
	# 40 rtgs=8 ICPs * 5 CO. Missing cases were substituted with the mean rtgs.			

Figure 6.7: Summary of findings on achievement of control objectives (CO)

ratings of each ICP's ability to achieve each CO between EAs and IAs

This hypothesis will test all 8 ICPs over the five control objectives (i.e, completeness, existence, rights and obligations, presentation and disclosure and valuation).

Internal control procedures (ICPs)	Completeness objective							
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.	EAs(ecompa)			IAs(icompa)			<u>t val</u>	<u>sig</u>
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
	63	3.2063	1.743	63	3.6190	1.475	-1.43	.158
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.	EAs(ecompb)			IAs(icompb)			<u>t val</u>	<u>sig</u>
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
	64	2.4531	1.321	64	2.6250	1.442	-.68	.499
3. There is adequate physical security over personal files which contain information relevant to the audit.	EAs (ecompc)			IAs(icompc)			<u>t val</u>	<u>sig</u>
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
	64	1.9219	1.301	64	2.1406	1.446	-.85	.398
4. The duties of those preparing the payroll are rotated.	EAs(ecompd)			IAs(icompd)			<u>t val</u>	<u>sig</u>
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
	64	2.0469	1.147	64	2.3594	1.252	-1.42	.161
5. The names on the payroll are checked periodically against the active employee file of the personnel department.	EAs(ecompe)			IAs(icompe)			<u>t val</u>	<u>sig</u>
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
	63	3.2063	1.788	63	3.0635	1.684	.48	.633

Internal control procedures (ICPs)	Completeness objective						
6.The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.	EAs(ecompf)			IAs(icompf)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	62	2.5484	1.554	62	3.0323	1.536	-1.98 .052
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.	EAs(ecompf)			IAs(icompf)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	62	4.0161	1.166	62	3.7419	1.402	1.19 .240
8. Formal procedures are established for changing names, pay rates and deductions.	EAs(ecompf)			IAs(icomph)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	62	3.0323	1.708	62	3.3548	1.651	-1.06 .291

Table 6.18a: Achievement of "completeness" control objectives by the ICPs

*significant at $p < 0.05$.

Eventhough there is a significant difference as to achievement of completeness objective by ICP6, overall there is no significant difference between the ratings of each ICP's ability to achieve "completeness" objective between EAs and IAs.

Internal control procedures (ICPs)	Existence objective							
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.	EAs(eexisa)		IAs(iexisa)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	2.9683	1.534	63	2.8571	1.795	.42	.673
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.	EAs(exisb)		IAs(iexisb)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	3.6250	1.558	64	3.8125	1.680	-.61	.543
3. There is adequate physical security over personal files which contain information relevant to the audit.	EAs(eexisc)		IAs(iexisc)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	3.4375	1.622	64	3.2500	1.633	.62	.537
4. The duties of those preparing the payroll are rotated.	EAs(eexisd)		IAs(iexisd)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	2.9219	1.276	64	2.9688	1.553	-.17	.864
5. The names on the payroll are checked periodically against the active employee file of the personnel department.	EAs(eexise)		IAs(iexise)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	5.1587	1.234	63	5.2698	1.483	-.45	.657
6. The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.	EAs(eexisf)		IAs(inexisf)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	62	2.6935	1.532	62	3.0968	1.739	-1.37	.176
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.	EAs(eexisg)		IAs(iexisg)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	62	3.4032	1.207	62	3.5806	1.499	-.69	.492

Internal control procedures (ICPs)	Existence objective						
8. Formal procedures are established for changing names, pay rates and deductions.	EAs(eexish)			IAs(iexish)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	62	3.5484	1.616	62	4.2258	1.583	-2.27.027*

Table 6.18b: Achievement of "existence" control objectives by the ICPs

*significant at $p < 0.05$.

Eventhough there is a significant difference as to achievement of existence objective by ICP8, overall there is no significant difference in the ratings of each ICP's ability to achieve "existence" objective between EAs and IAs.

Internal control procedures (ICPs)	Presentation and Disclosure						
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.	EAs(epredisa)			IAs(ipredisa)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	63	1.8413	.937	63	2.4127	1.328	-2.64 .011*
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.	EAs(epredisb)			IAs(ipredisb)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	64	1.8281	1.176	64	2.5000	1.425	-3.00 .004*
3. There is adequate physical security over personal files which contain information relevant to the audit.	EAs(epredisc)			IAs(ipredisc)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	64	1.5781	1.066	64	1.9063	1.109	-1.77 .081
4. The duties of those preparing the payroll are rotated.	EAs(epredisd)			IAs(ipredisd)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	64	1.6250	.845	64	2.2969	1.256	-3.74 .000*

Internal control procedures (ICPs)	Presentation and Disclosure						
5. The names on the payroll are checked periodically against the active employee file of the personnel department.	EAs(epredise)		IAs(ipredise)				
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	63	1.6032	1.129	63	1.8889	.952	-1.62 .109
6.The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.	EAs(epredisf)		IAs(ipredisf)				
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	62	1.9839	1.248	62	2.6774	1.388	-3.00 .004*
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.	EAs(epredisg)		IAs(ipredisg)				
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	62	3.6452	1.590	62	3.8065	1.389	-.54 .590
8. Formal procedures are established for changing names, pay rates and deductions.	EAs(epredish)		IAs(ipredish)				
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	62	2.0161	1.443	62	3.2581	1.514	-4.42 .000*

Table 6.18c: Achievement of "presentation & disclosure" control objectives by the ICPs

*significant at $p < 0.05$.

Overall, there is a significant difference in the ratings of each ICP's ability to achieve "presentation and disclosure" objective between EAs and IAs with the exception of ICP3, ICP5 and ICP7.

Internal control procedures (ICPs)	Rights and Obligations objective							
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.	EAs(ertsoba)		IAs(irtsoba)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	2.2857	1.313	63	2.5714	1.456	-1.15	.254
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.	EAs(ertsobb)		IAs(irtsobb)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	3.1250	1.548	64	3.6719	1.634	-1.81	.076
3. There is adequate physical security over personal files which contain information relevant to the audit.	EAs(ertsobc)		IAs(irtsobc)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	3.0000	1.553	64	2.6719	1.691	1.12	.268
4. The duties of those preparing the payroll are rotated.	EAs(ertsobd)		IAs(irtsobd)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	2.4063	1.137	64	2.6719	1.248	-1.29	.201
5. The names on the payroll are checked periodically against the active employee file of the personnel department.	EAs(ertsobe)		IAs(irtsobe)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	3.2540	1.713	63	3.2540	1.657	.00	1.000
6. The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.	EAs(ertsobf)		IAs(irtsobf)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	62	2.7419	1.342	62	3.4194	1.532	-2.60	.012*
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.	EAs(ertsobg)		IAs(irtsobg)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	62	3.1129	1.356	62	3.2258	1.476	-.44	.662

Internal control procedures (ICPs)	Rights and Obligations objective							
8. Formal procedures are established for changing names, pay rates and deductions.	EAs(ertsobh)				IAs(irtsobh)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	62	3.8871	1.472	62	3.6129	1.540	1.13	.265

Table 6.18d: Achievement of "rights & obligations" control objectives by the ICPs

*significant at $p < 0.05$.

Overall, there is no significant difference in the ratings of each ICP's ability to achieve "rights and obligation" objective between EAs and IAs with the exception of ICP6.

Internal control procedures (ICPs)	Valuation objective							
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.	EAs(evala)				IAs(ivala)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	4.8413	1.537	63	4.9206	1.451	-.29	.770
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.	EAs(evalb)				IAs(ivalb)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	3.1719	1.316	64	3.2656	1.566	-.38	.704
3. There is adequate physical security over personal files which contain information relevant to the audit.	EAs(evalc)				IAs(ivalc)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	2.4375	1.367	64	2.6875	1.622	-.91	.364

Internal control procedures (ICPs)	Valuation objective							
4. The duties of those preparing the payroll are rotated.	EAs(evald)			IAs(ivald)			<u>t val</u>	<u>sig</u>
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
	64	2.3125	1.153	64	2.5469	1.284	-1.12	.268
5. The names on the payroll are checked periodically against the active employee file of the personnel department.	EAs(evale)			IAs(ivale)			<u>t val</u>	<u>sig</u>
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
	63	1.9524	1.288	63	2.3175	1.584	-1.50	.138
6. The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.	EAs(evalf)			IAs(ivalf)			<u>t val</u>	<u>sig</u>
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
	62	2.8226	1.635	62	2.7903	1.590	.12	.906
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.	EAs(ivalg)			IAs(ivalg)			<u>t val</u>	<u>sig</u>
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
	62	3.8065	1.316	62	3.6774	1.400	.54	.592
8. Formal procedures are established for changing names, pay rates and deductions.	EAs (evalh)			IAs(ivalh)			<u>t val</u>	<u>sig</u>
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
	62	3.9194	1.334	62	3.9194	1.516	.00	1.000

Table 6.18e: Achievement of "valuation" control objective by the ICPs

*significant at $p < 0.05$.

There is no significant difference between the ratings of each ICP's ability to achieve valuation objective between EAs and IAs.

Conclusion: Reject H3a. There is no significant difference in the ratings of each ICP's ability to achieve control objective between EAs and IAs. Only 7 out of 40 ratings are significant. Five of the significantly different ones relate to the achievement of "presentation and disclosure" objective, one relates to "rights and obligation objective" and one relates to "existence" objective. EAs and IAs seem to agree on the achievement of the rest of the objectives.

b) Correlation on the 40 ratings

H3b: There is a significant difference of consensus level on the ability of each ICP to achieve each CO between EAs and IAs

Similar to the consensus level on the cases, EA's ratings on the 40 control objectives were correlated with every other EA's ratings on all the 40 ratings using Pearson correlation coefficient. A mean level of consensus was then calculated for each EA. This procedure was repeated for all IAs. A t-test pair was then performed to see if the mean consensus between the 2 groups of auditors was significant. The result was as follows:

<u>EAs(econco)</u>			<u>IAs(iconco)</u>			<u>t val</u>	<u>sig</u>
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
64	.3278	.069	64	.2313	.087	6.94	.000

Conclusion: Accept H3b. There is a significant difference of consensus level on the ability of each ICP to achieve each CO between EAs and IAs.

c) ratings of internal control system's (ICS) ability to achieve CO

H3c: There is a significant difference in the ratings on the overall internal control system's ability to achieve each CO between EAs and IAs

INTERNAL CONTROL OBJ. (CO)	FINDINGS							
CO1- Completeness	EAs(ecompal)				IAs(icompal)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	4.4688	1.054	64	4.2500	1.098	1.04	.300
CO2- Existence	EAs(eexisal)				IAs(iexisal)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	4.8594	1.006	64	4.7344	1.198	.64	.526
CO3- Presentation & Disclosure	EAs(epredisal)				IAs(ipredisal)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	3.2698	1.347	63	3.6508	1.003	-1.90	.062
CO4- Rights & Obligations	EAs(ertsobal)				IAs(irtsobal)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	4.1406	1.006	64	4.0469	1.061	.53	.600
CO5- Valuation	EAs(evalal)				IAs(ivalal)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	4.7619	1.132	63	4.3651	1.222	1.74	.087

Table 6.19: Consensus in ratings of overall internal control system in achieving the control objectives

*significant at $p < 0.05$.

Conclusion: Reject H3c. There is no significant

difference in the ratings of the overall internal control system's ability to achieve each CO between EAs and IAs.

To examine further to see whether there is a relationship between how well the overall internal control system can meet the internal control objectives between EAs and IAs a spearmen correlation was carried out because it involves "ordinal" data.

CONTROL OBJ.(CO)	FINDINGS			
CO1-Completeness. Overall internal control system can achieve this objective (ecompal by icompal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	64	-.14901	-1.18654	.23994
CO2-Existence Overall internal control system can achieve this objective (eexisal by iexisal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	64	.00925	.07282	.94219
CO3- Presentation & Disclosure Overall internal control system can achieve this objective (epredisal by ipredisal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	63	.11263	.88529	.37948
CO4-Rights & Obligations Overall internal control system can achieve this objective (ertsobal by irtsobal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	64	.06586	.51975	.60509
CO5-Valuation Overall internal control system can achieve this objective (evalal by ivalal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	63	-.15613	-1.23455	.22173

Table 6.20: Correlation in ratings of EAs and IAs on how well the overall internal control system can achieve the control objectives.

*significant at $p < 0.05$.

There is no significant correlation between the ratings of EAs and IAs regarding the ability of the overall internal control system in achieving the five COs.

d1) Mean ratings of each internal control procedure (ICP) and the ratings of the overall internal control system in achieving each control objective (CO)

H3d¹: There is a significant difference in the mean ratings of each ICP and the ratings of the overall internal control system's ability to achieve each CO amongst EAs

CONTROL OBJ. (CO)	FINDINGS							
CO1- Completeness	Mean ICP (emncomp)			Overall ICS (ecompal)				
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	61	2.7602	.930	61	4.4918	1.074	-11.33	.000*
CO2- Existence	Mean ICP (emnexis)			Overall ICS (eexisal)				
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	61	3.4590	.807	61	4.8852	1.018	-9.73	.000*
CO3- Presentation & Disclosure	Mean ICP (emnpredis)			Overall ICS (epredisal)				
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	60	2.0104	.745	60	3.3000	1.357	-9.61	.000*
CO4- Rights & Obligations	Mean ICP (emnrtsob)			Overall ICS (ertsobal)				
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	61	2.9693	.839	61	4.1639	1.019	-9.53	.000*
CO5- Valuation	Mean ICP (emnval)			Overall ICS (evalal)				
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	60	3.1125	.788	60	4.8000	1.147	-12.85	.000*

Table 6.21: Consistency in ratings of EAs on how well ICP and the overall internal control system can achieve the control objectives

*significant at $p < 0.05$.

Conclusion: Accept H3d¹. There is a significant difference

in the mean ratings of each ICP and the ratings of the overall internal control system's ability to achieve each CO amongst EAs.

To examine further to see whether there is a relationship between how well the ICPs can meet control objectives and how well the overall internal control system can meet the control objectives, a spearman correlation was carried out.

CONTROL OBJ.(CO)	FINDINGS			
CO1-Completeness. How well the achievement of this objective by "mean ICP" is related to the achievement of this objective by the "overall ICS"(emncomp by ecompal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	61	.27973	2.23862	02901*
CO2-Existence How well the achievement of this objective by "mean ICP" is related to the achievement of this objective by the "overall ICS"(emnexis by exisal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	61	.20863	1.63860	.10662
CO3- Presentation & Disclosure How well the achievement of this objective by "mean ICP" is related to the achievement of this objective by the "overall ICS"(emnpredis by epredisal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	60	.61739	5.97702	.00000*
CO4- Rights & Obligations How well the achievement of this objective by "mean ICP" is related to the achievement of this objective by the "overall ICS"(emnrtsob by ertsobal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	61	.42419	3.59798	.00066*

CO5- Valuation How well the achievement of this objective by "mean ICP" is related to the achievement of this objective by the "overall ICS"(emnval by evalal).	<u>n</u> <u>spearman.</u> <u>t val</u> <u>sig</u> <u>corr.coef.</u>
	60 .50874 4.50036 0.00003*

Table 6.22 : Correlation in ratings of EAs on how well ICP and the overall internal control system can achieve the control objectives

*significant at $p < 0.05$.

Overall, the results show that there is a significant but weak correlation (except for "existence" objective) between the mean ratings of each CO and the overall internal control system between EAs and IAs.

H3d²: There is a significant difference in the mean ratings of each ICP and the ratings of the overall internal control system's ability to achieve each CO amongst IAs

CONTROL OBJ. (CO)	FINDINGS						
CO1- Completeness	Mean ICP (imncomp)			Overall ICS (icompal)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	2.9672	.842	61	4.2131	1.097	-8.50 .000*
CO2- Existence	Mean ICP (imnexis)			Overall ICS (iexisal)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	3.6598	.839	61	4.7705	1.203	-8.84 .000*
CO3- Presentation & Disclosure	Mean ICP (imnpredis)			Overall ICS (ipredisal)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	60	2.5833	.614	60	3.6500	1.022	-7.80 .000*

CONTROL OBJ. (CO)	FINDINGS						
CO4- Rights & Obligations	Mean ICP (imnrtsob)			Overall ICS (irtsobal)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	3.1475	.906	61	4.0984	1.060	-6.83 .000*
CO5- Valuation	Mean ICP (imnval)			Overall ICS (ivalal)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	60	3.2333	.753	60	4.3667	1.248	-6.89 .000*

Table 6.23: Consensus in ratings of IAs on how well ICP and the overall internal control system can achieve the control objectives

*significant at $p < 0.05$.

Conclusion: Accept H3d². There is a significant difference in the mean ratings of each ICP and the ratings of the overall internal control system's ability to achieve each CO amongst IAs .

To examine further to see whether there is a relationship between how well the ICPs can meet the control objectives and how well the overall internal control system can meet the control objectives a spearman correlation was carried out.

CONTROL OBJ.(CO)	FINDINGS			
CO1-Completeness. How well the achievement of this objective by "mean ICP" is related to the achievement of this objective by the "overall ICS" (imncomp by icompal).	<u>n</u>	<u>spearman.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	61	.35002	2.87008	.00569*

CONTROL OBJ.(CO)	FINDINGS			
CO2-Existence How well the achievement of this objective by "mean ICP" is related to the achievement of this objective by the "overall ICS" (imnexis by iexisal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	61	.53227	4.82940	.00001*
CO3- Presentation & Disclosure How well the achievement of this objective by "mean ICP" is related to the achievement of this objective by the "overall ICS" (imnpredis by ipredisal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	60	.25383	1.99860	.05035*
CO4- Rights & Obligations How well the achievement of this objective by "mean ICP" is related to the achievement of this objective by the "overall ICS"(imnrtsob by ipredisal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	61	.40150	3.6726	.00134*
CO5-Valuation How well the achievement of this objective by "mean ICP" is related to the achievement of this objective by the "overall ICS"(imnval by ivalal).	<u>n</u>	<u>spearm.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	60	.28115	2.23117	.02955*

Table 6.24: Correlation in ratings of IAs on how well ICP and the overall internal control system can achieve the internal control objectives

*significant at $p < 0.05$.

Overall, there is a significant but weak correlation between the mean ratings of each ICP and the overall internal control system's ability to achieve all the objectives.

Thus from table 6.20, 6.22 and 6.24, it can be seen that there is no relationship between IAs' and EAs' ratings of the ability of the internal control system to achieve the control objectives, but there is a weak relationship between mean ICP (average ratings of all ICPs) and the internal control system's ability to achieve each control objective amongst EAs and IAs.

Figure 6.8 (on page 375) compares the evaluation of whether ICPs can meet control objectives and whether the overall internal control system can achieve the control objectives. It can be seen that the EAs think that each ICP is less able to achieve the control objectives but that the overall internal control system can achieve the control objectives better than IAs. The opposite is true for IAs. Both EAs and IAs do not seem to think that each ICP's ability to achieve each control objective is related to the overall internal control system's ability to achieve each control objective.

The same analogy could be made through the findings by Joyce (1976). Contrary to expectation (that is, the number of budgeted hours allocated to audit an internal control system is "directly" related to the quality of internal control system), she found that the quality of internal control system was "inversely" related to the number of budgeted hours that were assigned to conduct the audit. Gaumnitz et al. (1982) suggested that this

could be due to the fact that the auditors were not asked to evaluate the quality of internal control system first before assigning the number of hours to audit the internal control system.

Similar to the findings of this thesis, it was found that in practice, although the auditors were asked to rate the components (ICPs) of the internal control system first before rating the overall internal control system, the ratings that the auditors gave for the ICPs do not contribute to the ratings of the internal control system as a whole. The researcher had expected the results to be otherwise. This is in line with Lebbecke and Zuber's (1980) suggestion that in using the "CO" technique, the auditors must: (a) firstly identify whether the ICPs are able to meet the control objectives and then only (b) give their opinions on the quality of the internal control system.

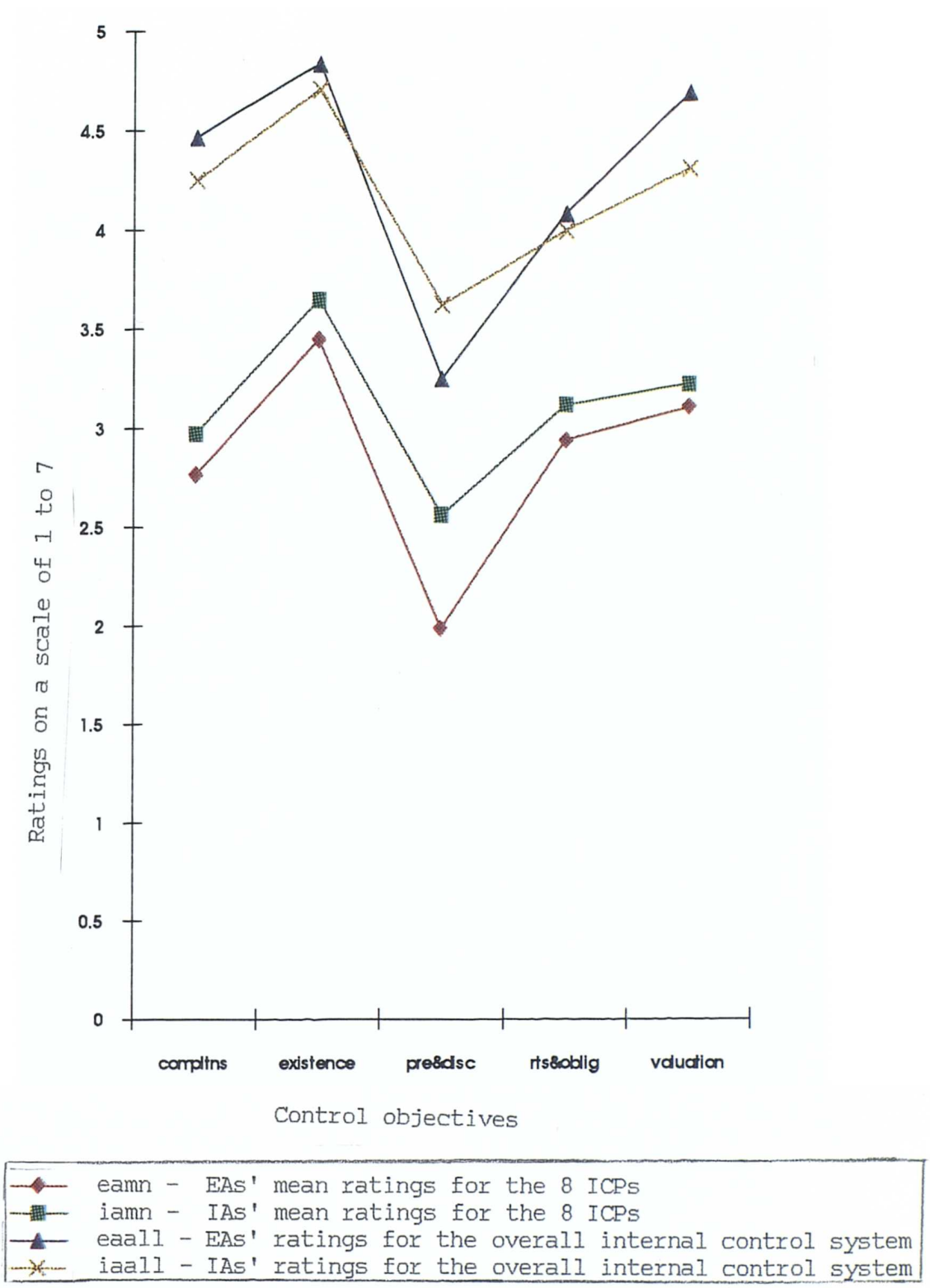


Figure 6.8: Evaluation of ability of internal control procedures and the ability of the overall internal control system to meet control objectives by EAs and IAs

6.5.1.3.1 DISCUSSION OF THE FINDINGS OF ABILITY OF ICPs AND INTERNAL CONTROL SYSTEM TO ACHIEVE THE CONTROL OBJECTIVES

No significant difference was found between EAs and IAs as to the ability of each ICP or the overall internal control system to assist in the achievement of the control objectives. This means to say that both groups of auditors agreed as to (a) the extent that the 8 ICPs were able to achieve the five control objectives, namely, "completeness, existence, presentation and disclosure, rights and obligations and valuation" and (b) the extent that the overall internal control system was able to achieve the same five control objectives.

However, when the mean ICP (average ratings of all ICPs) was compared to the overall internal control system's ability to achieve the five control objectives, a significant difference was found for each group of EA and IA.

This suggests that EAs' and IAs' evaluation of the individual controls' (ICPs) ability to achieve the five control objectives does not explain their evaluation of the overall internal control system's ability to achieve the five control objectives.

Brown (1962), as discussed in Chapter 3, suggested that auditors might judge the effectiveness of a given system of internal control differently either because they used

different methods of appraisal or because auditors placed different emphasis on the relative importance of various factors of internal control. In this thesis, it was found that auditors rated the quality of an internal control system in the same manner even though they used different techniques of evaluation. It was also shown that the auditors do not take into account the evaluation that they have made of the individual ICPs when they evaluate the internal control system as a whole.

Both of the findings contradict Brown's suggestion that "different methods of evaluation would lead to different opinions on the quality of internal control" and different emphasis on the relative importance of the various factors of internal control (ICPs) would lead to different opinions on the quality of internal control.

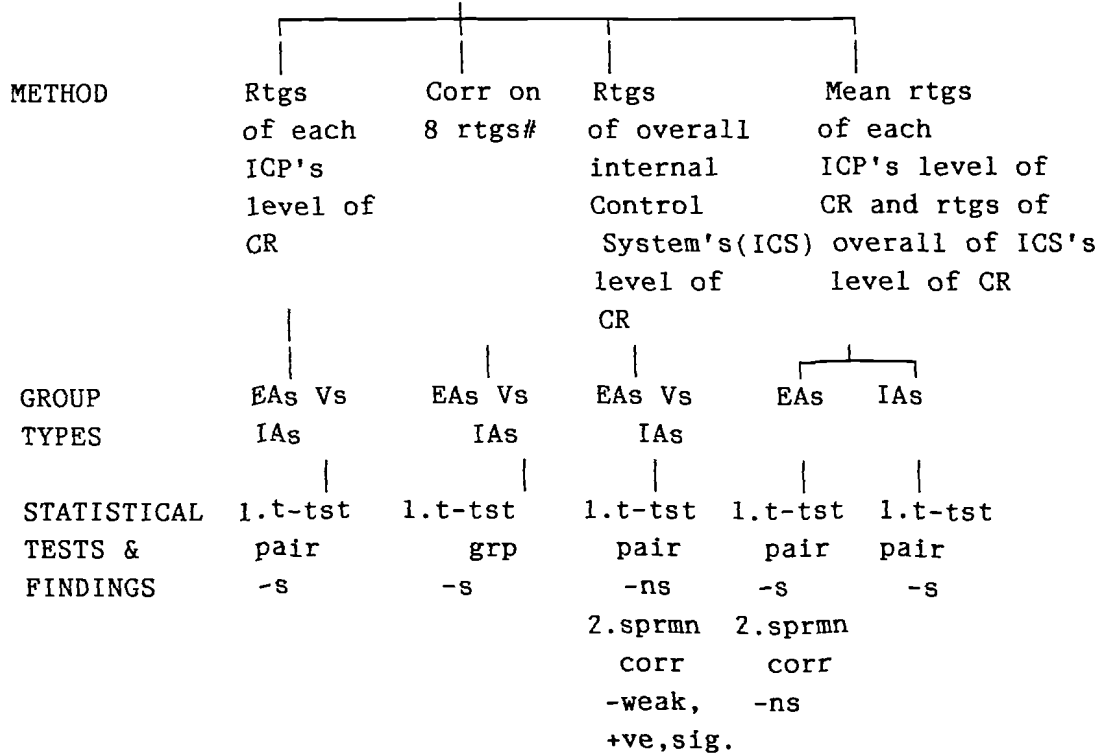
Figure 6.8 shows that (except for presentation and disclosure objective), auditors do not think that the evaluation of each ICP helps them in their evaluation of the overall internal control system.

EAs consider that internal control system can achieve control objectives better than IAs but that ICPs are less able to achieve the control objectives. The converse is true for IAs. These findings are consistent with table 6.10 where the auditors were asked to rate the ability of the internal control system to achieve control objectives and found that EAs (65.6%) rated it higher than IAs (34.4%).

However, there is no significant difference of ICP's or internal control system's ability to achieve the control objectives between EAs and IAs. This is contrary to Moore's (1993) findings that EAs were more competent with the specific control objectives and procedures used to test these objectives compared to IAs because most of EAs' procedures were assertion (control objectives') based.

6.5.1.4 Level of control risk (CR) of internal control procedures (ICPs) and internal control system (ICS)

WHETHER INTERNAL CONTROL PROCEDURES(ICPS) CAN ACHIEVE CONTROL RISK(CR)



2.visual representation- EAs think ICP more able to achieve CR

- CONCLUSION
- 1.Using corr as a measure of consensus, it was found that there is a significant difference between EAs and IAs. A t-test pair on rtgs of each ICP's ability to achieve CR shows a sig result.
 2. Overall ICS ability to achieve each CR was not sig. Both groups of auditors agreed as to which CR could be achieved by the overall ICS.
 3. There is a significant difference between the mean ratings of each ICP's ability to achieve CR and the ratings of the overall ICS's ability to achieve CR for the IAs. There is no significant difference between the mean ratings of each ICP's ability to achieve CR and the ratings of the overall ICS's ability to achieve CR for the EAs.

8 rtgs=8 ICPS * 1 CR

Missing cases were substituted with the mean rtgs.

Figure 6.9: Summary of findings on CR

a) ratings of level of CR of each ICP

H4a: There is a significant difference in the ratings of the level of CR of each ICP between EAs and IAs

Internal control procedures	Ratings of Control Risk(CR)						
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.	EAs(erttcrds)			IAs(irttcrds)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	62	2.8548	1.316	62	3.2419	1.351	-1.70 .095**
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.	EAs(erttkpg)			IAs(irttkpg)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	60	3.1833	1.214	60	3.6167	1.290	-1.95 .056**
3. There is adequate physical security over personal files which contain information relevant to the audit.	EAs (ertadesc)			IAs(irtadesc)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	3.6721	1.524	61	3.9836	1.668	-1.08 .285
4. The duties of those preparing the payroll are rotated.	EAs (ertdutro)			IAs(irtdutro)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	60	3.6833	1.513	60	3.9167	1.344	-.83 .407
5. The names on the payroll are checked periodically against the active employee file of the personnel department.	EAs(ertnamck)			IAs(irtnamck)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	62	3.0484	1.562	62	3.7258	1.381	-2.85 .006*

Internal control procedures	Ratings of Control Risk(CR)							
6.The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.	EAs(ertpyrse)			IAs(irtpyrse)			t val	sig
	n	mean	sd	n	mean	sd		
	61	2.9508	1.407	61	3.8525	1.459	-3.75	.000*
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.	EAs(ertmgtre)			IAs(irtmgtre)			t val	sig
	n	mean	sd	n	mean	sd		
	62	3.2258	1.453	62	3.8065	1.424	-2.28	.026*
8. Formal procedures are established for changing names, pay rates and deductions.	EAs(ertforpr)			IAs(irtfpr)			t val	sig
	n	mean	sd	n	mean	sd		
	62	3.0968	1.399	62	3.8387	1.517	-2.62	.011*

Table 6.25: Consensus in ratings of the level of CR of ICPs by IAs and EAs

*significant at $p < 0.05$. **significant at $p < 0.10$.

Conclusion: No conclusive decision can be made as to whether to reject or accept H4a if a level of significance of .05 is used. However, if a higher level of significance of .10 is used, overall it can be said that there is a significant difference in the ratings of the level of CR for each ICP between EAs and IAs.

Figure 6.10 compares evaluation of whether ICPs can meet internal control risk. EAs' ratings of level of CR of ICPs are lower than IAs' or in other words they are of the

opinion that ICPs can prevent or detect material errors better. As discussed earlier, EAs gave a higher rating of internal control system or are more lenient in their ratings.

Similar to the conclusion on control objectives, it can be said that IAs⁸⁹ do not think that the evaluation of each ICP would contribute to the evaluation of internal control system. Thus once again contradicting Brown's suggestion that evaluation of each factor (ICP) would help in the evaluation of the internal control system as a whole.

⁸⁹ There was no significant difference for EAs when the mean ratings of the ICPs was compared to the ratings for the overall internal control system.

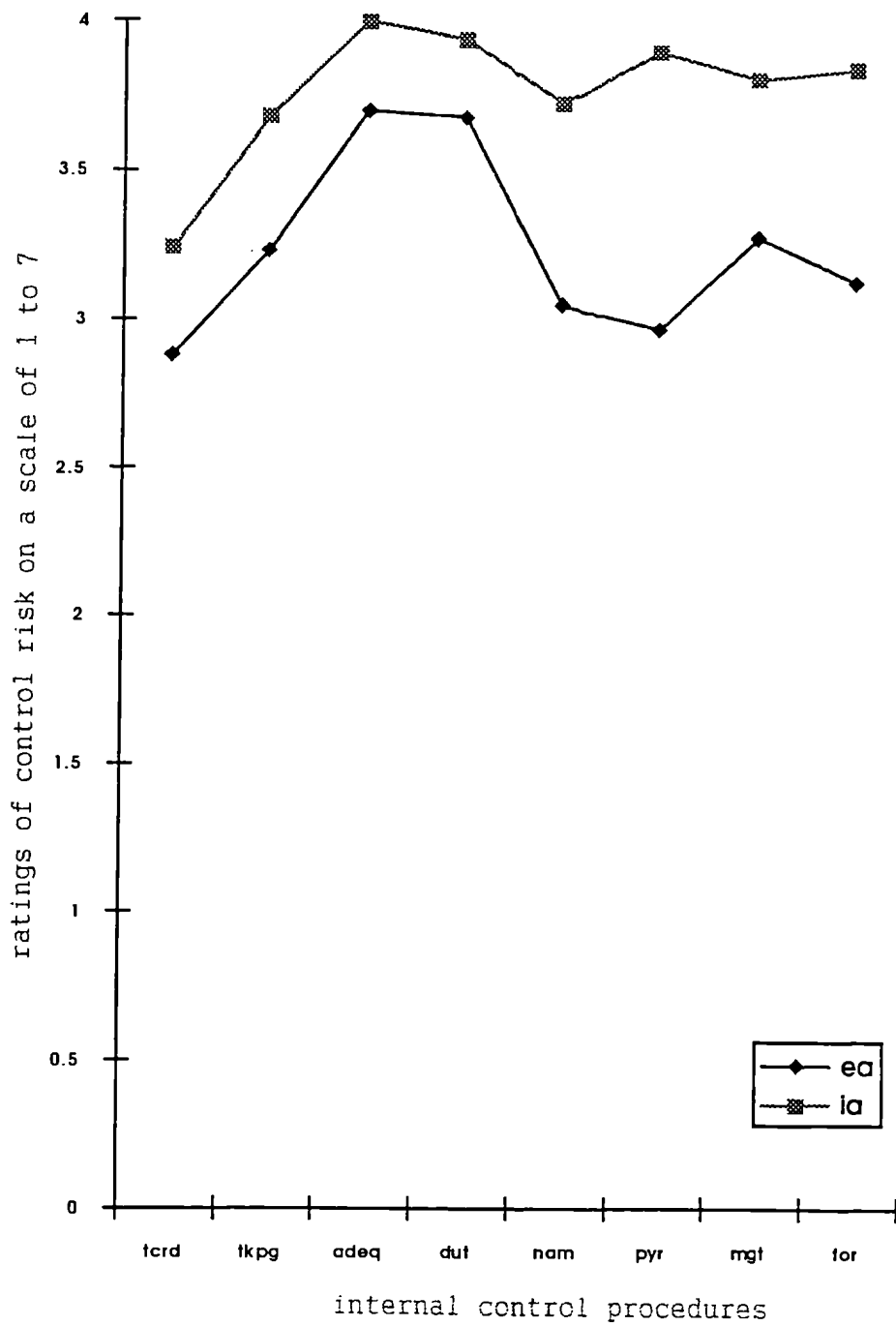


Figure 6.10: Evaluation of whether internal control procedures can meet "control risk" by EAs and IAs

b) correlation on 8 ratings

H4b: There is a significant difference of consensus level on the level of CR of each ICP between EAs and IAs

Similar to the consensus level on the cases and the ratings on CO, EA's ratings on the 8 control risk were correlated with every other EA's ratings to all the 8 control risk using Pearson correlation coefficient. A mean level of consensus was then calculated for each EA. This procedure was repeated for all IAs. A t-test pair was then performed to see if the mean consensus between the 2 groups of auditors was significant. The result was as follows:

EAs(econcr)			IAs(iconcr)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t_val</u>	<u>sig</u>
64	.0794	.108	64	.0430	.078	2.16	.034*

Conclusion: Accept H4b. There is a significant difference of consensus level on the level of CR of each ICP between EAs and IAs.

c) ratings of control risk (CR) for the overall internal control system (ICS)

H4c: There is a significant difference in the ratings of CR for the overall internal control system between EAs and IAs

EAs(ertcral)			IAs(irtcral)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t_val</u>	<u>sig</u>
62	3.0968	1.112	62	3.3226	.954	-1.05	.298

Conclusion: Reject H4c. There is no significant difference in the ratings of CR for the overall internal

control system between EAs and IAs.

d) mean ratings of CR for each ICP and the overall ICS

H4d¹: There is a significant difference in the mean ratings of CR for each ICP and the mean ratings of CR for the overall internal control system (ICS) amongst EAs

Mean ICP(emnrt)			Overall ICS(ertcral)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
58	3.1940	.917	58	3.1207	1.109	.48	.633

Conclusion: Reject H4d¹. There is no significant difference in the mean ratings of CR for each ICP and the mean ratings of CR for the overall internal control system amongst EAs.

H4d²: There is a significant difference in the mean ratings of CR for each ICP and the mean ratings of CR for the overall internal control system amongst IAs

Mean ICP(imnrt)			Overall ICS(irtcral)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
58	3.7241	.831	58	3.3621	.931	2.45	.018*

Conclusion: Accept H4d². There is a significant difference in the mean ratings of CR for each ICP and the mean ratings of CR for the overall internal control system amongst IAs.

To see how closely related the variables are, Spearman correlation is calculated.

ICPs	FINDINGS			
Mean ratings of CR of ICPs as compared to CR of overall ICS by <u>EAs</u> (emnrt by ertcral).	<u>n</u>	<u>spearman.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	58	.36318	2.91697	.00508*
Mean ratings of CR of ICPs as compared to CR of overall ICS by <u>IAs</u> auditors(imnrt by irtcral).	<u>n</u>	<u>spearman.</u> <u>corr.coef.</u>	<u>t val</u>	<u>sig</u>
	58	.20662	1.58031	.11967

Table 6.26: Correlation in mean ratings of ICP and control risk

* significant, at $p < .01$

The mean rating of CR of ICPs as compared with CR of overall internal control system of EAs is weakly correlated at .01 level of significance but it is uncorrelated for IAs. There seems to be little or no relationship between the ratings of the level of CR for each individual ICP and the ratings of the level of CR for the overall internal control system.

6.5.1.4.1 DISCUSSION OF FINDINGS ON THE LEVEL OF CONTROL RISK (CR) OF ICPs AND INTERNAL CONTROL SYSTEM

Control risk is defined in this thesis as the ability to detect or correct "material errors". The results indicate that there is a significant difference in the ability of the ICP to detect or correct material errors, but there is no significant difference of the overall internal control system to detect or correct material errors between EAs and IAs. Thus both groups of auditors do not seem to agree on the ability of the ICPs to detect or correct material errors but they seem to agree on the

ability of the overall internal control system to detect or correct material errors.

Figure 6.10 shows that EAs rated ICP's and internal control system's ability to detect or correct "material errors" as higher than IAs or in other words, EAs rated control risk as lower. It is also consistent with the result in table 6.11 where the auditors were asked to rate the ability of the overall internal control system to detect or correct material errors, and EAs (87.5%) rated it as higher than IAs (73.4%).

Thus EAs were more confident in the ability of the ICPs and internal control system's ability to detect or correct material errors. This could be due to the fact that materiality levels of IAs are lower, that is more severe than the materiality level of EAs.

As one respondent said,

There is no definition of "materiality". I generally find that EAs' definition of material, while never stated, is apparently much higher than IAs'".

IAs are more strict in their ascertainment of "materiality" than EAs. EAs may have a cut off limit of 10% of total assets or net income as a materiality level. But it is different for IAs which are concerned with the effectiveness of the internal control system and thus would have a tighter (ie. lower) materiality level. Thus, IAs would be expected to be more strict in their reliance

on the ICP or the internal control system.

Comparing each group of auditor, it was found that there is a significant difference when the mean ICP (average of all ICPs) was compared to the overall internal control system's ability to detect or correct material errors for each group of EA and IA.

One reason why EAs are seen to be more lenient than IAs could be as mentioned earlier on in the chapter is because of IAs' preoccupation with control compliance. Thus, IAs are generally more restrained in their risk assessments and strength perceptions. Also as discussed earlier, IAs realizing that they are less independent than EAs, may over-compensate in such assessments. Correspondingly, IAs may also recognize their lack of competence in a certain area and select the more conservative response.

Similar to the conclusion on control objectives, it can be said that each group of auditor does not think that the evaluation of each ICP would contribute to the evaluation of the overall internal control system.

This raises the very interesting question as to whether the effectiveness of a system of internal control is something more than a mere aggregation of the quality of its component parts (ICPs). This is perhaps the subject of further research.

6.5.1.5 Importance of ICPS

IMPORTANCE OF ICPS/WEIGHT OF ICPS			
METHOD	Total points allocated to overall ICPS	Mean points for each ICP	Correlation of average weights given to ICPS
GROUP TYPES	EAs Vs IAs	EAs Vs IAs	EAs and IAs
STATISTICAL TESTS & FINDINGS	1. t-test pair -ns 2. Pearson corr -ns (low,-ve)	1. t-test pair Only 2 out of 8 ICPS is sig	1. Pearson corr -s 2. Spearman corr -s
CONCLUSION	1. There is no significant difference of the total points allocated to the 8 ICPS between EAs and IAs. 2. There is a high, positive and significant rating between the average weights given to each ICP by EAs and IAs.		

Figure 6.11: Summary of findings on the relative importance of ICPS

a) total points allocated to ICS

H5a: There is a significant difference in the total points allocated to internal control system between EAs and IAs

EAs(totex)			IAs(totin)			t val	sig
n	mean	sd	n	mean	sd		
61	100.8033	16.741	61	112.9836	29.726	-2.57	.013*

Conclusion: Accept H5a. There is a significant difference in the total points allocated to internal control system between EAs and IAs.

Pearson correlation carried out to see if the weightings by both groups of auditors were related.

<u>Variable</u>	<u>Pearson corr.</u>
totex by totin	-.2126 (ns)

b) Mean points for each ICP

H5b: There is a significant difference in the mean points given for each ICP between EAs and IAs

Internal control procedures (ICPs)	Mean points for each ICP							
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations. (ICP1/ tcrd)	EAs (eactcrds)				IAs (iactcrds)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	12.9524	4.437	63	13.3810	4.198	-.54	.592
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation. (ICP2/ tkpg)	EAs (eadtkpg)				IAs (iadtkpg)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	14.5556	3.596	63	16.0952	7.089	-1.50	.140
3. There is adequate physical security over personal files which contain information relevant to the audit. (ICP3/ Adesc)	EAs (eacadesc)				IAs (iacadesc)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	9.7619	3.987	63	11.6667	6.658	-1.93	.058

Internal control procedures (ICPs)	Mean points for each ICP							
4. The duties of those preparing the payroll are rotated. (ICP4/ Dutro)	EAs (eacdutro)				IAs (iacdutro)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	8.4127	4.272	63	11.0159	10.132	-1.84	.071
5. The names on the payroll are checked periodically against the active employee file of the personnel department. (ICP5/ Namck)	EAs (eacnamck)				IAs (iacnamck)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	12.0794	4.570	63	14.6190	5.569	-2.66	.010*
6. The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation. (ICP6/ Pyrse)	EAs (eadpyrse)				IAs (iadpyrse)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	63	13.5397	4.211	63	16.6349	5.771	-3.18	.002*
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports. (ICP7/ Mgtre)	EAs (eadmgtre)				IAs (iadmgtre)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	64	14.7969	4.036	64	15.1094	3.945	-.46	.650
8. Formal procedures are established for changing names, pay rates and deductions. (ICP8/ Forpr)	EAs (eadforpr)				IAs (iadforpr)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	61	15.0164	3.196	61	14.7869	4.820	.31	.758

Table 6.27: Consensus in weightings of ICPs by IAs and EAs
* significant at $p < 0.05$

Conclusion: Reject H5b. There is no significant difference of the ratings in the mean points given for

each ICP between EAs and IAs with the exception of ICP5 and ICP6.

As can be seen from Table 6.27, IAs rated "segregation of duties" (which comprise of "ICP2" and "ICP6") higher than EAs. Detail discussion regarding this would be done in Section 6.7.4.

Figure 6.12 compares points given to the ICPs by EAs and IAs. It shows that EAs gave consistently lower points for all the ICPs, except for ICP8 ("Are formal procedures established for changing names, payrates and deductions?") as compared with IAs. However, this is not significantly different.

The finding is contradicting EAs' leniency in ratings. As discussed earlier, EAs when compared to IAs were more lenient in their ratings that is, they gave a higher rating when asked to evaluate the internal control system using different techniques of evaluations, when asked to rate the control objectives that can be achieved by the internal control system and when asked to rate the ability of the internal control system to detect or correct "material errors". Thus, it would be expected that they allocate higher points to the ICPs, but this is not so. The converse could be said about IAs.

This could imply that both EAs and IAs do not consider

the relevance of "each" ICP but rather they look at the ICPs as a whole when evaluating the internal control system.

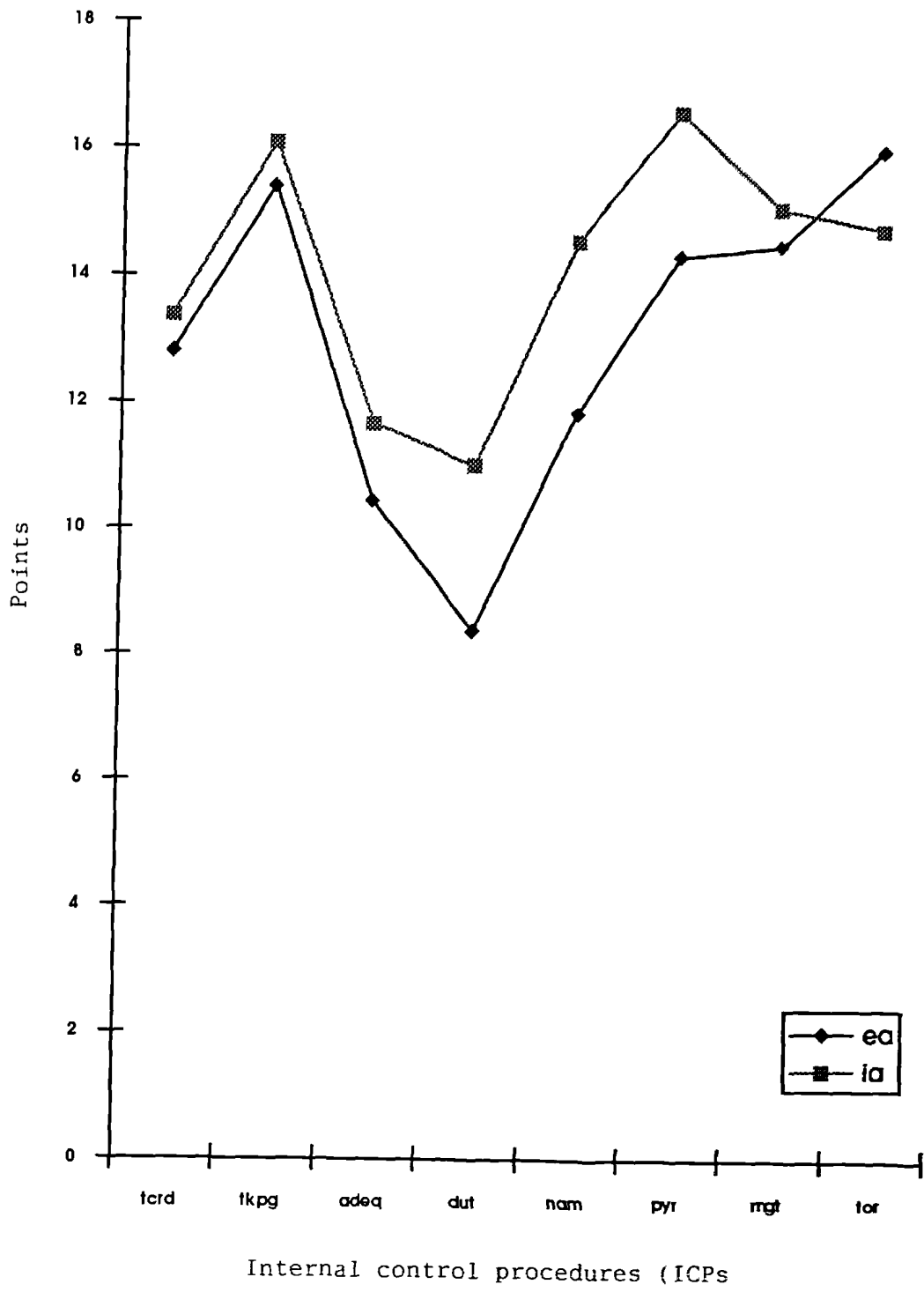


Figure 6.12: Points allocated to the importance of ICPs by EAs and IAs

6.5.1.5.1 DISCUSSION OF FINDINGS ON THE IMPORTANCE OF ICPs AND THE OVERALL INTERNAL CONTROL SYSTEM

There is no significant difference as to the points allocated (importance attached) to each ICP between EAs and IAs, but there is a significant difference of total points allocated (importance attached) to the overall internal control system.

Again, similar to the comment made earlier on the ratings given by the auditors for CO and CR, this means to say that the auditors do not think that the importance of each ICP contributes to the importance of the overall internal control system.

From Figure 6.12, EAs gave consistently lower points for all the ICPs except for Forpr ("Are formal procedures established for changing names, payrates and deductions?"). However, this was found not to be significantly different.

There seemed to be no relationship between EAs' opinion of the "importance of ICPs" and "the ability of internal control system to achieve the five control objectives" or "the ability of the internal control system to detect or correct material errors".

As far as the overall internal control system is concerned, EAs placed lesser importance on the internal

control system, but rated "the ability of the internal control system to achieve the control objectives" and "the ability of the internal control system to detect or correct material errors" higher as compared to IAs. Thus, although EAs were consistent in their judgements of "the ability of the internal control system to achieve the control objectives" and "the ability of the internal control system to detect or correct material errors", they were not consistent in determining "the importance of the internal control system". The same could be said about IAs.

As for the individual internal control procedures (ICPs), EAs and IAs were consistent in their judgements regarding "the importance of the ICPs" and "the ability of the ICPs to achieve control objectives" but they were not consistent in their judgements of "the ability of the ICPs to detect or correct material errors". Also, it was found that IAs rated "segregation of duties" controls higher than the other controls but this is not the case for EAs.

In summary, there is inconsistency in the ratings by the auditors with regards to the importance of the ICPs/ internal control system, the ability of ICPs/ internal control system to achieve the five control objectives and the ability of the ICPs/ internal control system to detect or correct material errors.

6.5.1.6 Types of controls

The two types of control examined in this thesis are "accounting" and "administrative controls". Consensus of EAs and IAs regarding the 2 controls is examined in three ways as shown in Figure 6.13.

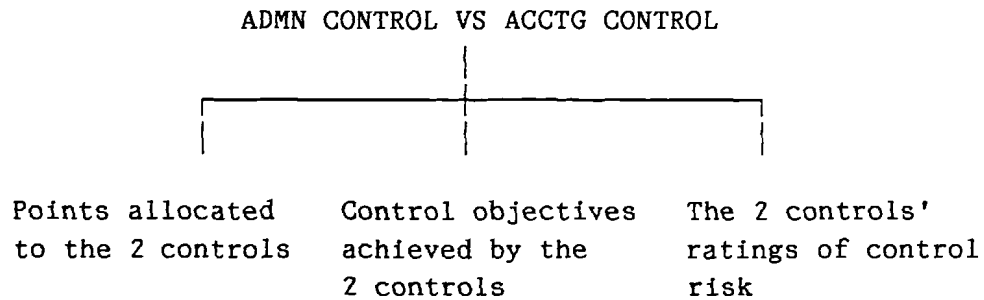


Figure 6.13: Examination of accounting and administrative controls

As discussed in Section 5.7 of Chapter 5, the 8 ICPs are divided into accounting and administrative controls as follows:

Accounting controls:

ICP1/ Tcrd: Are time cards and other source documents checked before processing by the payroll department for casts and calculations?

ICP3/ Adesc: Is there adequate physical security over personal files?

ICP4/ Dutro: Are the duties of those preparing the payroll rotated?

ICP5/ Namck: Are the names on the payroll checked periodically against the active employee file of the personnel department?

Administrative controls:

ICP2/ Tkpg: Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?

ICP6/ Pyrse: Are the tasks of both payroll preparation and payment of employees adequately separated from the tasks of payroll bank account reconciliation?

ICP7/ Mgtre: Are management reports used to monitor the reliability of financial data through comparisons with budgets and following up of variance reports?

ICP8/ Forpr: Are formal procedures established for changing names on the payroll, pay rates and deductions properly communicated to the employees?

The 4 ICPs in each category are combined for each group of auditor in order to obtain "accounting" and "administrative" controls. For the purpose of the analysis of this hypothesis, there will be 4 variables: (a) IA's accounting control; (b) EA's accounting control; (c) IA's administrative control and (d) EA's administrative control.

6.5.1.6.1 Points allocated to the 2 controls

POINTS ALLOCATED TO ACCOUNTING (ACCTG) AND ADMINISTRATIVE (ADMN) CONTROLS

METHOD	Mean wts of acctg Vs admn controls		Mean wts of acctg controls	Mean wts of admn controls
	EAs	IAs	EAs Vs IAs	EAs Vs IAs
GROUP TYPES				
STATISTICAL TESTS & FINDINGS	t-tst pair -s	t-tst pair -s	t-test pair -s	t-test pair -s
CONCLUSION	<p>1. Each group of auditors placed different emphasis on "accounting" and "administrative" controls. Both of the groups weight the "administrative" controls higher than "accounting" controls.</p> <p>2. There is a significant difference between the weights given to "accounting" controls by EAs and IAs. Similarly, there is a significant difference between the weights given to "administrative" controls by EAs and IAs. IAs seem to be more generous in their points with regard to both the controls than EAs.</p>			

Figure 6.14: Summary of findings on points allocated to the 2 controls

a1) mean weights of acctg vs admn controls for EAs

H6a¹: There is a significant difference in the mean weighting of accounting and administrative control amongst EAs

Acctg (emnac)			Admn (emnad)			t val	sig
n	mean	sd	n	mean	sd		
61	43.0492	10.783	61	57.7541	9.051	-10.66	.000*

Conclusion: Accept H6a¹. There is a significant difference in the mean weighting of "accounting" and "administrative" control amongst EAs. EAs placed different emphasis on the 2 types of controls. In this case, EAs seem to think that "administrative" controls (mean weight of 57.75) are more important than "accounting" controls (mean weight of 43.05). This is also substantiated by Table 6.49.

a2) mean weights of acctg vs admn controls for IAs

H6a²: There is a significant difference in the mean weighting of "accounting" and "administrative" control amongst IAs

Acctg (imnac)			Admn (imnad)			t val	sig
n	mean	sd	n	mean	sd		
61	50.4098	19.673	61	62.5738	12.033	-7.08	.000*

Conclusion: Accept H6a². There is a significant difference in the mean weighting of "accounting" and "administrative" control amongst IAs.

IAs placed different emphasis on the 2 types of controls. IAs also seem to think that "administrative" controls (mean weight of 62.57) are more important than "accounting" controls (mean weight of 50.41).

b) mean weights of accounting controls between EAs and IAs

H6b: There is a significant difference in the mean weighting of "accounting" controls between EAs and IAs

EAs (emnac)			IAs (imnac)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
63	43.2063	10.698	63	50.6825	19.416	-2.54	.014*

Conclusion: Accept H6b. There is a significant difference in the mean weighting of "accounting" controls between EAs and IAs with IAs giving higher points than EAs.

c) mean weights of administration controls between EAs and IAs

H6c: There is a significant difference in the mean weighting of administrative controls between EAs and IAs

EAs (emnad)			IAs (imnad)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
61	57.7541	9.051	61	62.5738	12.033	-2.29	.026*

Conclusion: Accept H6c. There is a significant difference in the mean weighting of "administrative" controls between EAs and IAs with IAs giving higher points than EAs.

6.5.1.6.2 Control objectives achieved by the 2 controls

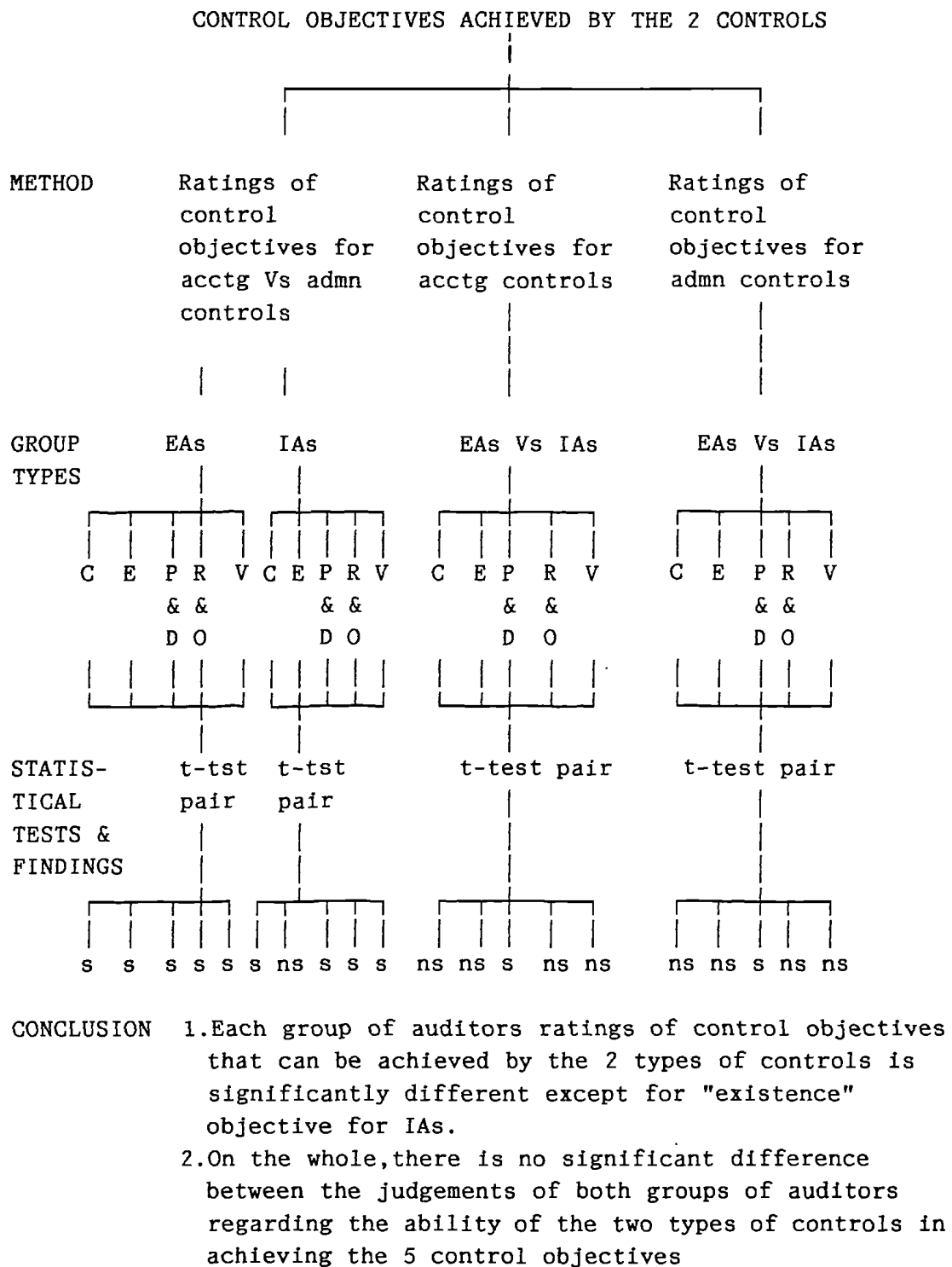


Figure 6.15: Summary of findings on control objectives achieved by the 2 types of controls

a1) rating of control objectives of accounting vs administration controls for EAs

H7a¹: There is a significant difference in the ratings of "accounting" and "administrative" control for the 5 control objectives amongst EAs.

CONTROL OBJ. (CO)	FINDINGS							
CO1- Completeness(C)	Acctg (ecompac)				Admn (ecompadm)			
	<u>n</u>	<u>mean</u>	<u>sd</u>		<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	10.1639	3.946		61	11.9180	3.926	-4.20 .000*
CO2- Existence(E)	Acctg (eexisacc)				Admn (eexisadm)			
	<u>n</u>	<u>mean</u>	<u>sd</u>		<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	14.4262	3.364		61	13.2459	3.740	3.09 .003*
CO3- Presentation & Disclosure (P & D)	Acctg (eprediac)				Admn (eprediad)			
	<u>n</u>	<u>mean</u>	<u>sd</u>		<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	6.5738	2.813		61	9.3770	3.861	-7.07 .000*
CO4- Rights & Obligations (R & O)	Acctg (ertsobac)				Admn (ertsobad)			
	<u>n</u>	<u>mean</u>	<u>sd</u>		<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	10.8852	.459		61	12.8689	3.792	-5.07 .000*
CO5- Valuation(V)	Acctg (evalacc)				Admn (evaladm)			
	<u>n</u>	<u>mean</u>	<u>sd</u>		<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	11.4426	3.443		61	13.6557	3.847	-5.02 .000*

Table 6.28: Consensus in ratings of EAs on how well the control objectives can be achieved by the 2 types of controls

*significant at $p < 0.05$.

Conclusion: Accept H7a¹. There is a significant difference in the ratings of "accounting" and "administrative" controls for the 5 control objectives amongst EAs.

a2) rating of control objectives of acctg vs admn controls for IAs

H7a²: There is a significant difference in the ratings of "accounting" and "administrative" controls for the 5 control objectives amongst IAs.

CONTROL OBJ. (CO)	FINDINGS						
CO1- Completeness(C)	Acctg (icompac)			Admn (icompadm)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	11.1475	3.872	61	12.5902	3.712	-3.23.002*
CO2- Existence(E)	Acctg (iexisacc)			Admn (iexisadm)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	14.3934	3.685	61	14.8852	4.050	-.99 .325
CO3- Presentation & Disclosure (P & D)	Acctg (iprediac)			Admn (iprediad)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	8.3934	2.848	61	12.1967	3.027	-9.20 .000*
CO4- Rights & Obligations (R & O)	Acctg (irtsobac)			Admn (irtsobad)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	11.1475	4.061	61	14.0328	4.074	-6.11 .000*
CO5- Valuation(V)	Acctg (ivalacc)			Admn (ivaladm)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u> <u>sig</u>
	61	12.4918	3.505	61	13.5738	3.797	-2.16 .035*

Table 6.29: Consensus in ratings of IAs on how well the control objectives can be achieved by the 2 types of controls

*significant at $p < 0.05$.

Conclusion: Accept H7a². There is a significant difference in the ratings of "accounting" and "administrative" controls for the 5 control objectives amongst IAs, with the exception of "existence" objective.

b) ratings of control objectives with respect to accounting controls between EAs and IAs

H7b: There is a significant difference in the ratings of "accounting" controls for the 5 control objectives between EAs and IAs.

CONTROL OBJ. (CO)	FINDINGS						
CO1- Completeness(C)	EAs (ecompac)			IAs (icompac)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val sig</u>
	62	10.2903	4.279	62	11.1452	3.840	-1.14 .257
CO2- Existence(E)	EAs (eexisacc)			IAs (iexisacc)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val sig</u>
	62	14.4677	3.352	62	14.3226	3.697	.21 .833
CO3- Presentation & Disclosure (P & D)	EAs (eprediac)			IAs (iprediac)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val sig</u>
	62	6.5968	2.796	62	8.4355	2.844	-3.79 .000*
CO4- Rights & Obligations (R & O)	EAs (ertsobac)			IAs (irtsobac)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val sig</u>
	62	10.8387	3.572	62	11.1774	4.035	-.46 .649
CO5- Valuation(V)	EAs (evalacc)			IAs (ivalacc)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val sig</u>
	62	11.4839	3.430	62	12.5161	3.482	-1.64 .105

Table 6.30: Consensus in ratings of IAs and EAs on how well the control objectives can be achieved by the "accounting" controls

*significant at $p < 0.05$.

Conclusion: Reject H7b. There is no significant difference in the ratings of "accounting" controls for the 5 control objectives between EAs and IAs with the

exception of "presentation and disclosure" objective.

c) rating of control objectives with respect to "administrative" controls between EAs and IAs

H7c: There is a significant difference in the ratings of "administrative" controls for the 5 control objectives between EAs and IAs.

INTERNAL CONTROL OBJ. (CO)	FINDINGS								
CO1- Completeness(C)	EAs (ecompadm)			IAs (icompadm)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>	
	62	12.0000	3.946	62	12.7097	3.800	-.97	.334	
CO2- Existence(E)	EAs (eexisadm)			IAs (iexisadm)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>	
	62	13.2903	3.726	62	14.7097	4.248	-1.87	.066	
CO3- Presentation & Disclosure (P & D)	EAs (eprediad)			IAs (iprediad)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>	
	62	9.4355	3.857	62	12.1935	3.002	-4.32	.000*	
CO4- Rights & Obligations (R & O)	EAs (ertsobad)			IAs (irtsobad)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>	
	62	12.9032	3.771	62	13.9355	4.113	-1.43	.157	
CO5- Valuation(V)	EAs (evaladm)			IAs (ivaladm)					
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>	
	62	13.6774	3.819	62	13.6452	3.807	.05	.962	

Table 6.31: Consensus in ratings of IAs and EAs on how well the control objectives can be achieved by the "administrative" controls

*significant at $p < 0.05$.

Conclusion: Reject H7c. There is no significant

difference in the ratings of "administrative" controls for the 5 control objectives between EAs and IAs, with the exception of "presentation and disclosure" objective.

Control objectives that can best be achieved by the "accounting" and "administrative" controls in priority of importance are as shown in Table 6.32.

Control Objectives	Accounting Controls		Administrative Controls	
	EAs	IAs	EAs	IAs
Existence	14.47	14.32	13.29	14.71
Valuation	11.48	12.52	13.68*	13.65
Rights and Obligations	10.84	11.18	12.90	13.94*
Completeness	10.29	11.15	12.00	12.71
Presentation and Disclosure	6.60	8.44	9.44	12.19

Table 6.32: Comparison of EAs and IAs ratings of "accounting" and "administrative" controls in achieving the control objectives

* As for "administrative" controls, EAs rated "valuation" objective higher than "rights and obligations" objective, whilst IAs rated "rights and obligations" objective higher than "valuation" objective. Overall, for both types of controls, IAs are of the opinion that the two types of controls are more able to achieve the control objectives than EAs.

In theory, as discussed in chapter 2, it was said that

"accounting" controls are better able to achieve "completeness, existence and valuation" objectives than "rights and obligations" and "presentation and disclosure" objectives. However, the findings suggests that both "accounting" and "administrative" controls are rated by EAs and IAs to achieve "completeness, rights and obligations and valuation objectives" better than "completeness and presentation and disclosure objectives".

Referring to the same table (Table 6.32), "administrative" controls are rated by EAs and IAs as more able to achieve the control objectives as compared to the "accounting" controls (with the exception of "existence" objective).

6.5.1.6.3 Ratings of the level of control risk for accounting and administrative controls

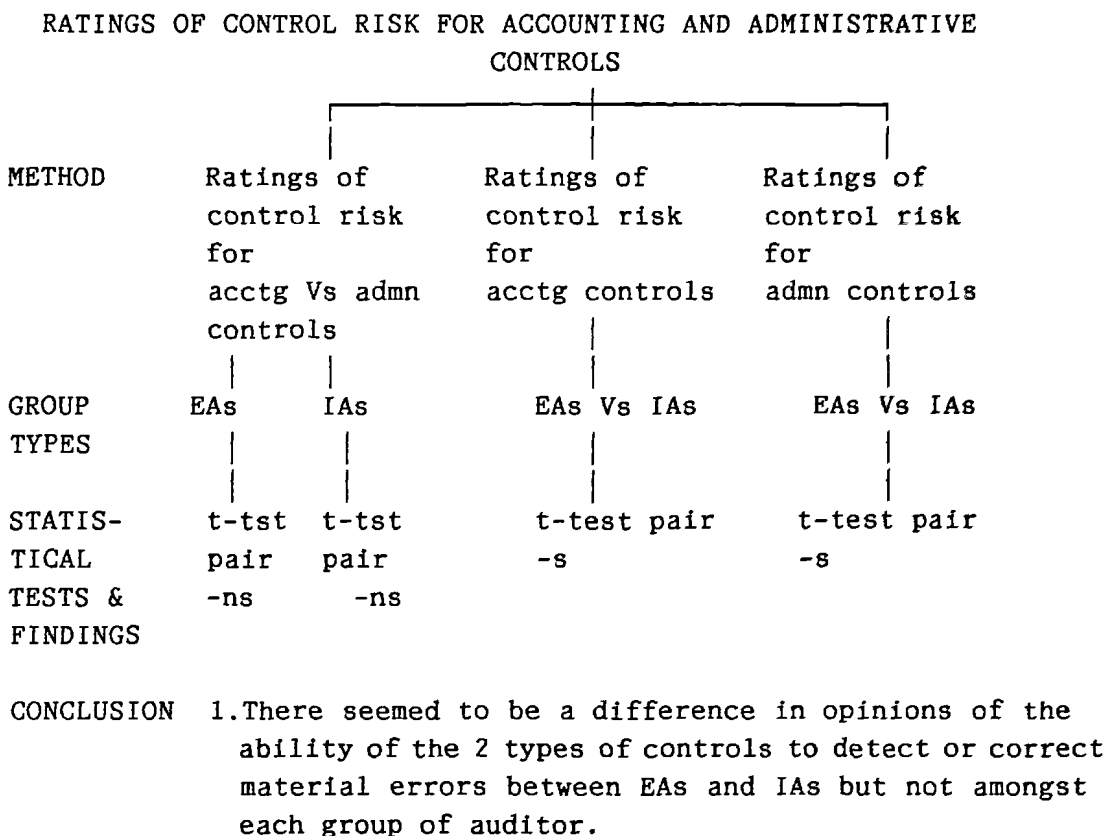


Figure 6.16: Summary of findings on the ratings of control risk for "accounting" and "administrative" controls

a) ratings of control risk for accounting and administrative controls amongst EAs

H8a¹: There is a significant difference in the ratings of control risk of "accounting" and "administrative" control amongst EAs

Acctg (ertacc)			Admn (ertadm)			t val	sig
n	mean	sd	n	mean	sd		
59	13.2373	4.232	59	12.5254	4.174	1.41	.165

Conclusion: Reject H8a¹. There is no significant difference between the ratings of control risk of "accounting" and "administrative" control amongst EAs.

a2) ratings of control risk for accounting and administrative controls amongst IAs

H8a²: There is a significant difference in the ratings of control risk of "accounting" and "administrative" control amongst IAs

Acctg (irtacc)			Admn (irtadm)			t val	sig
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
59	14.7458	3.618	59	15.0169	3.785	-.62	.539

Conclusion: Reject H8a². There is no significant difference in the ratings of control risk of "accounting" and "administrative" control amongst IAs.

b) ratings of control risk for accounting controls between EAs and IAs

H8b: There is a significant difference in the ratings of control risk of "accounting" controls between EAs and IAs

EAs (ertacc)			IAs (irtacc)			t val	sig
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
60	13.2333	4.196	60	14.8167	3.6296	-2.33	.023*

Conclusion: Accept H8b. There is a significant difference in the ratings of control risk of "accounting" controls between EAs and IAs.

c) ratings of control risk for administrative controls between EAs and IAs

H8c: There is a significant difference in the ratings of control risk of "administrative" controls between EAs and IAs

EAs (ertadm)			IAs (irtadm)			t val	sig
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>		
60	12.4667	4.164	60	15.0000	3.755	-3.54	.001*

Conclusion: Accept H8c. There is a significant

difference in the ratings of control risk of "administrative" controls between EAs and IAs.

Table 6.33 shows control risk ratings of "accounting" and "administrative" controls by EAs and IAs.

Control risk	Accounting controls		Administrative controls	
	EAs	IAs	EAs	IAs
Value of control risk	13.23	14.82	12.47	15.00

Table 6.33: Comparison of ratings of control risk of "accounting" and "administrative" controls between EAs and IAs

As can be seen from table 6.33, EAs rated control risk of "accounting" controls higher than "administrative" controls. Since the higher the ratings of control risk implies that the controls are less able to prevent or detect material errors in the internal control system, this suggests that EAs are of the opinion that "administrative" controls can prevent or detect material errors better than "accounting" controls. The opposite can be said for IAs.

6.5.1.6.4 DISCUSSION OF FINDINGS ON TYPES OF CONTROLS

There were three aspects of "administrative" and "accounting" controls tested in this section; (a) points allocated to the two types of controls indicating which type of control is more important; (b) ability of the two types of controls in achieving control objectives and (c) ability of the two types of controls in detecting or

correcting material errors.

If in fact a separation of "administrative" and "accounting" controls can be made in accordance to the researcher's segregation (which was based on auditing literature), there seemed to be a significant difference of the importance of "accounting" and "administrative" controls between and amongst EAs and IAs. Both groups of auditors rated "administrative controls" higher than "accounting controls".

Both groups of auditors also perceived "administrative" controls better able to achieve the 5 control objectives (though not statistically significant). The researcher expected that both groups of auditors would rate "accounting" controls as better able to achieve "completeness, existence and valuation" objectives as compared to the other two objectives ("presentation and disclosure" and "rights and obligations"). However, the results showed that the auditors rated both the controls as able to achieve "existence, valuation and rights and obligations" better than "completeness" and "presentation and disclosure" objectives.

The researcher also expected that EAs would rate "accounting" controls as better able to detect or correct material errors as compared to "administrative" controls and that IAs would rate "administrative" controls as better able to detect or correct material errors compared

to "accounting controls" because of the two groups' differences in audit objectives. However, the results showed the opposite; that is, EAs rated "administrative" controls as better able to detect or correct material errors, whereas IAs rated "accounting" controls as better able to detect or correct material errors.

The findings indicate that eventhough in theory a division of controls into "accounting" and "administrative" could be made, in practice it was difficult for the auditors to make this distinction. The findings did not show that IAs relied more on "administrative" controls rather than "accounting" controls and vice-versa. In fact, it was found that IAs rated "accounting" controls as better able to detect or correct material errors and EAs rated "administrative" controls as better able to detect or correct material errors. As far as achievement of the five control objectives is concerned, both groups of auditors rated "administrative" controls as better able to achieve the five control objectives.

Also, auditing literature suggests that "accounting" controls can achieve "completeness, existence and valuation" objectives better than "administrative" controls. However, it was found that although it is true that "accounting" controls could achieve "existence and valuation" objectives, it was not true for "completeness" objective.

6.5.2 CONSISTENCY

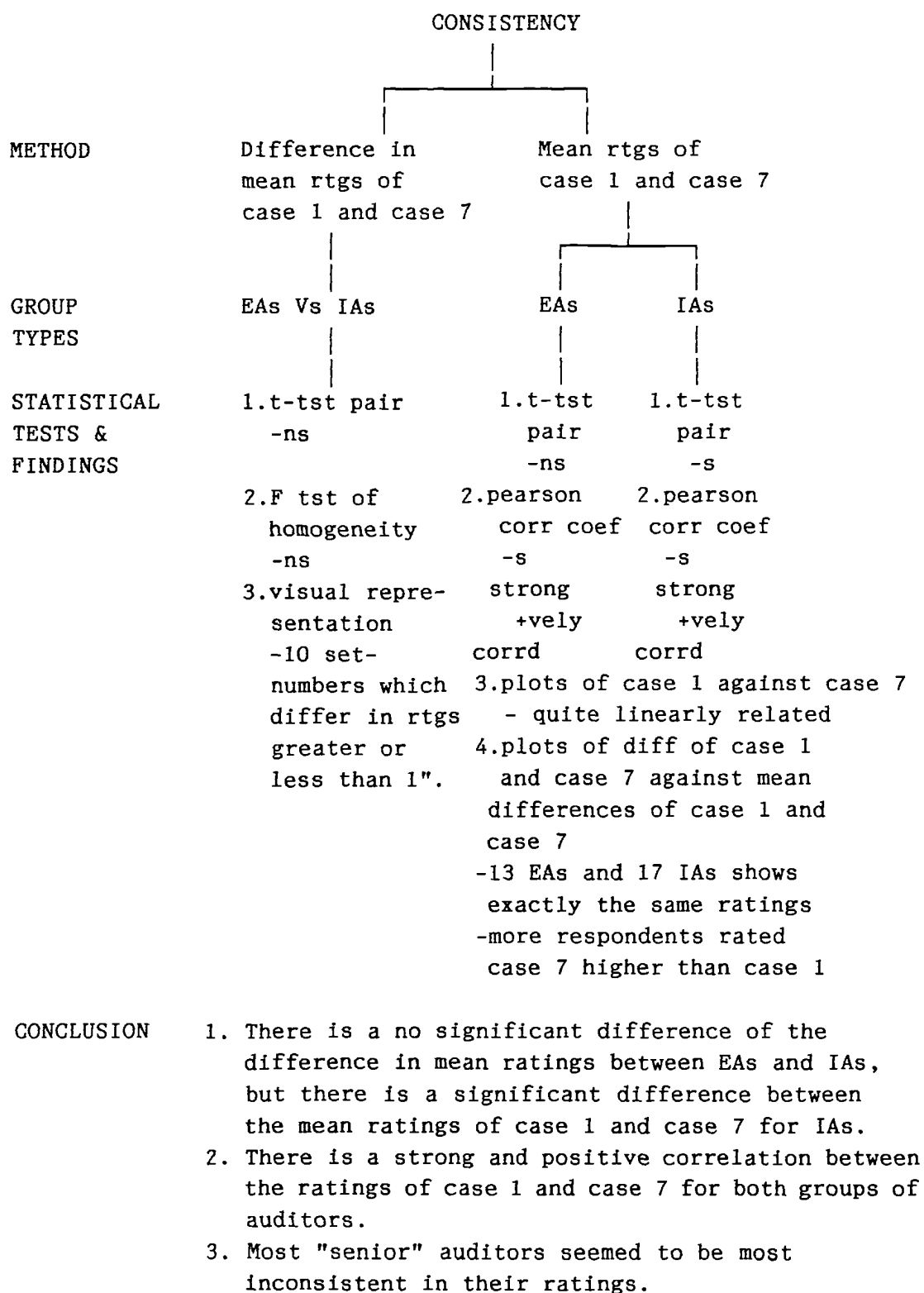


Figure 6.17: Summary of findings on consistency

6.5.2.1 Repeat cases

HB: THERE IS A SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSISTENCY BETWEEN IAs AND EAs.

(Consistency is defined as the variation in judgement of case 1 and case 7).

a) Difference in ratings of case 1 and case 7 between EAs and IAs

Examination of this hypothesis is important because one of the criteria required for expert status is that an individual should have high intra-judgemental consistency (Einhorn 1974, 563).

Consistency was determined by the test-retest method. Case 1 and case 7 were the repeat cases that are used for the purpose of testing this hypothesis.

H1a: There is a significant difference in the difference in the ratings of case 1 and case 7 between EAs and IAs

The difference in ratings of case 1 and case 7 for EAs is compared with the difference in ratings of case 1 and case 7 for IAs.

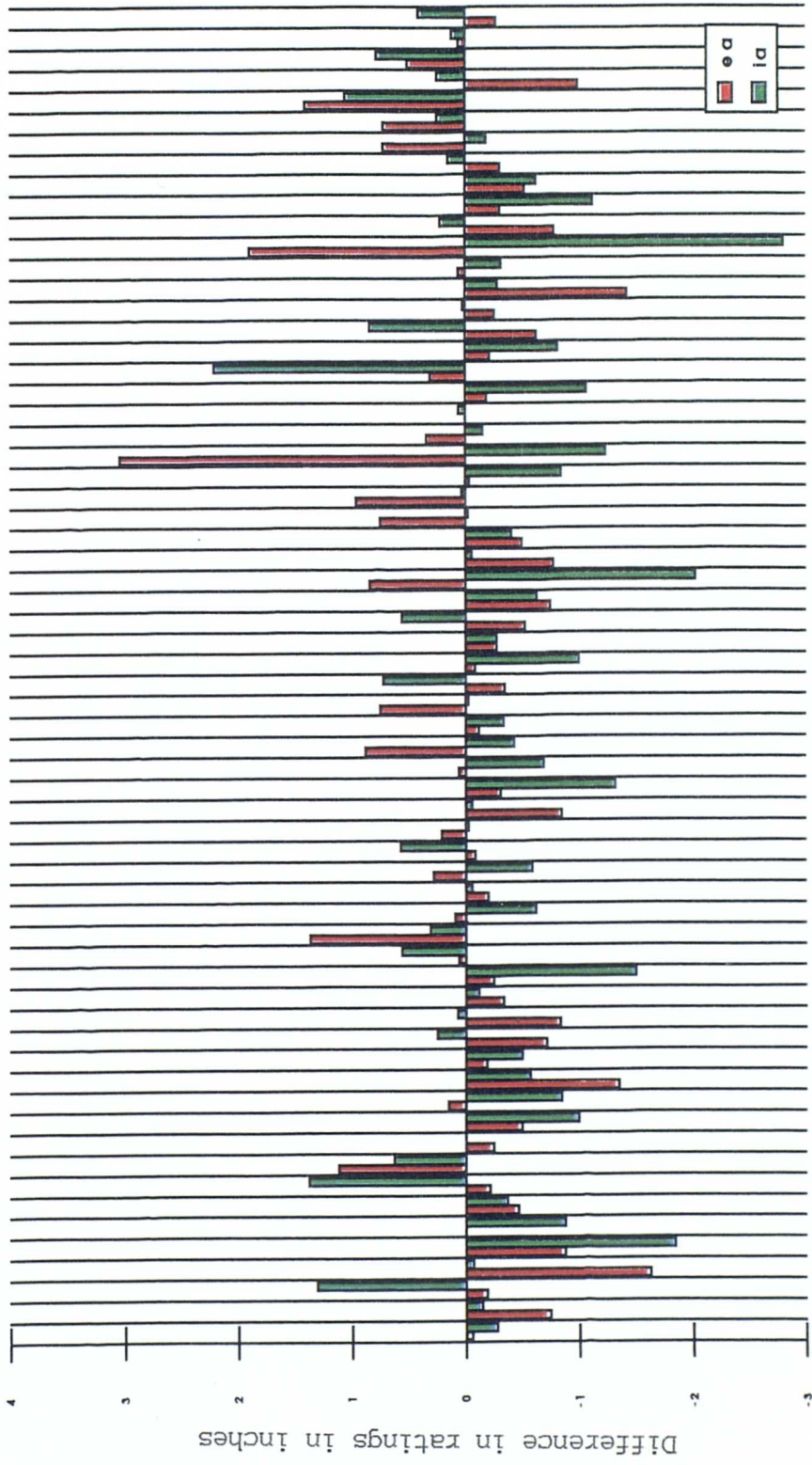
EAs(exdf17)			IAs(indf17)				
<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
64	-.0452	.782	64	-.2637	.805	1.47	.145

Conclusion: Reject H1a. There is no significant difference in the difference in ratings of case 1 and case 7 between EAs and IAs.

Figure 6.18 examines the differences in evaluation of case 1 and case 7.

Figure 6.18 shows that there are 10 setnumbers which the auditors differ in their ratings of case 1 and 7 by a difference of greater than -1" or +1". The setnumbers are: 3, 4, 5, 18, 20, 27, 37, 43, 47 and 48. The pairs of auditors who answered the setnumbers were noted and a random check was done on the answers given by the auditors to determine if they had rated the other questions without giving much thought to them. From their answers to the other questions, it was found that the auditors concerned did appear to have answered them cautiously.

In fact when the personal profiles of the auditors were examined, it was found that 7 out of 10 pairs of auditors that were involved were partners or head of departments, were very experienced and have professional qualifications. Thus it appears that the auditors who were most inconsistent in their answers were the "senior" auditors. This raises interesting questions for possible further research into whether "senior" auditors were most inconsistent in internal control evaluation and if so, why?



Setnumbers

Figure 6.18: Differences in evaluation of case 1 and case 7 between EAs and IAs

b) Difference in the variation of judgement between EAs and IAs

H1b: There is a significant difference in the variation of judgement consistency between EAs and IAs

<u>Variables</u>	<u>Variance</u>		<u>Observed value</u>
Difference in ratings of case 1 and case 7	-EAs	.611	.648/.611
	-IAs	.648	=1.061

Conclusion: Reject H1b since the observed value is less than the F value of 1.527. There is no significant difference in the variation of judgement consistency between EAs and IAs.

c1) Difference in ratings of case 1 and case 7 amongst EAs

There were two methods to test this hypothesis; one is by running a paired t-test on the difference in ratings of both cases within the 2 groups of auditors and the other is by examining visibly by means of a graph. The graph compares the difference in ratings of case 1 and case 7 and the mean in ratings of case 1 and case 7 for both of the groups.⁹⁰ Pearson correlation coefficient was also computed to see whether the ratings of case 1 and case 7 were highly correlated.

Previous research (Ashton, 1974; Bailey, 1981) have calculated Pearson correlation of the repeat cases

⁹⁰ Bland & Altman (1986) argued that plotting a graph of the difference between two ratings against their mean is a better approach than computing correlation coefficients.

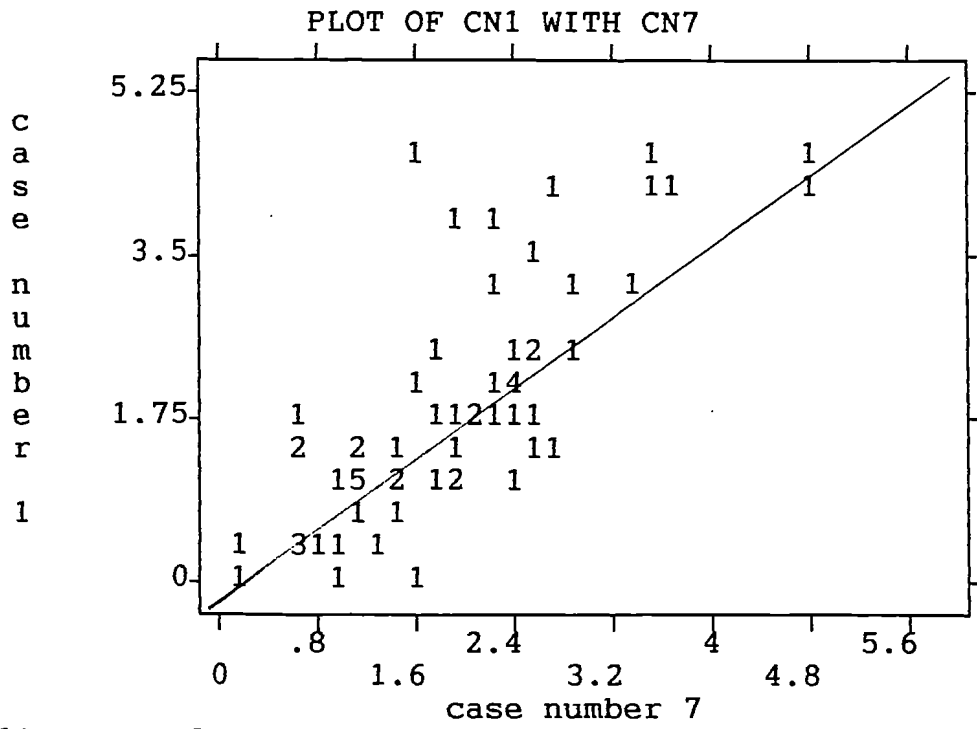
(number of repeat cases varying from 6 to 32) and use it as a measure of consistency level. In this thesis, there is only one repeat case and thus a graph would be more informative. Nevertheless, a correlation coefficient comparing the 2 ratings is also computed for the purpose of comparing with previous results.

H1c¹: There is a significant difference in the ratings of case 1 and case 7 amongst EAs

EAs (excn1)			EAs (excn7)			t_val	sig
n	mean	sd	n	mean	sd		
64	1.8433	1.235	64	1.8884	.979	-.46	.646

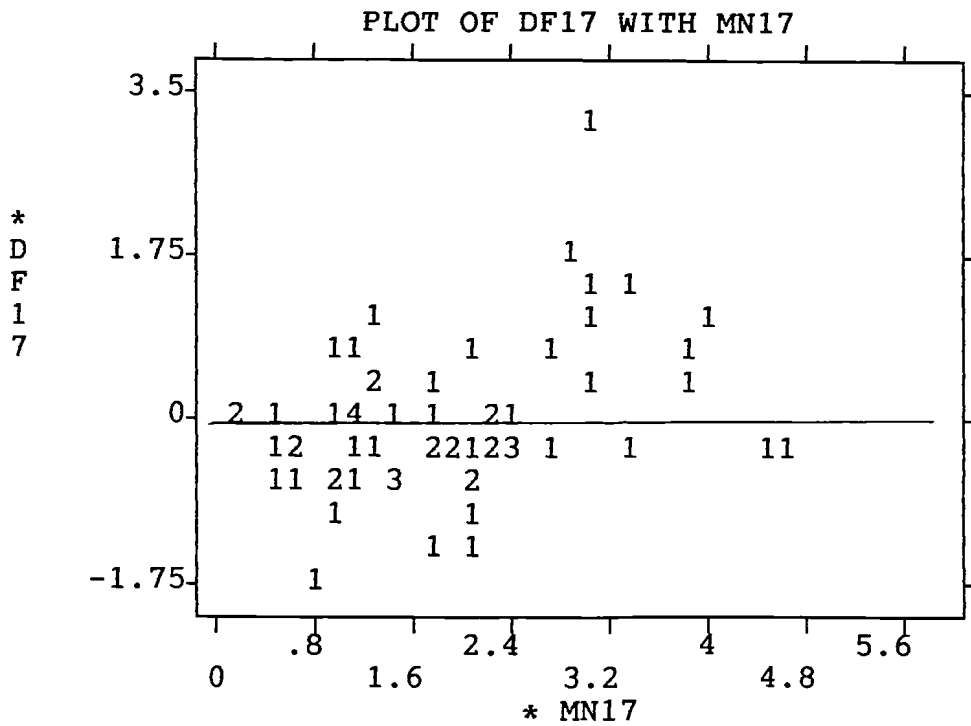
Conclusion: Reject H1c¹. There is no significant difference in the ratings of case 1 and case 7 amongst EAs.

Figure 6.19 is a plot comparing the evaluation of case 1 and case 7 by EAs and Figure 6.20 shows the plots comparing the difference of evaluation of the two cases against the mean of the cases for EAs.



64 cases plotted.

Figure 6.19: Plot of case 1 and case 7 for EAs



64 cases plotted.

Figure 6.20: Plot of difference in ratings of case 1 and case 7 against the mean of the difference for case 1 and case 7 for EAs

* $DF17 = (\text{case 1} - \text{case 7})$.
 * $MN17 = (\text{case 1} - \text{case 7}) / 2$.

As can be seen from the two figures, the plots of case 1 and case 7 can be said to be linearly related for the EAs. EAs seem to have rated case 7 higher than case 1 because there are a lot of negative differences as compared to positive differences.

c2) Difference in ratings of case 1 and case 7 between IAs

H1c²: There is a significant difference between the ratings of case 1 and case 7 amongst IAs

IAs(incn1)			IAs (incn7)			t val	sig
n	mean	sd	n	mean	sd		
64	1.6200	1.105	64	1.8837	1.098	-2.62	.011*

Conclusion: Accept H1c¹. There is a significant difference in the ratings of case 1 and case 7 amongst IAs.

To examine the correlation between the ratings of the repeat cases by EAs, Pearson correlation was calculated since it involves "interval" data.

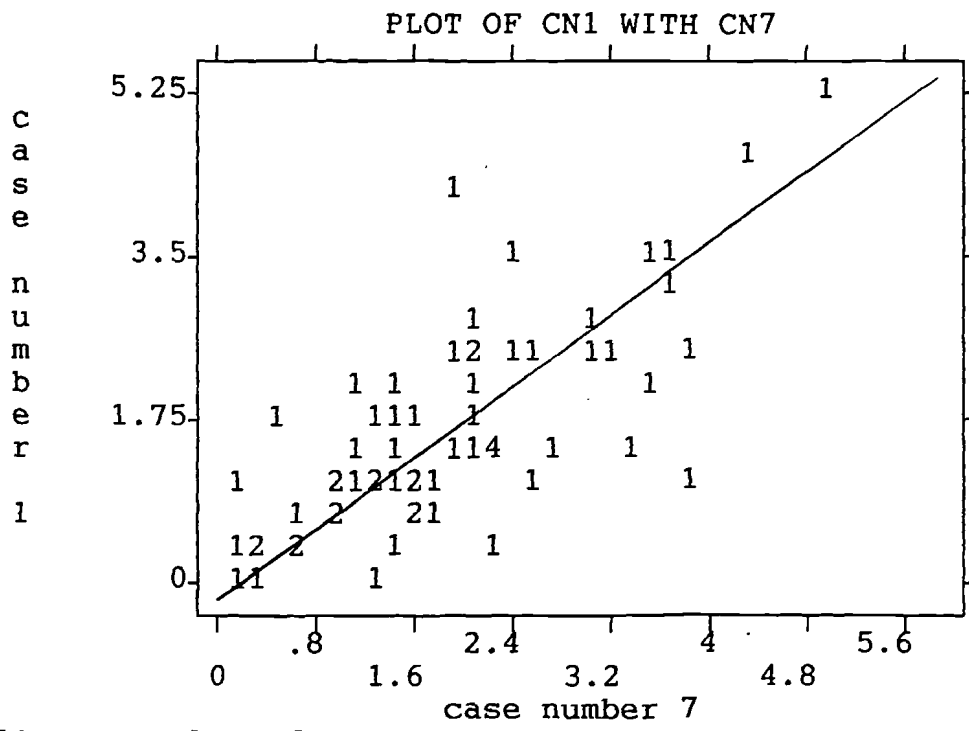
Variables	Pearson coef.	s(sig)/ns(not sig.)
excn1 with excn7	.7746**	** s

Table 6.34: Coefficient correlation of case 1 and case 7 between EAs

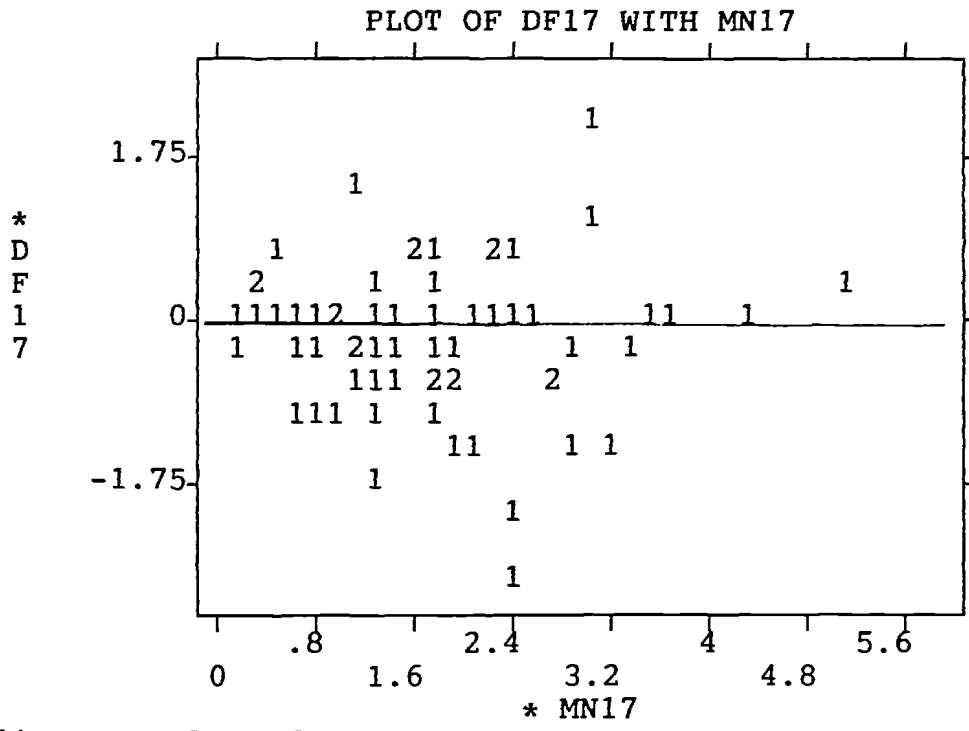
** s-significant at .001 (1 tail).

The result shows that the ratings of the 2 cases is strong and positively correlated for EAs.

Graphs comparing IA's ratings of Case 1 and Case 7 were plotted as shown in Figure 6.21 and 6.22.



64 cases plotted.
Figure 6.21: Plot of case 1 and case 7 for IAs



64 cases plotted.
Figure 6.22: Plot of difference in ratings between case 1 and case 7 against mean of the difference for case 1 and case 7 for IAs

* $DF17 = (\text{case 1} - \text{case 7})$.
 $MN17 = (\text{case 1} - \text{case 7}) / 2$.

Similar to EAs, the plots of case 1 and case 7 can be said to be linearly related for the IAs. As for the plots of means against difference, there is more consistency for IAs as there are a lot more auditors that fall on the "0" line. The IAs also rate case 7 higher than case 1.

Pearson correlation was calculated to examine the relationship between IAs' ratings of the two repeat cases.

Variables	Pearson coef.	s(sig)/ns(not sig.)
incn1 with incn7	.7328**	** s

Table 6.35: Coefficient correlation of case 1 and case 7 between IAs

** s-significant at .001 (1 tail).

The result shows that the ratings of the two cases by IAs is strong and positively correlated.

6.5.2.2 DISCUSSION OF FINDINGS ON CONSISTENCY

Overall, the results showed no significant difference in judgement consistency between EAs and IAs. When a t-test was done for each group, EAs showed no significant difference between the ratings of the repeat cases. There was also a strong correlation between the ratings of the 2 cases. IAs, on the other hand showed a significant difference between the repeat cases but there was also a strong correlation between their ratings. EAs (.7746) showed a higher consistency level than IAs (.7328) as observed by the correlation coefficient.

Compared with previous results as shown in Table 6.36, it

can be seen that EA's average level of consistency of .77 and IA's average level of consistency of .73 is consistent with previous results. Landry (1989) reported an average level of consistency of .69 for External EDP auditors and .72 for Internal EDP auditors. Ashton (1974) and Ashton and Brown (1979) reported a slightly higher consistency level of .81 and .91 respectively for EAs but Hamilton and Wright (1977) reported a consistency level of .76 for EAs which is consistent with this study.

	Avg. level of consistency
EAs: Internal control evaluation Ashton (1974)	.81
Hamilton & Wright (1977)	.76
Ashton & Brown (1980)	.91
Gaumnitz et al. (1982)	.825
Students and others: Internal control evaluation Trotman, Yetton & Zimmer (1983)	.73(individual) .89(2 group team) .91(3 group team)
EAs: Other types of research Joyce (1976)	.863
Other types of research not in accounting: Hoffman et al. (1968)- radiologists	.80
Reliance on IAs: Brown (1983)	.79
IAs and EAs: Evaluation of: a) EDP control system- Landry (1989)	Ext EDP: .69 Int EDP: .72

Table 6.36: Summary of judgement consistency in previous studies

6.5.3 EFFECTS OF VARIOUS VARIABLES ON JUDGEMENT CONSENSUS AND CONSISTENCY

The effect of 7 variables (i.e, experience level, position level, educational level, types of professional qualification, level of independence of IAs, types of independence of IAs and firm size) on judgement consensus and judgement consistency was investigated. As there were basically three approaches or techniques of evaluation ("ICQ", "CO" and "CR") of internal control system examined in this thesis, the effect of the variables was investigated for all three approaches. Pearson correlation was calculated for EAs and IAs according to the different categories of the variables as shown in Table 6.37 and 6.38.

A t-test group or a oneway ANOVA was then used (depending on the number of categories available in each variable) to examine the effects of the variables on judgement consensus (by means of the "ICQ", "CR" and "CO" approach) and judgement consistency.

For example, "judgement consensus" for the variable "experience" using the "ICQ" approach is calculated in the following way:

- (a) Pearson correlation coefficient was calculated for each different category using the formula below:

$$\boxed{\text{Total correlation} - 1/(n-1)}$$

where 1 is deducted from the total computation as

well as from "n" in order to minus the effect of correlation with itself.

Pearson correlation is calculated for each group of EAs and IAs separately.

(b) Since the variable "experience" has three categories, a one-way ANOVA was used to examine the effect of these categories on judgement consensus.

The same step of calculation is done for the rest of the variables for judgement consensus using "CR" and "CO" approach.

As for judgement consistency using the "ICQ" approach, a Pearson correlation examining the relationship of case 1 and case 7 was calculated for the auditors in that particular category of the "experience" variable. A one-way ANOVA was then used to examine the effect of the categories of the "experience" variable on judgement consistency. The steps were repeated for judgement consistency using "CR" and "CO" approach.

EFFECT OF VARIABLES ON JUDGEMENT CONSENSUS BY "ICQ" APPROACH

VARIABLES	Exper- ience level	Have prof qual	Type of prof qual	Position level	Firm size	Indepen- dence of IAs	Types of indep- of IAs
VARIA- BLES	1.1-3 2.3-6	1.Yes 2.No	1.CA 2.CACA/ CIMA 3.CIA/ MIIA	1.Prtnr/ Hd 2.Mgr/ Aud mgr 3.Sr/Sr IA 4.Jr/Jr IA	1.lrg 2.oths	1.very 2.mod 3.least	1.Organ a)very b)mod c)least 2.Compet a)very b)mod c)least 3.Econs a)very b)mod c)least
RELA- TION- SHIP WITH JUDG- MENT CON- SEN- SUS	1.EAs none 2.IAs none	1.EAs +ve 2.IAs -ve	1.EAs +ve 2.IAs none	1.EAs none 2.IAs none	1.EAs -ve *N/A 2.IAs none	1.EAs *N/A 2.IAs +ve	1.IAs: Orgn: none Comp: none Econs: none

STATIS-
TICAL
TESTS &
FINDINGS

1. Spearman correlation was calculated for each category of the variables. A t-test group was then done on the categories. Although there are varying correlation coefficients for the categories of each variable (some positive and some negative), all the variables show that there is no significant difference within the categories of each variable.

*N/A - not applicable

Figure 6.23: Summary of findings of "variables" on judgement consensus using "ICQ" approach

EFFECT OF VARIABLES ON JUDGEMENT CONSISTENCY BY "ICQ" APPROACH

VARIABLES	Experience level	Have prof qual	Type of prof qual	Position level	Firm size	Independence of IAs	Types of indep- of IAs
VARIABLES	1.1-3	1.Yes	1.CA	1.Prtnr/	1.lрге	1.very	1.Organ
BLES	2.3-6	2.No	2.CACA/	Hd	2.oths	2.mod	a)very
GATE-	3.>6		CIMA	2.Mgr/		3.least	b)mod
GORIES			3.CIA/	Aud mgr			c)least
			MIIA	3.Sr/Sr			2.Compet
				IA			a)very
				4.Jr/Jr			b)mod
				IA			c)least
							3.Econs
							a)very
							b)mod
							c)least
RELA-	1.EAs	1.EAs	1.EAs	1.EAs	1.EAs	1.EAs	1.IAs:
TION-	none	+ve	-ve	none	+ve	N/A	Orgn:
SHIP	2.IAs	2.IAs	2.IAs	2.IAs	2.IAs	2.IAs	none
WITH	-ve	-ve	none	-ve	+ve	none	Comp:
JUDG-							-ve
MENT							Econs:
CON-							none
SEN-							
SUS							

STATIS- 1. Spearmen correlation was calculated for each
TICAL category of the variables. A t-test group was then
TESTS & done on the categories. Although there are varying
FINDINGS correlation coefficients for the categories of each
variable (some positive and some negative), all the
variables show that there is no significant
difference within the categories of each variable.

Figure 6.24: Summary of findings of "variables" on judgement consistency

EFFECT OF VARIABLES ON JUDGEMENT CONSENSUS BY "CR" APPROACH

VARIABLES	Exper- ience level	Have prof qual	Type of prof qual	Position level	Firm size	Indepen- dence of IAs	Types of indep- of IAs
VARIA- BLES	1.1-3	1.Yes	1.CA	1.Prtnr/ Hd	1.lрге	1.very	1.Organ
CATE- GORIES	2.3-6	2.No	2.CACA/ CIMA	2.Mgr/ Aud mgr	2.oths	2.mod	a)very
	3.>6		3.CIA/ MIIA	3.Sr/Sr IA		3.least	b)mod
				4.Jr/Jr IA			c)least
							2.Compet
							a)very
							b)mod
							c)least
							3.Econs
							a)very
							b)mod
							c)least
RELA- TION- SHIP WITH JUDG- MENT CON- SEN- SUS	1.EAs none	1.EAs +ve	1.EAs +ve	1.EAs -ve	1.EAs +ve	1.EAs N/A	1.IAs: Orgn: none
	2.IAs	2.IAs	2.IAs	2.IAs	2.IAs	2.IAs	Comp: +ve
	-ve	+ve	none	none	none	none	Econs: none

STATIS- 1. Spearmen correlation was calculated for each
TICAL category of the variables. A t-test group was then
TESTS & done on the categories. Although there are varying
FINDINGS correlation coefficients for the categories of each
variable (some positive and some negative), all the
variables show that there is no significant
difference within the categories of each variable.

Figure 6.25: Summary of findings of "variables" on judgement consensus using "CR" approach

EFFECT OF VARIABLES ON JUDGEMENT CONSENSUS BY "CO" APPROACH

VARIABLES	Exper- ience level	Have prof qual	Type of prof qual	Position level	Firm size	Indepen- dence of IAs	Types of indep- of IAs
VARIA- BLES CATE- GORIES	1.1-3 2.3-6 3.>6	1.Yes 2.No	1.CA 2.CACA/ CIMA 3.CIA/ MIIA	1.Prtnr/ Hd 2.Mgr/ Aud mgr 3.Sr/Sr IA 4.Jr/Jr IA	1.lрге 2.oths	1.very 2.mod 3.least	1.Organ a)very b)mod c)least 2.Compet a)very b)mod c)least 3.Econs a)very b)mod c)least
RELA- TION- SHIP WITH JUDG- MENT CON- SEN- SUS	1.EAs +ve 2.IAs none	1.EAs -ve 2.IAs -ve	1.EAs +ve 2.IAs +ve	1.EAs none 2.IAs none	1.EAs -ve 2.IAs +ve	1.EAs N/A 2.IAs +ve	1.IAs: Orgn: none Comp: none Econs: +ve

STATIS- 1. Spearmen correlation was calculated for each
TICAL category of the variables. A t-test group was then
TESTS & done on the categories. Although there are varying
FINDINGS correlation coefficients for the categories of each
variable (some positive and some negative), all the
variables show that there is no significant
difference within the categories of each variable.

Figure 6.26: Summary of findings of "variables" on judgement consensus using "CO" approach

HC: THERE IS A SIGNIFICANT DIFFERENCE OF CONSENSUS AND CONSISTENCY LEVEL BETWEEN EAs AND IAs WITH RESPECT TO THE 7 VARIABLES

The results showed that all the 7 variables had no effect on judgement consensus or consistency by "ICQ" approach.

The relationship of the variables with judgement

consensus and judgement consistency (based on pearson correlation coefficient) is presented in Table 6.37.

Variables		Judgement consensus #1		Judgement consistency #2	
		EAs	IAs	EAs	IAs
		.82	.80	.77	.73
Experi- ence (yrs)	>6(33)*	.81	.79	.71	.66
	3 to 6(22)	.83	.80	.92	.75
	1 to 3(9)	.79	.80	.73	.93
Have prof. qualif- icati- ons	Yes(52)	.83	.79	.81	.68
	No(12)	.77	.82	.70	.84
Type of qualif- icati- ons	1(CA) (49)	.83 (49)	.78 (15)	.79	.77
	2(CACA,CIMA) (3)	.75 (3)	.78 (17)	.98	.89
	3(CIA,MIIA)	no audtr	.80 (20)	no audtr	.33
Posi- tion level	1-Prtnr/Head of IA(16)	.81	.78	.81	.46
	2-Mgr/Audit Mgr(13)	.80	.80	.45	.81
	3-Sr/Sr IA(20)	.82	.81	.89	.82
	4-Jr/IA(15)	.82	.78	.57	.87
Firm size	1-large (29)	.81 (29)	.80 (32)	.88 (29)	.75 (32)
	2-others (35)	.82 (35)	.80 (32)	.73 (35)	.73 (32)
Independence of IAs	1-very		.79#3		.80#4
	2-mod		.79#3		.86#4
	3-least		.78#3		.75#4

Variables			Judgement consensus #1		Judgement consistency #2	
			EAs .82	IAs .80	EAs .77	IAs .73
Types of independence of IAs #5	Organisational independence	1-very (17)		.81		.90
		2-mod (8)		.78		.98
		3-least (38)		.79		.60
	Competency	1-very (31)		.79		.65
		2-mod (25)		.80		.74
		3-least (8)		.80		.93
	Economics and other influences	1-very (38)		.79		.79
		2-mod (20)		.80		.75
		3-least (3)		.71		.83

Table 6.37: Comparison of EAs and IAs judgements according to the different variables using "ICQ" approach

* number in (brackets) represents number of auditors in each variable category

#1 all calculations are based on the total correlations of auditors in each group $-1/(n-1)$; where n is the number of auditors in each group. "1" is deducted from the total correlation and from "n" in order to minus the effect of correlation with itself. Pearson correlation is calculated for each group of EAs and IAs separately. Correlations are based on the repeat cases (case 2, case 3, case 4, case 5, case 6 and case 8).

#2 all calculations are based on Pearson correlation of coefficient of case 1 and case 7 of auditors in each group

#3 Total independence⁹¹ coefficient of correlation for consensus using "ICQ approach"

Least independent auditors:

1.Organisational	.79 * 3 ^d	= 2.37
2.Competency	.80 * 2 ^e	= 1.60
3.Econs & Other influences	.71 * 1 ^f	= .71
Total		<u>4.68</u>

Total independence coefficient correlation(ICQ) = $4.68/6 = .78$

#d- correlation coefficient is multiplied by 3 because it is the most important factor.

#e- correlation coefficient is multiplied by 2 because it is the second important factor.

#f- correlation coefficient is multiplied by 1 because it is the least important factor.

⁹¹ Independence of IAs has been discussed in Chapter 2. There are basically 3 types of independence mentioned in the auditing standards and literature. These 3 types of independence (organisational level, competency and economic and other influences) are being used here. The calculation of types of independence is shown in Chapter 5, Figure 5.3. The weighting of the types of independence was based on Ritterberg's findings (1977, 19), whereby, the respondents rated "organisational independence" the highest, followed by "competency" and lastly "economic and other influences".

Moderately independent auditors:

1.Organisational	.78 * 3=	2.34
2.Competency	.80 * 2=	1.60
3.Econs & Other influences	.80 * 1=	.80
Total		<u>4.74</u>

Total independence coefficient correlation(case)=4.74/6=.79

Very independent auditors:

1.Organisational	.81 * 3=	2.34
2.Competency	.79 * 2=	1.60
3.Econs & Other influences	.79 * 1=	.80
Total		<u>4.74</u>

Total independence coefficient correlation(case)=4.74/6=.79

#4 Total independence coefficient of correlation for consistency using the "ICQ" approach"

Least independent auditors:

1.Organisational	.60 * 3=	1.80
2.Competency	.93 * 2=	1.86
3.Econs & Other influences	.83 * 1=	.83
Total		<u>4.49</u>

Total independence coefficient correlation(case)=4.49/6=.75

Moderately independent auditors:

1.Organisational	.98 * 3=	2.94
2.Competency	.74 * 2=	1.48
3.Econs & Other influences	.75 * 1=	.75
Total		<u>5.17</u>

Total independence coefficient correlation(case)=5.17/6=.86

Very independent auditors:

1.Organisational .90 * 3= 2.70
 2.Competency .65 * 2= 1.30
 3.Econs & Other influences .80 * 1= .80

Total 4.80

Total independence coefficient correlation(case)=4.80/6=.80

Table 6.38 also showed that the 7 variables had no effect on judgement consensus by the "CR" and "CO" approach.

Variables		Judgement consensus(CR) #1		Judgement consensus(CO) #2	
		EAs .07	IAs .03	EAs .32	IAs .22
Exper- ience (years)	>6(33)*	.03	.02	.31	.21
	3 to 6(22)	.07	-.01	.29	.15
	1 to 3(9)	-.02	-.09	.25	.15
Have prof qualifi- cations	Yes(52)	.06	.03	.32	.21
	No(12)	.01	-.05	.25	.18
Type of quali- ficat- ions	1(CA) (49)	.06 (49)	-.02 (15)	.32 (49)	.20 (15)
	2(CACA, CIMA, CIPFA) (3)	-.43 (3)	.01 (17)	-.12 (3)	.17 (17)
	3(CIA, MIIA)	no audtr	-.03 (20)	no audtrs	.16 (20)
Position level	1-Prtnr/Hd of IA(16)	-.02	-.03	.27	.17
	2-Mgr/Audit Mgr(13)	.00	-.02	.28	.19
	3-Sr/Sr IA (20)	.04	-.01	.30	.19
	4-Jr/IA(15)	.05	-.03	.27	.17

Firm size	1-large		.06 (29)	.01 (32)	.30 (29)	.21 (32)
	2-others		.04 (35)	.01 (32)	.31 (35)	.20 (32)
Independence of IAs	1-very			#3 .03		.18 #4
	2-mod			#3 -.22		.15 #4
	3-least			#3 -.11		.13 #4
Types of independence of IAs	Organisational	1-very		.00		.16
		2-mod		-.08		.11
		3-least		.01		.22
	Competency	1-very		.01		.20
		2-mod		.00		.20
		3-least		-.10		.14
	Econs and other influences	1-very		.01		.21
		2-mod		.02		.19
		3-least		-.47		-.15

Table 6.38: Comparison of EAs and IAs judgement consensus according to the different variables using "CR" and "CO" approach

* number in (brackets) represents number of auditors in each variable category

#1 all calculations are based on the total correlations of auditors in each group $-1/(n-1)$; where n is the number of auditors in each group. "1" is deducted from the total computation in order to minus the effect of

correlation with itself. Pearson correlation is calculated for each group of EAs and IAs separately. Correlations are based on the ratings of internal control risk (CR) for the 8 ICPs. Missing cases (approximately 3) are substituted with the mean ICP in order for the correlation to be computed.

#2 all calculations are based on the total correlations of auditors in each group $-1/(n-1)$; where n is the number of auditors in each group. "1" is deducted from the total computation in order to minus the effect of correlation with itself. Pearson correlation is calculated for each group of EAs and IAs separately. Correlations are based on the extent to which the auditors think that the 8 ICPs are able to achieve the 5 control objectives (CO). Missing cases (approximately 3) are substituted with the mean ICP in order for the correlation to be computed.

#3 Total independence coefficient correlation for consensus using "CR" approach

Least independent auditors:

1.Organisational	.01 * 3=	0.03
2.Competency	-.10 * 2=	-.20
3.Econs & Other influences	-.47 * 1=	-.47

Total -.64

Total independence coefficient correlation(CR)=-.64/6=
-.11

Moderately independent auditors:

1.Organisational	- .08 * 3=	-0.24
2.Competency	.00 * 2=	0.00
3.Econs & Other influences	.02 * 1=	.02

Total -0.22

Total independence coefficient correlation(CR)=-0.22/6=
-.04

Very independent auditors:

1.Organisational	.00 * 3=	0.00
2.Competency	.01 * 2=	0.02
3.Econs & Other influences	.01 * 1=	.01

Total 0.03

Total independence coefficient correlation(CR)=0.03/6=
.005.

#4 Total independence coefficient correlation using "CO" approach

Least independent auditors:

1.Organisational	.22 * 3=	0.66
2.Competency	.14 * 2=	.28
3.Econs & Other influences	-.15 * 1=	-.15

Total .79

Total independence coefficient correlation(CO) =0.79/6=
.13

Moderately independent auditors:

1.Organisational	.11 * 3=	0.33
2.Competency	.20 * 2=	0.40
3.Econs & Other influences	.19 * 1=	.19

Total 0.92

Total independence coefficient correlation(CO) = 0.92/6=
.15

Very independent auditors:

1.Organisational	.16 * 3=	0.48
2.Competency	.20 * 2=	0.40
3.Econs & Other influences	.21 * 1=	.21

Total 1.09

Total independence coefficient correlation(CO) =1.09/6=
.18

Table 6.39 summarizes the relationship of the findings.

It is based on the results of Tables 6.37 and 6.38.

CON- SEN- SUS	EXPER- IENCE			HAVE PROF QUALIF			TYPE OF QUALIF			POSI- TION LEVEL			FIRM SIZE			INDE- PENDENCE LEVEL OF IAs			TYPES OF INDEP OF IAs		
	+	-	N	+	-	N	+	-	N	+	-	N	+	-	N	+	-	N	+	-	N
	v	v	i	v	v	i	v	v	i	v	v	i	v	v	i	v	v	i	v	v	i
	e	e	l	e	e	l	e	e	l	e	e	l	e	e	l	e	e	l	e	e	l
ICQ: EAs			E A	E A			E A					E A			E A						
IAs			I A		I A				I A			I A			I A			I A			O *
																					C
																					E
CR: EAs			E A	E A			E A					E A			E A						
IAs	I A			I A					I A			I A			I A			I A			O
																			C		
																					E
CO: EAs	E A			E A			E A					E A			E A						
IAs			I A	I A			I A					I A	I A			I A					O
																					C
																			E		
CON- SIS- TEN- CY: EAs			E A	E A					E A			E A	E A								
IAs		I A			I A				I A			I A			I A			I A			O
																				C	
																					E

Table 6.39: Relationship of the variables on "judgement consensus" and "judgement consistency" by using "ICQ", "CR" and "CO" approach
 * "O,C E" represents the 3 types of independence of IAs

As can be seen from Table 6.39, comparing the effect of the 7 variables over judgement consensus and consistency, it can be seen that "whether an auditor have professional qualification" shows the greatest number of relationships (either positive or negative) for both groups of auditors. For judgement consensus using "CR" and "CO" approach, there is a positive relationship of the variable (have professional qualification) for both EAs and IAs. Thus it seems that EAs and IAs that "have professional qualification" can reach a consensus better than those without professional qualifications.

However, for judgement consensus using "ICQ" approach, there is a positive relationship of the variable for EAs but not for IAs. This means to say that EAs that "have professional qualification" can reach consensus better than those without professional qualifications but this is not true for IAs. The same comments can be made for judgement consistency.

Other interesting observations are that "types of qualification" have a positive relationship on judgement consensus for EAs but that "position level" have no or negative effect on the judgement consensus of both EAs and IAs.

For the purpose of comparing the results from the present study to previous research, Table 6.40 is prepared which is based on information from Table 6.39 (using "ICQ

approach" only as previous research had only used this approach).

Variables	Judgement consensus			Judgement consistency			Judgement insight		
	None	Negative	Positive	None	Negative	Positive	None	Negative	Positive
Experience	Moo-re 1993	Ash-ton 1974	Rec-kers & Tay-lor 1979	Han 1986		Ash-ton & Bro-wn 1980	Ash-ton & Kra-mer 1980	Ash-ton 1974	Rec-kers & Tay-lor 1979
	Han 1987	Ham-il-ton & Wri-ght 1977	Ash-ton & Bro-wn 1980	Ham-ilt-on & Wri-ght 1977	THIS STUDY 1995 IAs			Hall Yet-ton & Zim-mer 1982	Ash-ton & Bro-wn 1980
	Bai-ley 1981	Ha-ll, Yet-ton & Zim-mer 1982	Lib-by 1985	THIS STUDY 1995 EAs				Slo-vic et al. 1972	Ham-il-ton & Wri-ght 1977
	THIS STUDY 1995 EAs & IAs	Joy-ce ⁹² 1976	Lan-dry 1989 EAs						
			Has-kins 1984						
			Basu 1992 ⁹³						

⁹² Allocation of budget hours to ICPs unlike the rest which requires auditors to evaluate internal control system.

⁹³ Evaluation of control environment.

Variables	Judgement consensus			Judgement consistency			Judgement insight		
	None	Ne- ga- ti- ve	Po- si- ti- ve	None	Ne- ga- ti- ve	Po- si- ti- ve	None	Ne- ga- ti- ve	Po- si- ti- ve
Educational level /Have prof qual	Moore 1993	THIS STUDY 1995 IAs	THIS STUDY 1995 EAs		THIS STUDY 1995 IAs	THIS STUDY 1995 EAs			
Types of qual	THIS STUDY 1995 IAs		THIS STUDY 1995 EAs	THIS STUDY 1995 IAs	THIS STUDY 1995 EAs				
Position level	Moore 1993 Basu 1992 THIS STUDY 1995 EAs AND IAs	Landry 1989 IAs	Landry 1989 EAs Meixner 1985	THIS STUDY 1995 EAs	THIS STUDY 1995 IAs				

Variables	Judgement consensus			Judgement consistency			Judgement insight		
	None	Negative	Positive	None	Negative	Positive	None	Negative	Positive
Firm size/ Inter firm differences	Han 1987 Ash-ton 1974 Bai-ley 1981 Basu 1992 THIS STUDY 1995 IAs	THIS STUDY 1995 EAs	Lan-dry 1989 Tab-or 94 1983 Joy-ce 1976	Han 1987		THIS STUDY 1995 EAS & IAs	Ham-ilt-on & Wri-ght 1977		Has-kins 1984 Moo-re 1993
Independence of IAs	Moo-re 1993 THIS STUDY 1995 IAs			THIS STUDY 1995 IAs					

⁹⁴ Determining sample size

Variables		Judgement consensus			Judgement consistency			Judgement insight		
		None	Ne- ga- ti- ve	Po- si- ti- ve	None	Ne- ga- ti- ve	Po- si- ti- ve	None	Ne- ga- ti- ve	Po- si- ti- ve
T y p e s o f I n d e p e n d e n c e	O r g a n i z a t i o n	THIS STU- DY 1995 IAs			THIS STU- DY 1995 IAs					
	C o m p a r i s o n	THIS STU- DY 1995 IAs				THIS STU- DY 1995 IAs				
	E c o n o m i c	THIS STU- DY 1995 IAs			THIS STU- DY 1995 IAs					

Table 6.40: Comparison of findings from the current study with previous studies over the 7 variables.

All the studies in comparison with the current study was done in US with the exception of Hall, Yetton and Zimmer (1982), which was done in Australia. Other studies (not included in the Table) not done in US are studies conducted by Eggleton and Choo (1983) which was done in New Zealand and Trotman, Yetton and Zimmer (1983) which was done in Australia. The current study is the first study of this nature in the UK. It is the hope of the researcher that future studies could be done to

enhance or resolve the issues that have been mentioned in this thesis.

6.5.3.1 DISCUSSION OF FINDINGS OF EFFECTS OF THE 7 VARIABLES ON JUDGEMENT CONSENSUS AND CONSISTENCY

The results showed that none of the 7 variables had an effect on judgement consensus or consistency.

From Table 6.40, it can be seen that there is no relationship between experience level and judgement consensus for both EAs and IAs, which is consistent with research done by Han (1987), Moore (1993) and Bailey (1981) but not consistent with others (example, Ashton, 1974 and Hamilton and Wright, 1977).

Only three research (Bailey, 1981; Landry, 1989 and Moore, 1993) have been done to date that compares EAs' and IAs' evaluation of the internal control system. Overall, it can be said that findings from the present study are consistent with Moore's findings than with the other two studies.

There can be no comparison of judgement insight from the present study because there is only one judgement model for each group of EA and IA as compared to previous research where the judgement models were determined for all the auditors who participated in the study. This is due to the fact that previous research requires each auditor to answer many more cases (example 32 cases in Ashton's research) compared to the current research which requires auditors to answer 8 cases only. Further discussions can be found in chapter 4.

This research found that there is no effect of independence of IAs on judgement consensus - which is consistent with Moore's findings. Since previous researches have not investigated types of independence of IAs on judgement consensus and consistency, no comparison could be made with those studies. Of the three types of independence, only "competency" showed a negative effect on judgement consistency with "organisational independence" and "economics and other influences" showing no effect on either judgement consensus or consistency.

It is interesting to note from Table 6.40 that the effect of the seven variables on judgement consistency is not in the same direction for EAs and IAs with the exception of variable "firm size" where the relationship is positive for both EAs and IAs. This means to say that EAs and IAs who worked in bigger firms have a greater judgement consistency than those that worked in smaller firms.

6.6 SUMMARY OF FINDINGS ON HYPOTHESES

ISSUES	HA:THERE IS A SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSENSUS BETWEEN IAs AND EAs	FINDINGS
1) Similar cases	H1a:There is a significant difference in the ratings of the 6 similar cases between EAs and IAs	not signif.
	H1b:There is a significant difference of variation in judgement consensus of the cases between EAs and IAs	not signif.
	H1c:There is a significant difference in the mean ratings of the 6 cases between EAs and IAs	not signif.
	H1d:There is a significant difference of the consensus level on the cases between EAs and IAs	not signif.

ISSUES	HA:THERE IS A SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSENSUS BETWEEN IAs AND EAs	FINDINGS
2)Techniques of evaluation	H2a ¹ :There is a significant difference in the ratings of EAs and IAs using "ICQ" as compared to "CO" approach	not signif.
	H2a ² :There is a significant difference in the ratings of EAs using "ICQ" as compared to "CO" approach	signif.
	H2a ³ :There is a significant difference in the ratings of IAs using "ICQ" as compared to "CO" approach	signif.
	H2b ¹ :There is a significant difference in the ratings of EAs and IAs using "ICQ" as compared to "CR" approach	not signif.
	H2b ² :There is a significant difference in the ratings of EAs using "ICQ" as compared to "CR" approach	signif.
	H2b ³ :There is a significant difference in the ratings of IAs using "ICQ" as compared to "CR" approach	signif.
	H2c ¹ :There is a significant difference in the ratings of EAs and IAs using "CO" as compared to "CR" approach	not signif.
	H2c ² :There is a significant difference between the ratings of EAs using "CO" as compared to "CR" approach	not signif.
	H2c ³ :There is a significant difference in the ratings of IAs using "CO" as compared to "CR" approach	not signif.
3)Whether ICPs achieve COs	H3a:There is a significant difference in the ratings on each ICP's ability to achieve each CO between EAs and IAs	not signif.
	H3b:There is a significant difference of consensus level on the ability of each ICP to achieve each CO between EAs and IAs	signif.
	H3c:There is a significant difference in the ratings on the overall ICS's ability to achieve each CO between EAs and IAs	not signif

ISSUES	HA: THERE IS A SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSENSUS BETWEEN IAs AND EAs	FINDINGS
	H3d ¹ : There is a significant difference in the mean ratings of each ICP and the ratings of the overall ICS's ability to achieve each CO amongst EAs	signif.
	H3d ² : There is a significant difference in the mean ratings of each ICP and the ratings of the overall ICS's ability to achieve each CO amongst IAs	signif.
4) Level of CR of ICPs	H4a: There is a significant difference in the ratings of the level of CR of each ICP between EAs and IAs	signif.
	H4b: There is a significant difference of consensus level on the level of CR of each ICP between EAs and IAs	signif.
	H4c: There is a significant difference in the ratings of CR for the overall ICS between EAs and IAs	not signif.
	H4d ¹ : There is a significant difference in the mean ratings of CR for each ICP and the mean ratings of CR for the overall ICS amongst EAs	not signif.
	H4d ² : There is a significant difference in the mean ratings of CR for each ICP and the mean ratings of CR for the overall ICS amongst IAs	signif.
5) Importance of ICPs	H5a: There is a significant difference in the total points allocated to overall ICS between EAs and IAs	signif.
	H5b: There is a significant difference in the mean points given for each ICP between EAs and IAs	not signif.
6) Types of controls	H6a ¹ : There is a significant difference in the mean weighting of accounting and administrative control amongst EAs	signif.
	H6a ² : There is a significant difference in the mean weighting of accounting and administrative control amongst IAs	signif.

ISSUES	HA: THERE IS A SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSENSUS BETWEEN IAs AND EAs	FINDINGS
	H6b: There is a significant difference in the mean weighting of accounting controls between EAs and IAs	signif.
	H6c: There is a significant difference in the mean weighting of accounting controls between EAs and IAs	signif.
	H7a ¹ : There is a significant difference in the ratings of accounting and administrative control for the 5 control objectives amongst EAs.	signif.
	H7a ² : There is a significant difference in the ratings of accounting and administrative control for the 5 control objectives amongst IAs.	signif.
	H7b: There is a significant difference in the ratings of accounting controls for the 5 control objectives between EAs and IAs.	not signif.
	H7c: There is a significant difference in the ratings of administrative controls for the 5 control objectives between EAs and IAs.	not signif.
	H8a ¹ : There is a significant difference in the ratings of control risk of accounting and administrative control amongst EAs	not signif.
	H8a ² : There is a significant difference between the ratings of control risk of accounting and administrative control amongst IAs	not signif.
	H8b: There is a significant difference between the mean ratings of control risk of accounting controls between EAs and IAs	signif.
	H8c: There is a significant difference in the ratings of control risk of administrative controls between EAs and IAs	signif.

ISSUES	HA:THERE IS A SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSENSUS BETWEEN IAs AND EAs	FINDINGS
OVERALL CONCLUSION	THERE IS NO SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSENSUS BETWEEN IAs AND EAs	***NOT SIGNIF

Table 6.41: Summary of hypotheses on judgement consensus

*** The overall result is not significant since the main sub-hypotheses of testing this hypothesis (concerning the ratings made on the "similar cases" that is hypotheses H1a to H1d all shows a non-significant result). Another reason for this overall conclusion is that the main hypothesis (HA) is concerned with judgement consensus between EAs and IAs and if the sub-hypotheses are examined closely, majority of the sub-hypotheses comparing EAs and IAs showed a non-significant result.

ISSUES	HB:THERE IS A SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSISTENCY BETWEEN IAs AND EAs	FINDINGS
1)Repeat cases	H1a:There is a significant difference in the difference in ratings of case 1 and case 7 between EAs and IAs	not signif.
	H1b:There is a significant difference in the variation of judgement consistency between EAs and IAs	not signif.
	H1c ¹ :There is a significant difference between the ratings of case 1 and case 7 amongst EAs	not signif.
	H1c ¹ :There is a significant difference between the ratings of case 1 and case 7 amongst IAs	signif.
OVERALL CONCLUSION	THERE IS NO SIGNIFICANT DIFFERENCE IN JUDGEMENT CONSISTENCY BETWEEN IAs AND EAs	NOT SIGNIF

Table 6.42: Summary of hypotheses on judgement consistency

VARIABLES	HC:THERE IS A SIGNIFICANT DIFFERENCE OF CONSENSUS LEVEL BETWEEN AUDITORS WITH RESPECT TO THE FOLLOWING VARIABLES LISTED BELOW USING THE "ICQ" APPROACH	FIN-DINGS
1)Experience	HC1:There is a significant difference of consensus level between auditors of various experience levels using the "ICQ" approach	not signif
2)Have prof qualifctns	HC2:There is a significant difference of consensus level between auditors who have passed the professional examinations and those that have not using the "ICQ" approach	not signif
3)Types of prof qualifctns	HC3:There is a significant difference of consensus level between auditors of various types of professional qualifications ,i.e those who are strong on EAs audit training, strong on company accounting and strong on IAs auditing using the "ICQ" approach	not signif
4)Position levels	HC4:There is a significant difference of consensus level between auditors of various position levels using the "ICQ" approach	not signif
5)Size of firms	HC5:There is a significant difference of consensus level between auditors from different size firms/organisations using the "ICQ" approach	not signif
6)Independence of IAs	HC6:There is a significant difference of consensus level between IAs of various levels of experience using the "ICQ" approach	not signif
7)Types of independence of IAs	HC7:There is a significant difference of consensus level between IAs with different types of independence using the "ICQ" approach.	not signif
OVERALL CONCLUSION	THERE IS NO SIGNIFICANT DIFFERENCE OF CONSENSUS LEVEL BETWEEN AUDITORS WHO HAVE AND THOSE THAT DO NOT HAVE THE ABOVE CHARACTERISTICS USING THE "ICQ" APPROACH	NOT SIGNIF

Table 6.43: Summary of hypotheses on effects of variables on judgement consensus using "ICQ" approach

VARIABLES	HD:THERE IS A SIGNIFICANT DIFFERENCE OF CONSENSUS LEVEL BETWEEN AUDITORS WITH RESPECT TO THE VARIABLES LISTED BELOW USING "CR" APPROACH	FIN-DINGS
1)Experience	HD1:There is a significant difference of consensus level between auditors of various experience levels using "CR" approach	not signif
2)Have prof qualifctns	HD2:There is a significant difference of consensus level between auditors who have passed the professional examinations and those that have not using "CR" approach	not signif
3)Types of prof qualifctns	HD3:There is a significant difference of consensus level between auditors of various types of professional qualifications ,i.e those who are strong on EAs audit training, strong on company accounting and strong on IAs auditing using "CR" approach	not signif
4)Position levels	HD4:There is a significant difference of consensus level between auditors of various position levels using "CR" approach	not signif
5)Size of firms	HD5:There is a significant difference of consensus level between auditors from different size firms/organisations using "CR" approach	not signif
6)Independence of IAs	HD6:There is a significant difference of consensus level between IAs of various levels of independence using "CR" approach	not signif
7)Types of independence of IAs	HD7:There is a significant difference of consensus level between IAs of different types of independence using "CR" approach.	not signif
OVERALL CONCLUSION	THERE IS NO SIGNIFICANT DIFFERENCE OF CONSENSUS LEVEL BETWEEN AUDITORS WHO HAVE AND THOSE THAT DO NOT HAVE THE ABOVE CHARACTERISTICS USING "CR" APPROACH	NOT SIGNIF

Table 6.44: Summary of hypotheses on effects of variables on judgement consensus using "CR" approach

VARIABLES	HE: THERE IS A SIGNIFICANT DIFFERENCE OF CONSENSUS LEVEL BETWEEN AUDITORS WITH RESPECT TO THE VARIABLES LISTED BELOW USING "CO" APPROACH	FINDINGS
1) Experience	HE1: There is a significant difference of consensus level between auditors of various experience levels using "CO" approach	not signif
2) Have prof qualifctns	HE2: There is a significant difference of consensus level between auditors who have passed the professional examinations and those that have not using "CO" approach	not signif
3) Types of prof qualifctns	HE3: There is a significant difference of consensus level between auditors of various types of professional qualifications ,i.e those who are strong on EAs audit training, strong on company accounting and strong on IAs auditing using "CO" approach	not signif
4) Position levels	HE4: There is a significant difference of consensus level between auditors of various position levels using "CO" approach	not signif
5) Size of firms	HE5: There is a significant difference of consensus level between auditors from different size firms/organisations using "CO" approach	not signif
6) Independence of IAs	HE6: There is a significant difference of consensus level between IAs of various levels of independence using "CO" approach	not signif
7) Types of independence of IAs	HE7: There is a significant difference of consensus level between IAs of different types of independence using "CO" approach.	not signif
OVERALL CONCLUSION	THERE IS NO SIGNIFICANT DIFFERENCE OF CONSENSUS LEVEL BETWEEN AUDITORS WHO HAVE AND THOSE THAT DO NOT HAVE THE ABOVE CHARACTERISTICS USING "CO" APPROACH	NOT SIGNIF

Table 6.45: Summary of hypotheses on effects of variables on judgement consensus using "CO" approach

VARIABLES	HF:THERE IS A SIGNIFICANT DIFFERENCE OF CONSISTENCY LEVEL BETWEEN AUDITORS WITH RESPECT TO THE VARIABLES LISTED BELOW	FIN-DINGS
1)Experience	HF1:There is a significant difference of consistency level between auditors of various experience levels	not signif
2)Have prof qualifctns	HF2:There is a significant difference of consistency level between auditors who have passed the professional examinations and those that have not	not signif
3)Types of prof qualifctns	HF3:There is a significant difference of consistency level between auditors of various types of professional qualifications, i.e those who are strong on EAs audit training, strong on company accounting and strong on IAs auditing	not signif
4)Position levels	HF4:There is a significant difference of consistency level between auditors of various position levels	not signif
5)Size of firms	HF5:There is a significant difference of consistency level between auditors from different size firms/organisations	not signif
6)Independence of IAs	HF6:There is a significant difference of consistency level between IAs of various levels of independence	not signif
7)Types of independence of IAs	HF7:There is a significant difference of consistency level between IAs with different types of independence	not signif
OVERALL CONCLUSION	THERE IS NO SIGNIFICANT DIFFERENCE OF CONSISTENCY LEVEL BETWEEN AUDITORS WHO HAVE AND THOSE THAT DO NOT HAVE THE ABOVE CHARACTERISTICS	NOT SIGNIF

Table 6.46: Summary of hypotheses on effects of variables on judgement consistency

6.7 DESCRIPTIVE JUDGEMENT MODEL OF AUDITORS

6.7.1 Experimental design used and results

The design involves (Kempthorne 1952, 403) 63 degrees of freedom: one degree of freedom is used in testing each of the 8 main effects and 28 two factor interactions. The remaining 27 are to test other higher order interactions

or other explanatory factors thus totalling 63. The 64 combinations of factor levels (or cases) are shown in Chapter 5, Table 5.7.

ANOVA computations are applied to the experimental results for each group of auditor. F ratios are computed for each main effect and 2 factor interactions.

For the purpose of constructing descriptive models of judgement, F ratios are computed for the 8 main effects and 28, 2 factor interactions from the data of each auditor.

An analysis of variance was carried out to examine the judgement model of the auditors, using educational level, experience level and position level as covariates. The main objective of the test was to see if the covariates and the 8 ICPs have an effect on the ratings of each group of auditors when they were considered simultaneously.

Bailey (1981) looked at the effect of types of auditor (whether external or internal); types of cases evaluated (which of the 8 cases) in determining the factors that effect EAs' and IAs' ratings but did not take into account the effect of the 12 ICPs in the questionnaire. He, too used ANOVA to examine the effects of the factors.

In the determination of the judgement model (which he called predictive model) of the auditors, he had to exclude 6 ICPs out of 12 ICPs because as he admitted it was due to the weakness of his experimental design (pg 108). Amongst the reasons he stated were the small number of hypothetical cases (each auditor had only to answer one of the 8 cases given to them) and the use of categorical data.

Realizing the weakness of his experiment, Bailey recommended that a judgement model be done for a group of IAs and a group of EAs.

Such an experiment could be fruitful as an exploratory technique to reveal basic differences in the importance placed upon certain variables.
(Bailey 1981, 119)

In this thesis, the experiment was carefully designed in order to avoid these weaknesses.

Using SPSS, the analysis of variance was used using the regression approach and a 2 factor interaction. The regression approach is where all effects are assessed simultaneously, with each effect adjusted for all other effects in the model. Only 2 factor interactions were analysed because the model that is being used assumes that 3 or higher order interactions are negligible.

For ANOVA to be used, the assumptions are that the values of the dependent variable for each of the factor

combinations must be normally distributed with the same variance. ANOVA would be able to determine whether one or more discrete factors has an effect on the dependent variable and whether the effect of one factor depends on the value of another factor (Norussis 1991, 212).

Norussis (1991) further states that,

The dependent variable must be interval level, and one or more categorical variables define the groups. These categorical variables are termed factors. The ANOVA procedure also allows you to include continuous explanatory variables, termed covariates.
(Norussis 1991, 217)

In this thesis, the dependent variable is the rating of the cases on a "visual analog scale" by the auditors. "Visual analog scale" is a "continuous" scale or an "interval" scale data. It thus meets the assumptions of ANOVA which is a "parametric" test. This is the first study that has ever used an "interval" scale data except for Reckers and Taylor (1979) which used a "reliability point scale". Previous studies have all used a "Likert" scale which is an "ordinal" scale but used ANOVA to determine the judgement models of the auditors.

The factors are the 8 ICPs given in the form of an "ICQ" with an "absent or present" tick (which is "categorical", again meeting the assumption of ANOVA). The covariates, except for length of experience are "categorical" in nature and had to be turned into "continuous" data as warranted by ANOVA. Thus, professional qualification and position level had to be turned into "binary"

variables. ANOVA was done for the 2 groups of auditors and results are as shown on the following pages.

6.7.2 Descriptive judgement model for EAs

A $\frac{1}{4}$ fractional replication of a 2^8 was chosen to determine the judgement model for both EAs and IAs as discussed in Chapter 5. In this particular design, all main effects and all 28, two cue interactions are estimable. 3 cue interactions are not intended to be measured as previous studies have indicated that they account for none or negligible interaction. An ANOVA by means of regression approach was conducted on the ratings of the 64 EAs.

CNI (case number 1) BY TCRD, TKPG, ADESC, DUTRO, NAMCK, PYRSE, MGTRE, FORPR WITH LGTHEXP, HAVPROF, SENIOR, MANAGER, PARTNER					
Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F
Covariates	7.501	5	1.500	2.260	.084
LGTHEXP	3.951	1	3.951	5.951	.023
HAVPROF	.003	1	.003	.005	.943
SENIOR	2.059	1	2.059	3.101	.092
MANAGER	.338	1	.338	.510	.483
PARTNER	1.835	1	1.835	2.764	.111
Main Effects	40.598	8	5.075	7.644	.000
TCRD	6.156	1	6.156	9.272	.006
TKPG	2.518	1	2.518	3.793	.064
ADESC	.163	1	.163	.246	.625
DUTRO	1.960	1	1.960	2.953	.100
NAMCK	12.907	1	12.907	19.442	.000
PYRSE	3.412	1	3.412	5.139	.034
MGTRE	6.255	1	6.255	9.423	.006
FORPR	2.316	1	2.316	3.489	.075
2-way Interactions	29.694	28	1.060	1.597	.132
TCRD TKPG	.001	1	.001	.002	.968
TCRD ADESC	1.535	1	1.535	2.312	.143
TCRD DUTRO	.371	1	.371	.559	.463
TCRD NAMCK	.331	1	.331	.499	.487
TCRD PYRSE	.571	1	.571	.860	.364
TCRD MGTRE	1.334	1	1.334	2.009	.170
TCRD FORPR	1.374	1	1.374	2.070	.164
TKPG ADESC	.147	1	.147	.221	.643
TKPG DUTRO	.427	1	.427	.644	.431
TKPG NAMCK	.036	1	.036	.054	.818
TKPG PYRSE	3.700	1	3.700	5.573	.028
TKPG MGTRE	.046	1	.046	.069	.795
TKPG FORPR	.000	1	.000	.000	.986
ADESC DUTRO	.747	1	.747	1.125	.300
ADESC NAMCK	1.775	1	1.775	2.674	.116
ADESC PYRSE	.105	1	.105	.158	.694
ADESC MGTRE	.454	1	.454	.684	.417
ADESC FORPR	.773	1	.773	1.164	.292
DUTRO NAMCK	.032	1	.032	.048	.828
DUTRO PYRSE	.293	1	.293	.441	.514
DUTRO MGTRE	.165	1	.165	.249	.623
DUTRO FORPR	.630	1	.630	.949	.340
NAMCK PYRSE	.391	1	.391	.589	.451
NAMCK MGTRE	.075	1	.075	.114	.739
NAMCK FORPR	.469	1	.469	.707	.409
PYRSE MGTRE	.033	1	.033	.049	.826
PYRSE FORPR	6.934	1	6.934	10.446	.004
MGTRE FORPR	4.660	1	4.660	7.019	.015
Explained	81.540	41	1.989	2.996	.004
Residual	14.605	22	.664		
Total	96.145	63	1.526		

Figure 6.28: Initial judgement model for EAs with all terms

Norussis (1991, 250) summarizes the formula for R^2 and R_a^2 as follows:

$$\begin{aligned} R^2 &= 1 - \frac{\text{Residual Sum of Squares}}{\text{Total Sum of Squares}} \\ &= 1 - \frac{14.605}{96.145} \\ &= 85\% \end{aligned}$$

Adjusted R^2 is

$$R_a^2 = \frac{1 - \text{Residual Sum of Squares}/(N-p-1)}{\text{Total Sum of Squares}/(N-1)}$$

where N is the number of cases and p is the number of independent variables.

Thus, based on Figure 6.28, adjusted R^2

$$\begin{aligned} &= 1 - \frac{14.605/64-41-1}{96.145/64-1} \\ &= 1 - \frac{.664}{1.526} \\ &= 56.5\% \end{aligned}$$

Adjusted R^2 never decreases as independent variables are added. However, this does not necessarily mean that the equation with more variables better fits the population. R^2 of 0 does not necessarily mean that there is no association between the variables. Instead it indicates that there is no linear relationship.

Norussis (1991) recommends the use of R_a^2 rather than R^2 .

Norussis states that,

...the sample R^2 in general tends to overestimate the population value of R^2 . Adjusted R^2 attempts to correct the optimistic bias of the sample R^2 . Adjusted R^2 does not necessarily increase as additional variables are added to an equation, and it is the preferred measure of goodness of fit because it is not subject to the inflationary bias

of unadjusted R^2 .
(Norussis 1991, 269)

The ANOVA model was able to explain about 56.5% of the ratings of case 1. No analysis for case 7 was done as from H3 it was observed that there are no significant differences between the 2 ratings.

From the initial analysis, it appears that only the covariate length of experience has an effect on the rating of case 1. Position level and whether an EA has a professional qualification does not affect their ratings.

As for the 8 ICPs, 5 out of the 8 ICPs are significant. It appears that namck1 has the most influence as to what ratings the EAs are going to give, followed by mgtre, tcrd and pyrse. The other 4; tkpg, adesc, dutro and forpr are not significant.⁹⁵

⁹⁵ For convenience, although Table 6.12 of Section 6.3 has explained the 8 ICPs, below is an explanation of the 8 ICPs.

ICP1(tcrd): Are time cards and other source documents checked before processing by the payroll department for casts and calculations?

ICP2(tkpg): Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?

ICP3(adesc): Is there adequate physical security over personal files which contain information relevant to the audit?

ICP4(dutro): Are the duties of those preparing the payroll rotated?

ICP5(namck): Are the names on the payroll checked periodically against the active employee file of the personnel department?

ICP6(pyrse): Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?

ICP7(mgtre): Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?

ICP8(forpr): Are formal procedures established for changing names, payrates and deductions?

However, for the purpose of comparison with weightings given to ICPs, the priority of importance for the 8 ICPs including the ICPs which are not significant is:

- 1) Namck
- 2) Mgtre
- 3) Tcrd
- 4) Pyrse
- 5) Tkpg
- 6) Forpr
- 7) Dutro
- 8) Adesc

There are about 3 significant 2 factor interactions but the overall 2 factor interactions were not significant.

This is expected for the simple reason that as you test a large number of hypotheses simultaneously, then even if all the null hypotheses are true (no real difference), there are bound to have some that are statistically significant.

This is equivalent to saying that the more times you run a test, the higher the probability that it is significant.

It was decided to use "backward elimination" where the terms (or independent variables) that are not significant are eliminated one by one based on the least significant term in order to determine the final model. The final model would then consist of only terms that are

significant to the rating of case 1. The first step was to eliminate the 2 factor interactions in total and then proceed with eliminating the insignificant term one by one, starting with the least significant independent variable.

CNI case number 1					
BY	TCRD				
	TKPG				
	ADESC				
	DUTRO				
	NAMCK				
	PYRSE				
	MGTRE				
	FORPR				
WITH	LGTHEXP	length of audit experience			
	HAVPROF	have professional qualification			
	SENIOR				
	MANAGER				
	PARTNER				
Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F
Covariates	6.075	5	1.215	1.371	.251
LGTHEXP	4.694	1	4.694	5.298	.026
HAVPROF	.039	1	.039	.044	.834
SENIOR	.877	1	.877	.990	.325
MANAGER	.247	1	.247	.279	.600
PARTNER	2.231	1	2.231	2.518	.119
Main Effects	41.387	8	5.173	5.839	.000
TCRD	6.295	1	6.295	7.105	.010
TKPG	3.756	1	3.756	4.239	.045
ADESC	.264	1	.264	.298	.587
DUTRO	1.876	1	1.876	2.118	.152
NAMCK	13.209	1	13.209	14.909	.000
PYRSE	3.357	1	3.357	3.789	.057
MGTRE	7.268	1	7.268	8.204	.006
FORPR	2.608	1	2.608	2.943	.092
Explained	51.846	13	3.988	4.501	.000
Residual	44.299	50	.886		
Total	96.145	63	1.526		

Figure 6.29: Initial judgement model for EAs with no two-factor interactions

The first step for backward elimination is to delete the

2 factor interactions.

1) Delete 2 factor interactions since it is not significant.

However, there is a need to check if the exclusion of 2 factor interactions has an effect on the model as a whole.

Change in residual sum of squares /Change in residual
deg of free.

Residual sum of squares for model with all terms	/Residual deg of freedom with all interactions
$= \frac{(44.299-14.605)/50-22}{14.605/22}$	$= \frac{29.694/28}{.664} = 1.60$

If the value calculated is less than the F table value for (28,22) degrees of freedom, therefore the term is not significant and can be removed from the model. F table value for (30,22)⁹⁶ degrees of freedom at $\alpha=.05$ is 1.98.

Thus, the 2 factor interactions can be excluded from the model since the calculated value is less than the value of F table.

⁹⁶ The conservative value for F table is chosen; that is by taking a higher degree of freedom if the degree of freedom needed is not available.

CN case number 1						
BY	TCRD					
	TKPG					
	ADESC					
	DUTRO					
	NAMCK					
	PYRSE					
	MGTRE					
	FORPR					
WITH	LGTHEXP	length of audit experience				
	SENIOR					
	MANAGER					
	PARTNER					
Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F	
Covariates	6.036	4	1.509	1.736	.157	
LGTHEXP	4.684	1	4.684	5.388	.024	
SENIOR	.981	1	.981	1.129	.293	
MANAGER	.212	1	.212	.243	.624	
PARTNER	2.321	1	2.321	2.670	.108	
Main Effects	42.645	8	5.331	6.132	.000	
TCRD	7.255	1	7.255	8.345	.006	
TKPG	4.503	1	4.503	5.180	.027	
ADESC	.288	1	.288	.331	.568	
DUTRO	1.843	1	1.843	2.120	.152	
NAMCK	13.444	1	13.444	15.464	.000	
PYRSE	3.479	1	3.479	4.002	.051	
MGTRE	7.434	1	7.434	8.551	.005	
FORPR	2.584	1	2.584	2.973	.091	
Explained	51.806	12	4.317	4.966	.000	
Residual	44.338	51	.869			
Total	96.145	63	1.526			

Figure 6.30: Initial judgement model of EAs with no two-factor interactions and no covariate "havprof"

2) Delete covariate havprof since it is the least significant.

However, there is a need to check if the exclusion of a factor has an effect on the model as a whole.

Change in residual sum of squares /Change in residual
deg of free.

$$\begin{array}{l} \text{Residual sum of squares for} \\ \text{model without interactions} \end{array} \quad / \begin{array}{l} \text{Residual deg of freedom} \\ \text{without interactions} \end{array}$$
$$= \frac{(44.338-44.299)/51-50}{44.299/50} = \frac{0.039/1}{.8859} = .044$$

If the value calculated is less than the F table value for (1,50) degrees of freedom, then the term is not significant and therefore can be removed from the model. F table value for (1,60) degrees of freedom at $\alpha=.05$ is 4.00.

Thus, the factor can be excluded from the model since the calculated value is less than the value of F table.

Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F
Covariates	5.824	3	1.941	2.266	.092
LGTHEXP	4.855	1	4.855	5.667	.021
SENIOR	.772	1	.772	.901	.347
PARTNER	2.445	1	2.445	2.854	.097
Main Effects	42.447	8	5.306	6.193	.000
TCRD	7.778	1	7.778	9.079	.004
TKPG	4.378	1	4.378	5.110	.028
ADESC	.356	1	.356	.416	.522
DUTRO	1.733	1	1.733	2.023	.161
NAMCK	13.699	1	13.699	15.990	.000
PYRSE	3.283	1	3.283	3.832	.056
MGTRE	7.347	1	7.347	8.575	.005
FORPR	2.398	1	2.398	2.799	.100
Explained	51.595	11	4.690	5.475	.000
Residual	44.550	52	.857		
Total	96.145	63	1.526		

Figure 6.31: Initial judgement model of EAs with no two-factor interactions, no covariate "havprof" and "manager"

The "deletion" process was carried on until only significant terms were left in the model. The model which contains the significant terms is the judgement model of EAs. The terms deleted in order before the final judgement model of EAs was obtained are as follows: (a) covariate manager; (b) factor adesc; (c) covariate senior; (d) factor partner; (e) factor dutro; (f)

covariate lgthexp and (g) factor forpr.

The variables in the final model are considered to be important and they influence the EAs judgements of the ratings of case 1. The final model for EAs is as shown in Figure 6.32.

The final model for the EAs as a group is as follows:

CN1 case number 1						
BY	TCRD					
	TKPG					
	NAMCK					
	PYRSE					
	MGTRE					
		Sum of		Mean		Signif
Source of Variation		Squares	DF	Square	F	of F
Main Effects		42.898	5	8.580	9.345	.000
TCRD		9.068	1	9.068	9.877	.003
TKPG		7.446	1	7.446	8.111	.006
NAMCK		13.423	1	13.423	14.621	.000
PYRSE		5.528	1	5.528	6.022	.017
MGTRE		7.432	1	7.432	8.096	.006
Explained		42.898	5	8.580	9.345	.000
Residual		53.247	58	.918		
Total		96.145	63	1.526		

Figure 6.32: Final judgement model of EAs

The final model adjusted R^2 is $1 - .918/1.526$ which is equal to 39.8%. No covariates is influential in the ratings of internal control system by EAs but 5 of the 8 ICPS are influential in the ratings of internal control system by EAs. In priority of importance the 5 ICPS are namck, tcrd, mgtre, tkpg and pyrse.

6.7.3 Descriptive judgement model for IAs

An ANOVA by means of regression approach was conducted on the ratings of the 64 IAs.

CNI BY TCRD, TKPG, ADESC, DUTRO, NAMCK, PYRSE, MGTRE, FORPR WITH LGTHEXP, HAVPROF, SENIOR, MANAGER, PARTNER						
Source of Variation		Sum of Squares	DF	Mean Square	F	Signif of F
Covariates		5.260	5	1.052	1.377	.271
LGTHEXP		.272	1	.272	.355	.557
HAVPROF		2.443	1	2.443	3.196	.088
SENIOR		.000	1	.000	.000	.998
MANAGER		.000	1	.000	.000	.999
PARTNER		.020	1	.020	.027	.871
Main Effects		27.700	8	3.462	4.531	.002
TCRD		1.507	1	1.507	1.972	.174
TKPG		2.044	1	2.044	2.675	.116
ADESC		.028	1	.028	.037	.849
DUTRO		.042	1	.042	.055	.817
NAMCK		14.852	1	14.852	19.435	.000
PYRSE		2.595	1	2.595	3.396	.079
MGTRE		4.665	1	4.665	6.104	.022
FORPR		1.220	1	1.220	1.597	.220
2-way Interactions		23.013	28	.822	1.075	.436
TCRD TKPG		.203	1	.203	.265	.612
TCRD ADESC		.159	1	.159	.207	.653
TCRD DUTRO		.621	1	.621	.813	.377
TCRD NAMCK		.715	1	.715	.935	.344
TCRD PYRSE		2.813	1	2.813	3.680	.068
TCRD MGTRE		.270	1	.270	.353	.559
TCRD FORPR		.137	1	.137	.179	.676
TKPG ADESC		.000	1	.000	.000	.983
TKPG DUTRO		2.315	1	2.315	3.030	.096
TKPG NAMCK		.934	1	.934	1.222	.281
TKPG PYRSE		1.461	1	1.461	1.912	.181
TKPG MGTRE		.039	1	.039	.052	.822
TKPG FORPR		.668	1	.668	.874	.360
ADESC DUTRO		.094	1	.094	.123	.729
ADESC NAMCK		.077	1	.077	.101	.754
ADESC PYRSE		.244	1	.244	.320	.578
ADESC MGTRE		1.897	1	1.897	2.482	.129
ADESC FORPR		.005	1	.005	.007	.935
DUTRO NAMCK		.968	1	.968	1.266	.273
DUTRO PYRSE		1.181	1	1.181	1.545	.227
DUTRO MGTRE		.097	1	.097	.127	.725
DUTRO FORPR		1.230	1	1.230	1.609	.218
NAMCK PYRSE		1.685	1	1.685	2.205	.152
NAMCK MGTRE		.086	1	.086	.112	.741
NAMCK FORPR		.848	1	.848	1.110	.304
PYRSE MGTRE		2.441	1	2.441	3.195	.088
PYRSE FORPR		.069	1	.069	.091	.766
MGTRE FORPR		.145	1	.145	.190	.667
Explained		60.082	41	1.465	1.918	.052
Residual	16.812	22	.764			
Total		76.894	63	1.221		

Figure 6.33: Initial judgement model of IAs with all terms

Based on Figure 6.33,

$$R^2 = 1 - \frac{\text{Residual Sum of Squares}}{\text{Total Sum of Squares}}$$

$$= 1 - \frac{16.812}{76.894}$$

$$= 78.1\%$$

Adjusted R^2 is

$$R_a^2 = \frac{1 - \text{Residual Sum of Squares}/(N-p-1)}{\text{Total Sum of Squares}/(N-1)}$$

where N is the number of cases and p is the number of independent variables.

$$= 1 - \frac{16.812/64-41-1}{76.894/64-1}$$

$$= 1 - \frac{.764}{1.221}$$

$$= 37.4\%$$

The ANOVA model was able to explain about 37.4% of the ratings of case 1.

From the analysis, it appears that the covariates were not significant.

As for the 8 ICPs, 2 out of the 8 ICPs were significant. Again, it was found that that namck has the most influence as to what ratings the EAs are going to give and it is followed by mgtre. The other 4; adesc, dutro, tcrd and forpr are not significant. There are no significant 2 factor interactions.

However, for the purpose of comparison with weightings given to ICPs, the priority of importance for the 8 ICPs

including the ICPs which were not significant were:

- 1) Namck
- 2) Mgtre
- 3) Pyrse
- 4) Tkpg
- 5) Tcrd
- 6) Forpr
- 7) Dutro
- 8) Adesc

Again, the same approach as for EAs (that is "backward elimination") in determining the final model was used.

Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F
Covariates	3.329	5	.666	.836	.531
LGTHEXP	.678	1	.678	.852	.361
HAVPROF	1.556	1	1.556	1.954	.168
SENIOR	.089	1	.089	.112	.740
MANAGER	.117	1	.117	.147	.703
PARTNER	.164	1	.164	.206	.652
Main Effects	30.298	8	3.787	4.755	.000
TCRD	2.639	1	2.639	3.314	.075
TKPG	3.320	1	3.320	4.168	.046
ADESC	.030	1	.030	.038	.846
DUTRO	.004	1	.004	.005	.944
NAMCK	14.283	1	14.283	17.932	.000
PYRSE	3.505	1	3.505	4.400	.041
MGTRE	4.710	1	4.710	5.914	.019
FORPR	1.361	1	1.361	1.708	.197
Explained	37.069	13	2.851	3.580	.001
Residual	39.825	50	.796		
Total	76.894	63	1.221		

Figure 6.34: Initial judgement model of IAs with no two-factor interactions

The following steps show how the final model is derived by means of elimination. The first step for elimination is to delete the 2 factor interactions.

- 1) Delete 2 factor interactions since they are not significant.

However, there is a need to check if the exclusion of 2 factor interactions has an effect on the model as a whole.

Change in residual sum of squares /Change in residual deg of free.

Residual sum of squares for model with all terms	/Residual deg of freedom with all interactions	
= $\frac{(39.825-16.812)/50-22}{16.812/22}$	= $\frac{.8218}{.764}$	= 1.0758

If the value calculated is less than the F table value for (28,22) degrees of freedom, then the term is not significant and therefore can be removed from the model. F table value for (30,22)⁹⁷ degrees of freedom at a=.05 is 1.98.

Thus, the 2 factor interactions can be excluded from the model since the calculated value is less than the value of F table.

⁹⁷ The conservative value for F table is chosen; that is by taking a higher degree of freedom if the degree of freedom needed is not available.

BY		CN1 case number 1			
	TCRD				
	TKPG				
	ADESC				
	NAMCK				
	PYRSE				
	MGTRE				
	FORPR				
WITH		LGTHEXP length of audit experience			
	HAVPROF				
	have professional qualification				
	SENIOR				
	MANAGER				
	PARTNER				
Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F
Covariates	3.376	5	.675	.864	.511
LGTHEXP	.678	1	.678	.868	.356
HAVPROF	1.588	1	1.588	2.034	.160
SENIOR	.093	1	.093	.119	.732
MANAGER	.122	1	.122	.157	.694
PARTNER	.165	1	.165	.212	.647
Main Effects	30.294	7	4.328	5.541	.000
TCRD	2.665	1	2.665	3.412	.071
TKPG	3.345	1	3.345	4.283	.044
ADESC	.030	1	.030	.038	.846
NAMCK	14.289	1	14.289	18.297	.000
PYRSE	3.506	1	3.506	4.490	.039
MGTRE	4.725	1	4.725	6.050	.017
FORPR	1.357	1	1.357	1.738	.193
Explained	37.065	12	3.089	3.955	.000
Residual	39.829	51	.781		
Total	76.894	63	1.221		

Figure 6.35: Initial judgement model of IAs with no two-factor interactions and no factor "dutor"

2) Delete dutrol as it has the highest F value or it is the least significant.

However, there is a need to check if the exclusion of the factor has an effect on the model as a whole.

Change in residual sum of squares /Change in residual deg of free.

Residual sum of squares for /Residual deg of freedom
model excluding interactions excluding interactions

$$= \frac{(39.829-39.825)/51-50}{39.825/50} = \frac{0.004/1}{.796} = 0.005$$

The value calculated is less than the F table value for (1,50) degrees of freedom, therefore the term is not significant and can be removed from the model. F table value for (1,60) degrees of freedom at $\alpha=.05$ is 4.00.

The other terms deleted in order before the final judgement model of IAs was obtained were as follows:

- (a) factor adesc;
- (b) covariate senior;
- (c) covariate manager;
- (d) covariate partner;
- (e) covariate lgthexp;
- (f) factor forpr and (g) factor havprof.

The final model for the IAs as a group with only significant terms is as shown in Figure 6.36

CN1 case number 1					
BY TCRD					
TKPG					
NAMCK					
PYRSE					
MGTRE					
Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F
Main Effects	32.609	5	6.522	8.541	.000
TCRD	4.569	1	4.569	5.984	.017
TKPG	5.153	1	5.153	6.749	.012
NAMCK	12.567	1	12.567	16.459	.000
PYRSE	5.325	1	5.325	6.974	.011
MGTRE	4.995	1	4.995	6.542	.013
Explained	32.609	5	6.522	8.541	.000
Residual	44.285	58	.764		
Total	76.894	63	1.221		

Figure 6.36: Final judgement model of IAs

The final model adjusted R^2 is $1-.764/1.221$ which is equal to 37.4%. Thus, the final model is able to explain 37.4%

of the variation in the ratings of cases. Again no covariates seem to have influenced the IAs judgement as a group but 5 out of 8 ICPS seem important. In priority of importance, the 5 ICPS are namck, pyrse, tkpg, mgtre and tcrd.⁹⁸

⁹⁸ Please refer to Table 6.12 for the full description of the 8 ICPs. Explanation of accounting and administrative controls can be found in Section 6.5.1.6.

6.7.4 Comparison of judgement model weightings and subjective weightings given by the auditors

Internal control procedures (ICPs)	EAs		IAs	
	Subjective weights*	Judgement model	Subjective weights	Judgement model
Tcrds (Acctg procedure) ⁹⁹	5	3	6	5
Tkpg (Admn procedure)	3	5	2	4
Adesc (Acctg procedure)	7	8	7	8
Dutro (Acctg procedure)	8	7	8	7
Namck (Acctg procedure)	6	1	5	1
Pyrse (Admn procedure)	4	4	1	3
Mgtre (Admn procedure)	2	2	3	2
Forpr (Admn procedure)	1	6	4	6

Table 6.47: Comparison of judgement model and subjective weightings of EAs and IAs

* Subjective weights are the weights that the auditors allocate to the individual controls in terms of the importance of the controls. This is similar to Table 6.27.

As can be seen from Table 6.47, although EAs and IAs placed some importance on "Forpr" (as seen from the "subjective weights" column), but this was not found to be the case when their judgement models were determined. "Adesc" and "Dutro" are rated least important by both groups of auditors.

Judgement insight was calculated based on the results of

⁹⁹ Please refer to Table 6.12 or footnote 79 for the explanation of the ICPs.

the table. Judgement insight was obtained by comparing each group of auditors' subjective weightings and the importance of the ICPs obtained from the judgement model. It can only be calculated for the overall group.

Both spearman and pearson correlation are done on the auditor's subjective weights of the 8 ICPs (that constitute each case) as compared with the importance of the 8 ICPs as determined by the judgement model of the 2 groups of auditors. The result shows a judgement insight of .29 for EAs and .62 for IAs. This implies that what IAs do in practice has a closer relationship with what they believe than is the case for EAs. The judgement insight for EAs and IAs are on the low side compared with previous research (as shown in Table 6.48).

Previous research	Avg. level of self-insight
EAs: Internal control evaluation Ashton(1974)	.89
Hamilton & Wright(1977)	.89
Ashton & Brown(1979)	.86
Students and others:Internal control evaluation Trotman,Yetton & Zimmerman(1983)	.77 .59(individual) .69(group)
EAs: Other types of research Joyce(1976)	.53
Other types of research not in accounting Slovic et al(1972)-stockbrokers	.34
Reliance on IAs: Brown(1983)	.74

Table 6.48: Summary of judgement insight in previous studies

Rank	EAs		IAs	
	ICPs	Subjective weights	ICPs	Subjective weights
1	#Forpr	15.0164	Pyrse	16.6349
2	Tkpg	14.5556	Tkpg	16.0952
3	Mgtre	14.7969	Mgtre	15.1094
4	Pyrse	13.5397	Forpr	14.7869
5	*Tcrds	12.9524	*Namck	14.6190
6	*Namck	12.0794	*Tcrds	13.3810
7	*Adesc	9.7619	*Adesc	11.6667
8	*Dutro	8.4127	*Dutro	11.0159
Range(highest-lowest)		6.6037		5.619

Table 6.49: Range of subjective weightings of EAs and IAs

* Accounting controls

Please refer to Table 6.12 for the description of the ICPs

As can be seen from Table 6.49, the range of difference between the weights given to the most important and least important ICP is greater for EAs than IAs. It is consistent with Landry's (1989) findings. However, the range of ratings is tighter with 1.1 point for EAs and 1.0 point for IAs. This could be due to the nature of the ICPs included in the ICQ and the nature of the sub-system. Landry has chosen the cash receipts sub-system as the focus of his study and has not included any extreme cases (that is with all ICPs present or vice-versa) in his study.

Table 6.49 also shows that IAs placed greatest importance on the two separation of duties controls ("Pyrse" and

"Tkpg"), whereas EAs placed greatest importance on "Forpr". Both groups of auditors placed most importance on "administrative" controls rather than "accounting" controls and placed least importance on "adesc" and "dutivo".

6.8 COMPARISON WITH PREVIOUS RESEARCH WHICH INVOLVES IAS AND EAS

So far as we are aware, all research on the same subject has been done in the US. To date, three studies have compared EAs and IAs and the findings of these and also our current results are shown in Table 6.50.

Bailey (US, 1981)	Landry (US, 1989)	Moore (US, 1993)	This study (UK, 1995)
<u>Criteria for selection:</u> (A) EAS PASSED AICPA AND IA PASSED CIA AND ARE MIIA MEMBERS (B) ONLY PUBLIC CORPRTNS ARE TAKEN AS REPRESENTING IIA ORGNS. BANKS ARE <u>EXCLUDED</u> BECAUSE THEY ARE NOT AFFECTED BY FCPA ACT.	<u>Criteria for selection:</u> EXTERNAL AND INTERNAL EDP AUDITORS	<u>Criteria for selection:</u> IAs ARE 90% PROFESSIONALLY QUALIFIED, I.E THEY HAVE PASSED EITHER CPA OR CIA. EAs ARE 86% PROFESSIONALLY QUALIFIED, I.E THEY HAVE PASSED EITHER CPA, CIA, CIMA	<u>Criteria for selection:</u> EAs AND IAs WITH DIFFERENT LEVELS OF EDUCATIONAL, POSITION AND EXPERIENCE LEVELS PARTICIPATED IN THE STUDY
1. Consistency level -not examined	1. There is no significant difference in consistency level between EAs and IAs	1. Consistency level not examined	1. There is no significant difference in consistency level between EAs and IAs

Bailey (US, 1981)	Landry (US, 1989)	Moore (US, 1993)	This study (UK, 1995)
2. There is a <u>significant difference</u> in consensus level between EAs and IAs	2. There is a <u>significant difference</u> in consensus level between EAs and IAs	2. There is a <u>significant difference</u> in judgements between EAs and IAs. Moore categorize evaluation of internal control as "subjective assessments in internal control test". He gave 3 cases to the auditors and found significant difference for 2 out of 3 cases. He therefore concluded that there is a significant difference.	2. There is no significant difference in judgement consensus between EAs and IAs.
3. EAs less strict in their ratings (higher ratings)	3. EAs less strict in their ratings (higher ratings)	3. EAs less strict in their ratings (higher ratings)	3. EAs less strict in their ratings (higher ratings).
4. Consensus is higher for EAs than IAs			4. Consensus is higher for EAs than IAs

Bailey (US, 1981)	Landry (US, 1989)	Moore (US, 1993)	This study (UK, 1995)
<p>5. Judgement model using multiple regression approach shows no significant difference. The predictive model for <u>IAs</u> was able to explain about <u>33%</u> of the variation in judgement whilst that of <u>EAs</u> was able to explain about <u>41%</u>.</p>			<p>5. A $\frac{1}{4}$ replicate of 2^8 design was used to determine the judgement model of EAs and IAs by means of analysis of covariance-multiple regression approach. The final model for <u>EAs</u> was able to explain <u>39.8%</u> of the variation in judgement whereas the final model of <u>IAs</u> was able to explain <u>37.4%</u> of variation in judgement. It is consistent with Bailey's study.</p>

Bailey (US, 1981)	Landry (US, 1989)	Moore (US, 1993)	This study (UK, 1995)
<p>6.(a) Experience- not significant (analysed by means of ANOVA model)</p> <p>(b) Educational- not examined</p> <p>(c) Position level-not examined</p> <p>(d) Firm size- not examined</p> <p>(e) Independence of IAs- not examined</p> <p>(f) Types of independence - not examined</p> <p>(g) Types of qualifctns- not examined</p>	<p>6.(a) Experience- not significant</p> <p>(b) Educational- not significant. 3 types of education were examined, i.e accounting, EDP and continuing education</p> <p>(c) Position level- <u>significant</u> for EAs but not significant for IAs</p> <p>(d) Firm size- <u>significant</u></p> <p>(e) Independence of IAs-not examined</p> <p>(f) Types of independ- ence-not examined</p> <p>(g) Types of qualifctns- not examined</p>	<p>6.(a) Experience -not significant</p> <p>(b) Educational -not significant</p> <p>(c) Position level-not significant</p> <p>(d) Firm size- not examined</p> <p>(e) Independ- ence of IAs-not examined</p> <p>(f) Types of independ- ence (organi- sational independ- ence -not significant</p> <p>(g) Types of qualifctns- not examined</p>	<p>6.(a) Experience- b) Educational c) Position level d) Firm size e) Independ- ence of IAs f) Types of independ- ence g) Types of qualifctns There is no significant relation- ship between the 7 variables and "judge- ment consensus" and "judgement consis- tency".</p>

Bailey (US, 1981)	Landry (US, 1989)	Moore (US, 1993)	This study (UK, 1995)
	7. Mean ranking of ICPs between EAs and IAs- mixed results		7. EAs consider ICPs less able to achieve control objectives. However, the ratings were not significantly different for both groups of auditors. Both groups do not differ in their opinion as to the ability of the overall internal control system to achieve the 5 control objectives. There is a <u>significant</u> difference for both groups of auditors in their opinion as to ability of mean ICP and ICS to achieve the control objectives.

Bailey (US, 1981)	Landry (US, 1989)	Moore (US, 1993)	This study (UK, 1995)
			8. EAs consider ICPs less important than IAs (less weight given).
			9. EAs consider ICPs more able to prevent or detect errors (lower control risk). There are mixed results relating to the opinion of both groups of auditors as to whether each ICP is able to achieve the control risk. However, there is no significant difference as to the ability of the overall internal control system to achieve the control risk.
			10. There is no significant difference in the variation of judgement "consensus" and "consistency" between IAs and EAs.

Bailey (US, 1981)	Landry (US, 1989)	Moore (US, 1993)	This study (UK, 1995)
			11. There is a <u>significant difference</u> in the weighting given to "administrative" and "accounting" controls by both groups.
			12. There is a <u>significant difference</u> in the opinions of EAS and IAs as to which ICPs constitutes "accounting" controls" or "administrative" controls.

Bailey (US, 1981)	Landry (US, 1989)	Moore (US, 1993)	This study (UK, 1995)
			13. Judgement insight for EAs (.29) was lower than that of IAs (.62). Judgement insight is the correlation coefficient of how well the subjective weightings of the ICPs coincide with the importance attached to the ICPs by way of the judgement model.

Table 6.50: Comparison of findings with previous research

6.9 GENERAL COMMENTS FROM AUDITORS

The main comments were that the questionnaire was quite lengthy. Some said that they took one hour, others said they took four hours and another said they took one and a half days to complete it. The reason for the varying length of time taken to complete the questionnaire was because some concentrated on filling the questionnaire till finish but some had to extend the task of filling it

over days because of other urgent work to attend to. However, on the average they all agreed that the time taken to complete the questionnaire varied from one to one and a half hours.

Other specific comments were discussed earlier on in the chapter under separate discussion sections of each issue.

Majority of the auditors found filling the questionnaire an exciting and fulfilling exercise.

6.10 SUMMARY

This chapter has reported the results of the study according to the 4 main issues of: consensus; consistency; factors influencing consensus and consistency and judgement model for each group of EAs and IAs. The overall conclusion showed that there was no significant difference of judgement consensus and judgement consistency between EAs and IAs and none of the factors examined seem to have an effect on judgement consensus and consistency.

Finally, the findings of this study were also compared with previous research that dwells on the same issues.

CHAPTER 7

CONCLUSIONS, IMPLICATIONS AND SUGGESTION FOR FURTHER RESEARCH

7.1 INTRODUCTION

This final chapter presents conclusions of this research, recommendations for future research, and implications of this research for accounting practice.

7.2 SUMMARY OF PROBLEM AND RESEARCH APPROACH

Evaluation of internal control system is a critical area in which the duties of IAs and EAs interface. IAs helped management designed and maintained internal controls which are evaluated, and often relied upon by EAs. With the finalisation of internal control and financial reporting by the Ruttman Committee in December 1994, it is mandatory for listed companies registered in the UK with accounting periods beginning on or after 1st January 1995 to report whether they are complying with the Code of Best Practice in their annual reports and if not to state the reasons why. Paragraph 4.5 of the Code states,

The directors should report on the effectiveness of the company's system of internal control

However, the final guideline only requires the directors to describe the procedures of internal "financial" controls (compared with the system of internal control) that exist in the company but the directors are not required to state their opinion on the effectiveness of

internal "financial" control.

The IA would most probably be the person responsible for the preparation of the internal control report and the work that is required to be done before the preparation of the report since he is the person in charge of ensuring that the internal control system is in place. The EA would be required to evaluate the directors' opinion in addition to his normal work of expressing his audit opinion on the truth and fairness of financial statements.

With this new development, the increase in cooperation between the two groups of auditors is made more important. Thus if there are basic differences between the two groups of auditors, identification of these differences should be of interest to both groups and differences reduced if possible.

The user of financial statements is entitled to assume that auditors' different types of opinions result from underlying differences in the reliability of accounting data and do not result from inconsistencies (either among different auditors or with the same auditor over time) in the application of judgement at some point in the evaluation process. Since the result of the evaluation of internal control would determine the "nature, timing and extent" of the auditing procedures, inconsistencies in

internal control may be especially serious. There is no doubt that internal control evaluation involves some judgement on the part of auditors but if the reasons for the difference in judgement among auditors could be determined, that would enable the accounting profession to be more objective in their work. Some writers and researchers in the field of auditing have attributed the differences in judgement to the different internal control procedures present in the internal control system and the personal profile of the auditors such as their educational level, position level and experience level. Thus in this thesis such claims are being investigated by means of a laboratory experiment.

7.3 SUMMARY OF FINDINGS

Findings will be discussed according to the four main issues: a) consensus; b) judgement models; c) consistency and d) effect of the variables on judgement "consensus" and "consistency".

Strictly speaking, the results of the present study are applicable only to the task and individuals involved. Great care must be taken in attempting to generalize these results to other types of internal control subsystem, other hypothetical (or real) business firms, other EAs, or other sets of internal control procedures.

Most of the auditors who participated in the study

consist of partners/ head or deputy head of departments, very experienced and were professionally qualified.

7.3.1 Consensus

Overall, the test showed no significant difference between the ratings of EAs and IAs although visually, it can be seen that EAs tend to give higher ratings to all the cases. In other words there may be a tendency for EAs to place a higher degree of reliance upon particular controls than would IAs, but it was not found to be statistically significant. The spread of answers between the two groups of auditors was not significant and their answers were strongly and positively correlated.

No significant difference was found between both groups of auditors using different techniques or approaches of evaluation. They were closest in their ratings when they used the "ICQ"¹⁰⁰ approach, followed by "CO"¹⁰¹

¹⁰⁰ "ICQ" approach. The auditors were presented with a list of ICPs (8 of them) which were marked with a "Yes" indicating presence of the control and a "No" indicating absence of the control and they were required to base their judgement of the strength of internal control system based on this list of ICPs.

¹⁰¹ "CO" approach. The auditors were asked to match the internal control procedures to the control objectives. There were five control objectives which comprised of "completeness, existence, rights and obligations, presentation and disclosure and valuation". Based on their assessments, the auditors were then asked to evaluate the quality of the internal control system.

approach and then the "CR"¹⁰² approach. There was a significant difference within each of the two groups of auditors when the "ICQ" approach was used compared with both the "CO" and the "CR" approach. However, no significant difference was found within each group of auditors when the "CR" approach was used compared with the "CO" approach. This indicate that both groups of auditors seem to agree that there was similarity between the "CR" and "CO" approach of evaluation.

There was a significant difference of consensus level to achieve control objectives between EAs and IAs. A t-test done on their mean ratings showed that 7 out of 40 of EAs' ratings were significantly different from IAs' ratings. However, taking the system as a whole there was no significant difference between EAs' and IAs' ratings as to the system's capability to achieve any of the given control objectives. Visually, it can be seen that EAs thought that the ICPs (but not the overall internal control system) to be less able to ensure the achievement of the control objectives as compared to IAs. When theoretical questions about the potential of ICPs to achieve particular control objectives were asked, it was found that EAs were more optimistic than IAs. This held

¹⁰² "CR" approach. The auditors were asked to assess the ICPs level of control risk or the ability of the ICPs to prevent or detect material errors from occurring. Based on their assessment of the control risk, the auditors were then asked to assess the quality of the internal control system.

true for their opinion of the overall internal control system but not with the ICPs. On the other hand, IAs were more pessimistic in placing more reliance on the effectiveness of ICPs, which is in line with their ratings of the overall internal control system but again, not with their ratings of the ICPs. The results implied that EAs and IAs do not seem to think that the ratings that they gave for each ICP would contribute to their ratings of the overall internal control system or in other words they do not think that the ratings of the components or features of the internal control system would help in the evaluation of the overall internal control system.

When the mean ratings of each ICP were compared with the internal control system's ability to achieve each control objective for each group of auditor, there was a significant difference and their ratings were positively and significantly correlated except for one control objective.¹⁰³

There was a significant difference of consensus level on the ratings of "control risk" or the ability of the internal control procedures to detect or correct material errors between EAs and IAs. However, they seem to agree on the overall internal control system's ratings of

¹⁰³ "Presentation and Disclosure objective" for IAs and "Existence" for EAs.

control risk. Visually, it can be seen that EAs' ratings of "control risk" were lower than those of IAs or, in other words, EAs perceived that ICPs were more able to prevent or detect material errors. This could be due to the fact that materiality levels of IAs were more severe/strict than materiality levels of IAs. A significant difference was found for IAs (but not for EAs) when the mean ratings of each ICP's ratings of control risk were compared with the overall internal control system's ratings of control risk. Again, the results implied that IAs do not seem to realise that the ratings that they gave for each ICP should contribute to their ratings of the overall internal control system.

As to the two types of controls, EAs and IAs placed greater importance on "administrative" controls rather than "accounting" controls. Both groups of auditors perceived "administrative" controls better able to achieve the 5 control objectives. "Accounting" and "administrative" controls were rated by the auditors to be able to achieve "existence, valuation and rights and obligations" objectives better than "completeness and presentation and disclosure" objectives. EAs rated "administrative" controls better able to detect or correct material errors, whereas IAs rated "accounting" controls as better able to detect or correct material errors.

7.3.2 Judgement models

To the researcher's knowledge, this study is the first attempt to make use of analysis of covariance using regression approach based on an experimental design to determine the judgement models of auditors. It has the advantage of analyzing the effects of the covariates with the other ICPs simultaneously in determining the judgement model of auditors. This was made possible because each EA was paired up with an IA based on similar "covariates" (experience level, position level and educational level of the auditors)¹⁰⁴. The covariates were not significant when they were examined together with the 8 internal control procedures (ICPs)¹⁰⁵ for

¹⁰⁴ Only three variables were examined because the number of respondents were limited to 64 per group. A larger number of respondents would have been required in order to test for a larger number of variables.

¹⁰⁵ ICP1 (tcrd): Are time cards and other source documents checked before processing by the payroll department for casts and calculations?

ICP2 (tkpg): Are the tasks of both timekeeping and payment of employees adequately separated from the task of payrollpreparation?

ICP3 (adesc): Is there adequate physical security over personal files which contain information relevant to the audit?

ICP4 (dutr): Are the duties of those preparing the payroll rotated?

ICP5 (namck): Are the names on the payroll checked periodically against the active employee file of the personnel department?

ICP6 (pyrse): Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?

ICP7 (mgtr): Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?

ICP8 (forpr): Are formal procedures established for changing names, payrates and deductions?

both groups of auditors. The same 5 ICPs out of the 8 ICPs were found to be significant or seemed to influence the ratings of case 1 for both of the groups. The priority of importance was however different. Please refer to Figure 7.1 and 7.2 for the judgement model and the priority of importance of the 5 ICPs.

The final model for the EAs as a group is as follows:

```

*** ANALYSIS OF VARIANCE ***
      CN1      case number 1
BY  TCRD106
      TKPG
      NAMCK
      PYRSE
      MGTRE

```

Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F
Main Effects	42.898	5	8.580	9.345	.000
TCRD	9.068	1	9.068	9.877	.003
TKPG	7.446	1	7.446	8.111	.006
NAMCK	13.423	1	13.423	14.621	.000
PYRSE	5.528	1	5.528	6.022	.017
MGTRE	7.432	1	7.432	8.096	.006
Explained	42.898	5	8.580	9.345	.000
Residual	53.247	58	.918		
Total	96.145	63	1.526		

64 Cases were processed.

Figure 7.1: Final judgement model of EAs

The final model adjusted R² was 1-.918/1.526 which was equal to 39.8%. 5 of the 8 internal control procedures(ICPs) was influential in the ratings of internal control system by EAs. In priority of importance the 5 ICPS were namck, tcrd, mgtre, tkpg and pyrse.

¹⁰⁶ Please refer to footnote 85 for the explanation of the ICPs.

The final model for the IAs as a group is as follows:

```

*** ANALYSIS OF VARIANCE ***
CNI case number 1
BY TCRD107
TKPG
NAMCK
PYRSE
MGTRE

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Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F
Main Effects	32.609	5	6.522	8.541	.000
TCRD	4.569	1	4.569	5.984	.017
TKPG	5.153	1	5.153	6.749	.012
NAMCK	12.567	1	12.567	16.459	.000
PYRSE	5.325	1	5.325	6.974	.011
MGTRE	4.995	1	4.995	6.542	.013
Explained	32.609	5	6.522	8.541	.000
Residual	44.285	58	.764		
Total	76.894	63		1.221	

64 Cases were processed.

Figure 7.2: Final judgement model of IAs

The final model adjusted R^2 was $1 - .764/1.221$ which was equal to 37.4%. Thus the final model was able to explain 37.4% of the variation in the ratings of cases. Again 5 out of 8 internal control procedures (ICPs) seemed important and seemed to have influenced the IAs judgement as a group. In priority of importance, the 5 ICPs were namck, pyrse, tkpg, mgtre and tcrd.

As can be seen from the results of the judgement models, both groups of auditors considered the same five internal control procedures (ICPs) to be important although in different priority of importance. The five ICPs consist

¹⁰⁷ Please refer to footnote 85 for the explanation of the ICPs.

of two accounting procedures (namck and tcrd) and three administration procedures (tkpg, pyrse and mgtre). "Tkpg" and "Pyrse" represented the two separation of duties procedures, and consistent with previous studies (Ashton, 1974; Hamilton and Wright 1977 and others), they were found to be important in influencing the auditors' judgement in evaluating the payroll internal control system. The judgement model of EAs showed the two accounting procedures to be most influential compared with the other three administration procedures. As for the IAs, the judgement model showed that there was a mixed combination of procedures that were considered as important.

Comparison of the subjective weighting given by the auditors and the weighting obtained by the judgement model gave a judgement insight of .29 for EAs and .62 for IAs. This implied that what IAs do in practice had a closer relationship with what they believed than was the case for EAs. The judgement insight for EAs was on the low side compared with previous studies which range from .34 to .89.

The range between the ratings given to the most important and least important control was 6.6037 for the EAs and 5.619 for the IAs, showing a wider spread for the EAs. This implied a closer level of agreement between different IAs than appeared to exist between EAs with

respect to the importance of particular ICPs.

Both groups of auditors have considered the four "administrative" ICPs to be more important than the 4 "accounting" procedures.

7.3.3 Consistency

No significant difference was found with regard to the ratings given to repeat cases between EAs and IAs. Thus they were consistent in their ratings. The difference in spread of ratings between the two groups was also not significant. However, when a t-test on the repeat cases was done for each group of auditors, IAs showed a significant difference but when Pearson correlation was calculated, it showed that the ratings of the 2 cases were highly and positively correlated. Thus, although there was an inconsistency in the ratings of repeat cases for IAs, the ratings were closely related.

Similar to the findings on consensus, none of the 7 variables (experience level, position level, educational level, types of qualification, independence level of IAs, types of independence of IAs and firm size) seemed to be significant in determining judgement consistency of an auditor.

With regard to the ability of the internal control system in achieving the internal control objectives, EAs rated

it as 81.2% and IAs rated it as 65.6%. As to the internal control system's ability to detect or prevent material errors, EAs rated it as 87.5% and IAs rated it as 73.4%. These figures indicate that on the whole, the respondents had confidence that the internal control system presented to them was quite strong but IAs were more sceptical than EAs.

7.3.4 Effect of the variables on judgement "consensus" and "consistency"

None of the variables (experience level, position level, educational level, types of professional qualification, independence level of IAs, types of independence of IAs and firm size)¹⁰⁸ examined singly seems to be significant in determining the "judgement consensus" and judgement consistency" of the auditors.

7.3.5 Conclusion of study

Our overall conclusion is that judgements of both EAs and IAs are quite similar to each other in their ratings of the internal control strength of a given system.

This differs from previous research results from the US (Bailey, 1981; Landry, 1989 and Moore, 1993). Comparing the results of this study with the US results it appears

¹⁰⁸ Experience, educational and position level also showed insignificant results when they were examined simultaneously with the 8 ICPs in determining the judgement models of the auditors.

that there is greater judgement consensus between UK's IAs and EAs than between US's IAs and EAs. This is likely to be accounted for by a greater degree of similarity of professional qualifications and background of UK's IAs and EAs than may be the case in US. This is supported by a "not significant" result when a t-test was done on the types of professional qualifications possessed by EAs and IAs. Further study examining this issue would be helpful.

While the researcher considers that the statistical approach in this study to have been more robust than those used in the three US studies, it would be hard to argue that the US results are not dependable particularly as they all came to broadly similar conclusions.

7.4 LIMITATIONS OF THIS STUDY

The results of this study should be considered in the light of the following limitations:

- (1) The design of the survey instrument represents a tradeoff of "realism" and subject fatigue. To simulate the "real world", the instrument would have to include all crucial variables in each of the cases. At the same time, the survey instrument had to be of such a length that auditors would respond to it meaningfully. In satisfying both constraints, perhaps certain key variables were omitted which may have affected the results of the study. For example, the researcher had wanted to include the five components

of internal control as recommended by COSO and the UK Final Guidance but it was just not possible because at the same time there had to be a balance of "accounting" and "administrative" control in addition to avoiding the questionnaire being too lengthy.

Another factor to consider was the number of auditors who were willing to participate. Since auditors who were willing to participate consisted of 95 EAs and 192 IAs, it would only enable the use of 8 ICPs in the cases (as explained in Chapter 5).

However, the final form and variables in the survey instrument were considered only after many discussions with academic staffs and a pilot test to the practitioners.

- (2) the sampling was not done at random. It was the intention of the researcher to do a random selection of the sample from the list of auditors who volunteered to participate, but due to inevitable factors (such as, the auditor has resigned, seconded to another location), or for reasons that they were too busy, substitution had to be done. This therefore resulted in non-random selection.

Thus, the results may not be generalized beyond the

audit firms and the companies studied. However, most of previous research in the same area had been using convenience sampling, which is also a non-random selection.¹⁰⁹ Landry (1989) suggested that more variables or ICPs should be included in future research but he warned that,

unless respondents were to commit beforehand to participate in the study, a mailed questionnaire of this length would probably have a poor response rate.
(Landry 1989, 118)

However, as shown in this study, even after the auditors had volunteered to participate, there was still a poor response rate.

- (3) there were a few auditors whose personal profile (experience, educational and position level) as stated in the "list of auditors who were willing to participate" did not match up with the personal profile that they had filled in the primary questionnaire. As there were about three months lapse from the date the lists were sent and the primary questionnaires were administered, the auditors could have been promoted to a higher position or completed and passed their professional examinations. Since the EAs and IAs were matched according to the profile that they had given in the lists, it was decided to use the

¹⁰⁹ Ashton 1974; Hamilton and Wright 1977; Ashton and Brown 19806, to name a few..

information in the list if there were any discrepancies with the profile given in the questionnaire.

- (4) Internal control evaluation normally involves teamwork. Auditors were asked in this study to make control evaluations on an individual basis. Interaction with fellow auditors thus was not tested, and the possible effect of this interaction is not included in this study.
- (5) It was assumed in this study that EAs and IAs of similar personal profiles will behave in the same manner. This might not be the case. The assumption had to be made so that the effect of the personal profile on the evaluation judgement of the auditors could be taken out first before the effect of the 8 ICPs on the auditors' evaluation judgement could be tested by means of the analysis of covariance.
- (6) Even though the respondents were instructed not to discuss with other participants or not to use outside aids for support, some participants may have used such materials to improve their judgements.
- (7) The classification of "administrative" and "accounting" controls was not done by respondents but by the researcher. It would have been better that

the respondents were asked to classify the controls into the two types of controls, but because the questionnaire was lengthy, it was decided not to do so.

7.5 IMPLICATIONS OF THIS STUDY

These findings have shown that EAs can rely on the judgements of IAs since there was no significant difference in the evaluation that they made regarding a given internal control system. Thus, the internal control report that COSO and Cadbury's Code of Best Practice have recommended management/ directors to prepare (and most probably management/ directors will assign the task to IAs) can be evaluated more confidently by EAs.

The judgement models of both groups of auditors were also quite similar showing that the same ICPs were relied upon by the auditors in evaluating a given case. None of the variables (education level, experience level and position level) were found to influence the judgements of EAs and IAs in their ratings of the case. This suggests that evaluation of payroll internal control system could be done by relatively junior, inexperienced and those having no professional qualification. Visually, it was observed that "senior auditors" were most inconsistent in their ratings though it was not found to be statistically significant.

Both groups of auditors agreed that "administrative" (non-financial controls) were more important than "accounting" controls (financial controls) which was not what the researcher would have expected. Separation of duties was considered as important by both groups of auditors, though IAs placed more importance on them. One interesting finding was that EAs rated ability of "administrative" controls to detect or correct errors better than "accounting" controls. The opposite was true for IAs.

EAs were more lenient in their ratings of the cases as compared to IAs. This could be due to the fact that IAs were less familiar with the task of internal control evaluation and thus were more cautious and conservative in their ratings.

EAs rated ability of the internal control system to detect or correct material errors better than IAs. This could be due to EAs' lower materiality level. In practice it was found that evaluation of the components or features of the internal control system do not contribute to the evaluation of the internal control system as a whole.

Although the two groups were consistent with their ratings when given similar cases to evaluate, however, when compared within groups, IAs showed that there was a

significant difference between their evaluation of the cases. This could be due to the fact that IAs were less familiar with recognising similar internal control system.

Comparing our results with similar research in US, it appears that there is greater judgement consensus between UK's IAs and EAs than between US's IAs and EAs. This could be due to the fact that there is a larger difference in educational background in US than in UK. The implication of our finding is that there is an even stronger justification for IAs and EAs to rely on each other's work in the UK than would appear to be the case in the US.

7.6 SUGGESTIONS FOR FUTURE RESEARCH

In future, it would be better if all the five components of internal control as mentioned by COSO and Cadbury's Code of Best Practice could be included in the questionnaire. This would require more ICPs to be included in each case. The researcher would suggest that if this suggestion is taken up, there should be an effort to gather EAs and IAs first who would be willing to participate in the research. Objectives of the study, the time that they have to spend in filling in the questionnaire and the nature or content of the questionnaire should be explained to each individual auditor who is willing to participate. This step is very important, as poor response rate would lead to non-random

selection and a less representative sample. At least three months should be spent on getting individual auditors to participate.

If there were a larger number of auditors who would be willing to participate, then a different factorial design could be constructed to determine the judgement model of auditors. In addition a larger number of covariates could be used in the analysis (assuming analysis of covariance using regression approach was used) for example "age".

One attribute of a decision maker which has been found to be instrumental in determining information processing ability is age. Age has been said to contribute heavily to both the manner in which a decision is reached and decision quality.
(Taylor 1975, 74)

Instead of mail questionnaires, the questionnaires could be administered personally by the researcher. The voluntary auditors could be gathered in one place and asked to complete the questionnaires within the time limit given. This method could also ensure that the auditors do not discuss with one another or use decision aids to help them fill up the questionnaire.

The existing research could be expanded and modified to include the effect of peer pressure. In practice, evaluations usually are not made by isolated auditors. Individuals will influence one another's thinking, and decisions may be subject to review. Thus the influences of peer pressure and review by superiors would be a potential area for investigation. Such pressures would be

expected to increase consensus.

Instead of examining three approaches of internal control evaluation as was done in this thesis, "CO" or "CR" approach can be examined in depth as a single approach of evaluation in future studies. One respondent has commented that the "CO" approach is the more modern approach to evaluation as compared to the "ICQ" approach.

Another suggestion is to use a single organisation involving the actual EAs and IAs in the organisation. The internal control procedures could be included in the questionnaire and the auditors could then be required to assess the cases and make an evaluation of the internal control system. The differences between their judgements could then be examined and internal control procedures that are most influential on their judgements could then be determined. After a study of this nature has been taken, it could be compared with another similar organisation (in terms of size of the organisation and the size of the audit firm, for example) and any discrepancy between the judgements of any two pairs of auditors in the first organisation could then be compared with the judgements of the two pairs of auditors in the second organisation. The five components of internal control, i.e control environment, control activities, assessment of risk, information and communication and monitoring could then be assessed to ensure if these components could have caused the discrepancy.

Another suggestion would be to request the auditors to identify which of the 8 ICPs they perceived as "accounting" and "administrative" controls. This could then be compared with the researcher's definition which is based on auditing literature. An attempt can then be made to compare the two controls' ability to achieve the 5 control objectives.

Another suggestion would be for the respondents to quantify the materiality levels that they used so that IAs' materiality levels could be compared with EAs' materiality levels to determine if in fact the materiality levels of IAs is lower than that of EAs.

7.7 SUMMARY

This chapter has mentioned the research conclusions, limitations of the study, implications of the study and suggestion for future research. In conclusion, the main findings of this thesis have shown that there is a strong justification for EAs to rely on IAs with respect to internal control evaluation and vice-versa because both categories of auditors have been shown in this research to form closely similar judgements about internal control. This should be an encouraging finding as with recent developments of internal control reporting by management (which would be prepared by the IAs) and as EAs are required to evaluate the report, EAs could be more confident with the internal control report that they have to evaluate.

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APPENDIX 5a:LIST OF AUDITORS

Appendix 5ai): Cover letter for "list of auditors who are willing to participate" from supervisor

14 February 1994

Perhaps I should start by explaining my appearance on this letterhead. I have taken up an academic appointment at Hull and it is in that context, as supervisor of a PhD research student, that I am writing this covering letter.

You will see from Hasnah's letter that we are asking if you and some of your colleagues would please assist us in our research. If you are willing to do so, at the moment this will involve you in returning the enclosed enquiry pack so as to give us the necessary details of your colleagues (and hopefully yourself as well!) who are each prepared to assist us by completing a questionnaire which Hasnah will send directly to the people concerned.

Hasnah's research is to investigate whether external auditors and internal auditors come to similar or different assessments about the quality of internal control within a system and, if there are differences between their judgements, to endeavour to explore what might be the root causes for these differences.

I feel this research is particularly important at the moment.

Post-Cadbury, directors will be reporting on the quality of their internal financial control and, in many companies they may be relying upon internal audit (at least to a large extent) to put them in a position to provide such a report. External auditors will be reviewing that report and it is possible that external auditors too will wish to consider the quality of internal work in this regard. If the two groups of auditors are likely to come to different conclusions then it is clearly of interest to everyone to understand what those differences are likely to be. On the other hand, if we discover that internal auditors draw broadly similar conclusions to those of external auditors, this will also be of relevant interest. As you are aware, businesses apart from those which are caught directly in the Cadbury net (i.e. listed U.K. companies) are also seeking to adopt the general principles of Cadbury.

Hasnah is an exceptionally able researcher. She herself is a university academic. I do hope that you and your colleagues will be able to assist her in this - it would both be of immense value to her and also, I believe, of interest to auditors generally.

You will note from Hasnah's letter that we will keep you in touch with the progress of the research. I should say that we will ensure that all responses received will be treated with complete confidence and will not be used in any way which could be connected with the individuals or organisations to which they belong.

With every good wish,

Andrew Chambers

(Professor of Audit and Control)

Appendix 5a ii): Cover letter for "list of EAs who are willing to participate" from the researcher

21 January 1994

Dear Sir,

INTERNAL AND EXTERNAL AUDITORS: THEIR JUDGEMENTS AND PERCEPTIONS ON INTERNAL CONTROL

I am conducting a Phd research project under the supervision of Prof. Andrew Chambers to find out whether there are significant differences between the perceptions and judgements of internal and external auditors on certain aspects of internal control.

Using the attached sheets, we would be grateful if you could provide us with the names of auditors from your office and/or other offices of your firm who would be willing to participate, together with their background data (you are only asked to tick the appropriate boxes). A prepaid reply envelope is enclosed for your response.

If possible we would like to have at least 8 auditors each from the "partners" and "managers" levels and at least 12 auditors from EACH of the "seniors" and "juniors" levels.

PLEASE DO NOT DECLINE TO PARTICIPATE IN THIS RESEARCH IF YOU ARE ABLE TO PUT FORWARD A SMALLER NUMBER OF NAMES ONLY!

Other firms are assisting us in this research so it is possible that we will not involve every auditor that you name to us. However, we are planning to send a questionnaire directly to most of the auditors whom you indicate would be willing to assist us.

Thank you for your cooperation. We will let you know about our progress and will be sending you a summary of our results in due course.

Yours sincerely,

HASNAH HAJI HARON

Appendix 5aiii): Cover letter for "list of IAs who are willing to participate" from the researcher

19 January 1994

Dear Sir,

INTERNAL AND EXTERNAL AUDITORS: THEIR JUDGEMENTS AND PERCEPTIONS ON INTERNAL CONTROL

I am conducting a Phd research project under the supervision of Prof. Andrew Chambers to find out whether there are significant differences between the perceptions and judgements of internal and external auditors on certain aspects of internal control.

Using the attached sheets, I would be grateful if you could provide me with the names of auditors who would be willing to participate, together with their background data (you are only asked to tick the appropriate boxes). A prepaid reply envelope is enclosed for your response.

If possible we would like to have at least 3 auditors EACH from the "Head and Deputy Head of Internal Audit" and "Audit Manager" levels and at least 6 auditors from EACH of the "Senior Internal Auditor" and "Internal Auditor" levels.

PLEASE DON'T DECLINE TO PARTICIPATE IN THIS RESEARCH IF YOU ARE ABLE TO PUT FORWARD A SMALLER NUMBER OF NAMES.

Other firms are assisting us in this research so it is possible that we will not involve every auditor that you name to us. However, we are planning to send a questionnaire directly to most of the auditors whom you indicate would be willing to assist us.

Thank you for your cooperation. We will let you know about our progress and will be sending you a summary of our results in due course.

Yours sincerely,

HASNAH HAJI HARON

Appendix 5aiv): Example from a page of list of auditors
who would be willing to participate

PARTNER/ HEAD AND DEPUTY HEAD OF INTERNAL AUDIT
NAME

1. _____

ADDRESS(if different from your own address):

Please tick() the appropriate boxes.

a) Possess professional accounting and/or auditing qualifications?

- | | | |
|---|--------------------------|-----|
| 1 | <input type="checkbox"/> | Yes |
| 2 | <input type="checkbox"/> | No |

b) Professional accounting and /or auditing qualifications (have completed and passed) as at 31 December 1993.

- | | | |
|---|--------------------------|---|
| 1 | <input type="checkbox"/> | CACA(Char. Assoc. of Certif. Accountants) |
| 2 | <input type="checkbox"/> | CIMA(Char. Inst. of Management Accountants) |
| 3 | <input type="checkbox"/> | CA(Char. Accts., English, Irish or Scottish) |
| 4 | <input type="checkbox"/> | CIA(Certified Internal Auditor) |
| 5 | <input type="checkbox"/> | MIIA(Member of the Inst. of Int. Auditors-UK) |
| 6 | <input type="checkbox"/> | Other |

If "other", please specify

c) length of auditing experience
(in years)

<input type="text"/>	<input type="text"/>
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APPENDIX 5b: FOLLOW-UP LETTER FOR "LIST OF AUDITORS WHO
ARE WILLING TO PARTICIPATE" FROM SUPERVISOR

We enclose another copy of what we sent you a while back and also a copy of the questionnaire which we will be using. The research is well advanced in the sense that we have now spent a year and a half working up to this point but it is in jeopardy because we need 128 internal auditors and a similar number of external auditors to participate. We have a required target for internal auditors but are short of about 80 external auditors. We need Ernst & Young to help us with 20 or more people in the firm whom we may contact. I enclose a copy of the questionnaire.

Hasnah needs to ask for the names and details to be submitted to her first as a balanced set of external auditors (which have to correspond in seniority, etc., to the internal auditors).

We are particularly in need of "seniors" and "assistants" and would appreciate those as of partners and managers, please.

We don't want to make exaggerated claims for the value of this research but we do believe that it has considerable value. It will be of interest to know whether the external auditors come to the same conclusions about the same system of internal control as the internal auditors reach and, if not, whether this can be accounted for in any way. If these things, it will then probably lead to further research which may be more valuable.

I know this is a very significant burden we are asking of you. I can appreciate the view of the time which will be involved (about one hour for each questionnaire). I do believe it could be very useful.

APPENDIX 5c: PRIMARY QUESTIONNAIRE

Appendix 5ci): Cover letter for primary questionnaire
from the researcher

Dear Sir,

INTERNAL AND EXTERNAL AUDITORS: THEIR JUDGEMENTS AND
PERCEPTIONS ON INTERNAL CONTROL

Thank you for your willingness to participate in our
research.

The enclosed questionnaire should take approximately 1½
hours to complete and a prepaid reply envelope is
enclosed for your response.

Please note that there are no incorrect answers. If there
are more than 1 participant in your firm, please do not
discuss when filling up the questionnaire as your
individual response is very important in this research.
You can be rest assured that your answers will be kept
strictly confidential and will solely be used for
academic purposes.

It would be most appreciated if you could return the
questionnaire to us in 2 or 3 weeks time so that we could
proceed with the analysis as soon as possible.

In case you have any query regarding the questionnaire,
you could phone me at 0482-470352 or Prof Chambers at
0790-763350.

Any comments you care to make about this work is very
much appreciated.

Thank you so much for your coopertaion. We will let you
know about our progress and will be sending you a summary
of our results in due course.

Yours sincerely,

HASNAH HAJI HARON

Appendix 5cii): Primary questionnaire

SECTION A: DEMOGRAPHIC INFORMATION OF EXTERNAL AUDITORS

Please tick () the appropriate choice.

[Q1] Are you an external auditor or an internal auditor?

- 1 External auditor
2 Internal auditor

[Q2] Your current position(status)

- 1 Partner
2 Manager
3 Senior
4 Assistant

[Q3] Your sex

- 1 Male
2 Female

[Q4] Length of auditing experience in years

[Q5] Your age in years

[Q6] Your qualifications(excluding professional qualifications which are covered in question 7 and question 8 of this questionnaire). Please tick all the qualifications that you have.

- 1 Certificate
1 Diploma
1 First degree in accounting or related discipline
1 First degree in another discipline
1 Postgraduate
1 Other

[Q7] If your answer to question 6 is "other", please specify.

[Q8] Do you have a professional accounting and/or auditing qualification?

- | | | |
|---|--------------------------|-----|
| 1 | <input type="checkbox"/> | Yes |
| 2 | <input type="checkbox"/> | No |

[Q9] Accounting and/or auditing professional qualifications(have completed and passed)

- | | | |
|---|--------------------------|---|
| 1 | <input type="checkbox"/> | CACA(Char. Assoc. of Certified Accountants) |
| 1 | <input type="checkbox"/> | CIMA(Char. Institute of Management Accountants) |
| 1 | <input type="checkbox"/> | CA(Char. Accountants, English, Irish or Scottish) |
| 1 | <input type="checkbox"/> | CIA(Certified Internal Auditor) |
| 1 | <input type="checkbox"/> | MIIA(Member of the Inst. of Internal Auditors-UK) |
| 1 | <input type="checkbox"/> | Other |

[Q10] If your answer to question 9 is "other", please specify.

[Q11] Name of firm/firms(public practice or industry/commerce) that you've last worked in as an auditor (excluding the firm you are currently working in) if any.

Name of firms (most recent first)	Position(external or internal auditor). Please circle appropriate answer.	Number of years worked
a.	EA IA 1 2	<input type="text"/> <input type="text"/>
b.	EA IA 1 2	<input type="text"/> <input type="text"/>
c.	EA IA 1 2	<input type="text"/> <input type="text"/>
d.	EA IA 1 2	<input type="text"/> <input type="text"/>
e.	EA IA 1 2	<input type="text"/> <input type="text"/>

[Q12] Name of firm currently working in

Number of years worked

<input type="text"/>	<input type="text"/>
----------------------	----------------------

[Q13] Total number of auditors(that is total of juniors,seniors, managers and partners) in your firm as at 31 December 1993:

At Your Location (place of work)		United Kingdom (estimated)		Worldwide (estimated)				
<input type="checkbox"/>	below 25	01	<input type="checkbox"/>	below 25	01	<input type="checkbox"/>	below 25	
02	<input type="checkbox"/>	25 to 49	02	<input type="checkbox"/>	25 to 49	02	<input type="checkbox"/>	25 to 49
03	<input type="checkbox"/>	50 to 74	03	<input type="checkbox"/>	50 to 74	03	<input type="checkbox"/>	50 to 74
04	<input type="checkbox"/>	75 to 99	04	<input type="checkbox"/>	75 to 99	04	<input type="checkbox"/>	75 to 99
05	<input type="checkbox"/>	100 to 124	05	<input type="checkbox"/>	100 to 124	05	<input type="checkbox"/>	100 to 124
06	<input type="checkbox"/>	125 to 149	06	<input type="checkbox"/>	125 to 149	06	<input type="checkbox"/>	125 to 149
07	<input type="checkbox"/>	150 to 174	07	<input type="checkbox"/>	150 to 174	07	<input type="checkbox"/>	150 to 174
08	<input type="checkbox"/>	175 to 199	08	<input type="checkbox"/>	175 to 199	08	<input type="checkbox"/>	175 to 199
09	<input type="checkbox"/>	200 to 224	09	<input type="checkbox"/>	200 to 224	09	<input type="checkbox"/>	200 to 224
10	<input type="checkbox"/>	225 to 249	10	<input type="checkbox"/>	225 to 249	10	<input type="checkbox"/>	225 to 249
11	<input type="checkbox"/>	250 to 749	11	<input type="checkbox"/>	250 to 899	11	<input type="checkbox"/>	250 to 10249
12	<input type="checkbox"/>	750 to 1249	12	<input type="checkbox"/>	900 to 1549	12	<input type="checkbox"/>	10250 to 20249
13	<input type="checkbox"/>	1250 to 1749	13	<input type="checkbox"/>	1550 to 2199	13	<input type="checkbox"/>	20250 to 30249
14	<input type="checkbox"/>	1750 to 2249	14	<input type="checkbox"/>	2200 to 2849	14	<input type="checkbox"/>	30250 to 40249
15	<input type="checkbox"/>	2250 to 2749	15	<input type="checkbox"/>	2850 to 3499	15	<input type="checkbox"/>	40250 to 50249
16	<input type="checkbox"/>	2750 to 3249	16	<input type="checkbox"/>	3500 to 4149	16	<input type="checkbox"/>	50250 to 60249
17	<input type="checkbox"/>	3250 to 3749	17	<input type="checkbox"/>	4150 to 4799	17	<input type="checkbox"/>	60250 to 70249
18	<input type="checkbox"/>	3750 to 4249	18	<input type="checkbox"/>	4800 to 5449	18	<input type="checkbox"/>	70250 to 80249
19	<input type="checkbox"/>	4300 & above	19	<input type="checkbox"/>	5500 & above	19	<input type="checkbox"/>	80250 & above
2	<input type="checkbox"/>	don't know	20	<input type="checkbox"/>	don't know	20	<input type="checkbox"/>	don't know

[Q14] Total value of net assets of firm (worldwide) as at
31 December 1993:

01	<input type="checkbox"/>	below £25 million
02	<input type="checkbox"/>	£25 to £49.99 million
03	<input type="checkbox"/>	£50 to £74.99 million
04	<input type="checkbox"/>	£75 to £99.99 million
05	<input type="checkbox"/>	£100 to £124.99 million
06	<input type="checkbox"/>	£125 to £149.99 million
07	<input type="checkbox"/>	£150 to £174.99 million
08	<input type="checkbox"/>	£175 to £199.99 million
09	<input type="checkbox"/>	£200 to £224.99 million
10	<input type="checkbox"/>	£225 to £249.99 million
11	<input type="checkbox"/>	£250 to £499.99 million
12	<input type="checkbox"/>	£500 to £749.99 million
13	<input type="checkbox"/>	£750 to £999.99 million
14	<input type="checkbox"/>	£1 to £1.99 billion
15	<input type="checkbox"/>	£2 to £2.99 billion
16	<input type="checkbox"/>	£3 to £3.99 billion
17	<input type="checkbox"/>	£4 to £4.99 billion
18	<input type="checkbox"/>	£5 and above
19	<input type="checkbox"/>	cannot disclose
20	<input type="checkbox"/>	don't know

[Q15] Total value of turnover of firm (worldwide) as at
31 December 1993:

01	<input type="checkbox"/>	below £25 million
02	<input type="checkbox"/>	£25 to £49.99 million
03	<input type="checkbox"/>	£50 to £74.99 million
04	<input type="checkbox"/>	£75 to £99.99 million
05	<input type="checkbox"/>	£100 to £124.99 million
06	<input type="checkbox"/>	£125 to £149.99 million
07	<input type="checkbox"/>	£150 to £174.99 million
08	<input type="checkbox"/>	£175 to £199.99 million
09	<input type="checkbox"/>	£200 to £399.99 million
10	<input type="checkbox"/>	£400 to £599.99 million
11	<input type="checkbox"/>	£600 to £799.99 million
12	<input type="checkbox"/>	£800 to £999.99 million
13	<input type="checkbox"/>	£1 to £2.99 billion
14	<input type="checkbox"/>	£3 to £4.99 billion
15	<input type="checkbox"/>	£5 to £6.99 billion
16	<input type="checkbox"/>	£7 to £8.99 billion
17	<input type="checkbox"/>	£9 to £10 billion
18	<input type="checkbox"/>	£10 billion and above
19	<input type="checkbox"/>	cannot disclose
20	<input type="checkbox"/>	don't know

[Q16] Annual profit of firm (worldwide) as at 31 December 1993:

01	<input type="checkbox"/>	below £25 million
02	<input type="checkbox"/>	£25 to £49.99 million
03	<input type="checkbox"/>	£50 to £74.99 million
04	<input type="checkbox"/>	£75 to £99.99 million
05	<input type="checkbox"/>	£100 to £124.99 million
06	<input type="checkbox"/>	£125 to £149.99 million
07	<input type="checkbox"/>	£150 to £174.99 million
08	<input type="checkbox"/>	£175 to £199.99 million
09	<input type="checkbox"/>	£200 to £399.99 million
10	<input type="checkbox"/>	£400 to £599.99 million
11	<input type="checkbox"/>	£600 to £799.99 million
12	<input type="checkbox"/>	£800 to £999.99 million
13	<input type="checkbox"/>	£1 to £1.99 billion
14	<input type="checkbox"/>	£2 to £2.99 million
15	<input type="checkbox"/>	£3 to £3.99 million
16	<input type="checkbox"/>	£4 to £4.99 million
17	<input type="checkbox"/>	£5 to £5.99 billion
18	<input type="checkbox"/>	£6 billion and above
19	<input type="checkbox"/>	cannot disclose
20	<input type="checkbox"/>	don't know

[Q17] The number of times you have participated in auditing the payroll systems of clients

- | | | |
|---|--|--------------------|
| 1 | | 0 time |
| 2 | | 1 to 3 times |
| 3 | | 4 to 6 times |
| 4 | | 6 to 8 times |
| 5 | | 8 to 10 times |
| 6 | | more than 10 times |

[Q18] Estimated number of clients that you've participated in auditing

Type of Industry (most recent first)	No. of clients		
Manufacturing	<table border="1" style="margin: auto;"> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> </tr> </table>		
Merchandising	<table border="1" style="margin: auto;"> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> </tr> </table>		
Natural resources	<table border="1" style="margin: auto;"> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> </tr> </table>		
Banking	<table border="1" style="margin: auto;"> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> </tr> </table>		
Insurance	<table border="1" style="margin: auto;"> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> </tr> </table>		
Tourism	<table border="1" style="margin: auto;"> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> </tr> </table>		

Type of Industry (most recent first)	No. of clients																
Advertising	<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 50%; height: 20px;"></td> <td style="width: 50%; height: 20px;"></td> </tr> </table>																
Property	<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 50%; height: 20px;"></td> <td style="width: 50%; height: 20px;"></td> </tr> </table>																
Legal	<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 50%; height: 20px;"></td> <td style="width: 50%; height: 20px;"></td> </tr> </table>																
Others (Please specify)	<table border="1" style="width: 100%; height: 100%;"> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%; height: 20px;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%; height: 20px;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%; height: 20px;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%; height: 20px;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%; height: 20px;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%; height: 20px;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%; height: 20px;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%; height: 20px;"></td></tr> </table>																
Total	<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 33%; height: 20px;"></td> <td style="width: 33%; height: 20px;"></td> <td style="width: 33%; height: 20px;"></td> </tr> </table>																

SECTION A: DEMOGRAPHIC INFORMATION OF INTERNAL AUDITORS

Please tick () the appropriate choice.

[Q1] Are you an external auditor or an internal auditor?

- 1 External auditor
2 Internal auditor

[Q2] Your current position (please mark the closest in one of these four positions).

- 1 Head of Internal Audit
2 Audit Manager
3 Senior Internal Auditor
4 Internal Auditor

[Q3] Your sex

- 1 Male
2 Female

[Q4] Length of auditing experience in years

--	--

[Q5] Your age in years

--	--

[Q6] Your qualifications (excluding professional qualifications which are covered in question 7 and question 8 of this questionnaire). Please tick all the qualifications that you have.

- | | | |
|---|--------------------------|--|
| 1 | <input type="checkbox"/> | Certificate |
| 1 | <input type="checkbox"/> | Diploma |
| 1 | <input type="checkbox"/> | First degree in accounting or related discipline |
| 1 | <input type="checkbox"/> | First degree in another discipline |
| 1 | <input type="checkbox"/> | Postgraduate |
| 1 | <input type="checkbox"/> | Other |

[Q7] If your answer to question 6 is "other", please specify.

[Q8] Do you have a professional accounting and/or auditing qualification?

- | | | |
|---|--------------------------|-----|
| 1 | <input type="checkbox"/> | Yes |
| 2 | <input type="checkbox"/> | No |

[Q9] Accounting and/or auditing professional qualifications (have completed and passed)

- | | | |
|---|--------------------------|---|
| 1 | <input type="checkbox"/> | CACA(Chart. Assoc. of Certified Accountants) |
| 1 | <input type="checkbox"/> | CIMA(Chart.Institute of Management Accountants) |
| 1 | <input type="checkbox"/> | CA(Chart. Accountants,English, Irish or Scottish) |
| 1 | <input type="checkbox"/> | CIA(Certified Internal Auditor) |
| 1 | <input type="checkbox"/> | MIIA(Member of the Inst. of Internal Auditors-UK) |
| 1 | <input type="checkbox"/> | Other |

[Q10] If your answer to question 9 is "other", please specify.

[Q11] Name of firm/firms (public practice or industry/commerce) that you've last worked in as an auditor (excluding the firm you are currently working in) if any.

Name of firms (most recent first)	Position(external or internal auditor). Please circle appropriate answer.	Number of years worked
a.	EA IA 1 2	<input type="text"/> <input type="text"/>
b.	EA IA 1 2	<input type="text"/> <input type="text"/>
c.	EA IA 1 2	<input type="text"/> <input type="text"/>
d.	EA IA 1 2	<input type="text"/> <input type="text"/>
e.	EA IA 1 2	<input type="text"/> <input type="text"/>

[Q12] Name of firm currently
• working in

Number of years
worked

<input type="text"/>	<input type="text"/>
----------------------	----------------------

[Q13] Total number of auditors (that is total of juniors, seniors, managers and partners) in your firm as at 31 December 1993:

At Your Location (place of work)	United Kingdom (estimated)	Worldwide (estimated)
01 <input type="checkbox"/> below 25	01 <input type="checkbox"/> below 25	01 <input type="checkbox"/> below 25
02 <input type="checkbox"/> 25 to 49	02 <input type="checkbox"/> 25 to 49	02 <input type="checkbox"/> 25 to 49
03 <input type="checkbox"/> 50 to 74	03 <input type="checkbox"/> 50 to 74	03 <input type="checkbox"/> 50 to 74
04 <input type="checkbox"/> 75 to 99	04 <input type="checkbox"/> 75 to 99	04 <input type="checkbox"/> 75 to 99
05 <input type="checkbox"/> 100 to 124	05 <input type="checkbox"/> 100 to 124	05 <input type="checkbox"/> 100 to 124
06 <input type="checkbox"/> 125 to 149	06 <input type="checkbox"/> 125 to 149	06 <input type="checkbox"/> 125 to 149
07 <input type="checkbox"/> 150 to 174	07 <input type="checkbox"/> 150 to 174	07 <input type="checkbox"/> 150 to 174
08 <input type="checkbox"/> 175 to 199	08 <input type="checkbox"/> 175 to 199	08 <input type="checkbox"/> 175 to 199
09 <input type="checkbox"/> 200 to 224	09 <input type="checkbox"/> 200 to 224	09 <input type="checkbox"/> 200 to 224
10 <input type="checkbox"/> 225 to 249	10 <input type="checkbox"/> 225 to 249	10 <input type="checkbox"/> 225 to 249
11 <input type="checkbox"/> 250 to 749	11 <input type="checkbox"/> 250 to 899	11 <input type="checkbox"/> 250 to 10249
12 <input type="checkbox"/> 750 to 1249	12 <input type="checkbox"/> 900 to 1549	12 <input type="checkbox"/> 10250 to 20249
13 <input type="checkbox"/> 1250 to 1749	13 <input type="checkbox"/> 1550 to 2199	13 <input type="checkbox"/> 20250 to 30249
14 <input type="checkbox"/> 1750 to 2249	14 <input type="checkbox"/> 2200 to 2849	14 <input type="checkbox"/> 30250 to 40249
15 <input type="checkbox"/> 2250 to 2749	15 <input type="checkbox"/> 2850 to 3499	15 <input type="checkbox"/> 40250 to 50249
16 <input type="checkbox"/> 2750 to 3249	16 <input type="checkbox"/> 3500 to 4149	16 <input type="checkbox"/> 50250 to 60249
17 <input type="checkbox"/> 3250 to 3749	17 <input type="checkbox"/> 4150 to 4799	17 <input type="checkbox"/> 60250 to 70249
18 <input type="checkbox"/> 3750 to 4249	18 <input type="checkbox"/> 4800 to 5449	18 <input type="checkbox"/> 70250 to 80249
19 <input type="checkbox"/> 4300 & above	19 <input type="checkbox"/> 5500 & above	19 <input type="checkbox"/> 80250 & above
2 <input type="checkbox"/> don't know	20 <input type="checkbox"/> don't know	20 <input type="checkbox"/> don't know

[Q14] Total value of net assets of firm(worldwide) as
at 31 December 1993:

01		below £25 million
02		£25 to £49.99 million
03		£50 to £74.99 million
04		£75 to £99.99 million
05		£100 to £124.99 million
06		£125 to £149.99 million
07		£150 to £174.99 million
08		£175 to £199.99 million
09		£200 to £224.99 million
10		£225 to £249.99 million
11		£250 to £499.99 million
12		£500 to £749.99 million
13		£750 to £999.99 million
14		£1 to £1.99 billion
15		£2 to £2.99 billion
16		£3 to £3.99 billion
17		£4 to £4.99 billion
18		£5 and above
19		cannot disclose
20		don't know

[Q15] Total value of turnover of firm(worldwide) as at
31 December 1993:

01	<input type="checkbox"/>	below £25 million
02	<input type="checkbox"/>	£25 to £49.99 million
03	<input type="checkbox"/>	£50 to £74.99 million
04	<input type="checkbox"/>	£75 to £99.99 million
05	<input type="checkbox"/>	£100 to £124.99 million
06	<input type="checkbox"/>	£125 to £149.99 million
07	<input type="checkbox"/>	£150 to £174.99 million
08	<input type="checkbox"/>	£175 to £199.99 million
09	<input type="checkbox"/>	£200 to £399.99 million
10	<input type="checkbox"/>	£400 to £599.99 million
11	<input type="checkbox"/>	£600 to £799.99 million
12	<input type="checkbox"/>	£800 to £999.99 million
13	<input type="checkbox"/>	£1 to £2.99 billion
14	<input type="checkbox"/>	£3 to £4.99 billion
15	<input type="checkbox"/>	£5 to £6.99 billion
16	<input type="checkbox"/>	£7 to £8.99 billion
17	<input type="checkbox"/>	£9 to £10 billion
18	<input type="checkbox"/>	£10 billion and above
19	<input type="checkbox"/>	cannot disclose
20	<input type="checkbox"/>	don't know

[Q16] Annual profit of firm(worldwide) as at 31 December 1993:

01	<input type="checkbox"/>	below £25 million
02	<input type="checkbox"/>	£25 to £49.99 million
03	<input type="checkbox"/>	£50 to £74.99 million
04	<input type="checkbox"/>	£75 to £99.99 million
05	<input type="checkbox"/>	£100 to £124.99 million
06	<input type="checkbox"/>	£125 to £149.99 million
07	<input type="checkbox"/>	£150 to £174.99 million
08	<input type="checkbox"/>	£175 to £199.99 million
09	<input type="checkbox"/>	£200 to £399.99 million
10	<input type="checkbox"/>	£400 to £599.99 million
11	<input type="checkbox"/>	£600 to £799.99 million
12	<input type="checkbox"/>	£800 to £999.99 million
13	<input type="checkbox"/>	£1 to £1.99 billion
14	<input type="checkbox"/>	£2 to £2.99 million
15	<input type="checkbox"/>	£3 to £3.99 million
16	<input type="checkbox"/>	£4 to £4.99 million
17	<input type="checkbox"/>	£5 to £5.99 billion
18	<input type="checkbox"/>	£6 billion and above
19	<input type="checkbox"/>	cannot disclose
20	<input type="checkbox"/>	don't know

[Q17] Name of audit firm that does audit for your company

- | | | |
|----|--------------------------|-------------------|
| 01 | <input type="checkbox"/> | Arthur Andersen |
| 02 | <input type="checkbox"/> | Coopers & Lybrand |
| 03 | <input type="checkbox"/> | Ernst & Young |
| 04 | <input type="checkbox"/> | KPMG Peat Marwick |
| 05 | <input type="checkbox"/> | Price Waterhouse |
| 06 | <input type="checkbox"/> | Touche Ross |
| 07 | <input type="checkbox"/> | Other |

[Q18] If your answer to question 17 is "other", please specify.

[Q19] To whom is the Head of Internal Audit accountable? (Tick more than one if appropriate).

- | | | |
|----|--------------------------|---|
| 01 | <input type="checkbox"/> | Financial Controller or Director of Finance |
| 02 | <input type="checkbox"/> | Chief Executive |
| 03 | <input type="checkbox"/> | Board of Directors |
| 04 | <input type="checkbox"/> | Audit Committee |
| 05 | <input type="checkbox"/> | Other |

[Q20] If your answer to question 19 is "other", please specify.

[Q21] Are you involved with compliance testing?

- | | | |
|---|--------------------------|--------|
| 1 | <input type="checkbox"/> | Yes |
| 2 | <input type="checkbox"/> | No |
| 3 | <input type="checkbox"/> | Partly |

[Q22] If your answer to question 21 is "Yes" or "Partly", please elaborate if possible.

[Q23] Do you make recommendations for improvement in internal control systems?

- | | | |
|---|--------------------------|--------|
| 1 | <input type="checkbox"/> | Yes |
| 2 | <input type="checkbox"/> | No |
| 3 | <input type="checkbox"/> | Partly |

[Q24] If your answer to question 23 is "Yes" or "Partly", please elaborate if possible.

[Q25] Are you involved with developing detailed proposals for the design or re-design of internal controls?

- | | | |
|---|--------------------------|--------|
| 1 | <input type="checkbox"/> | Yes |
| 2 | <input type="checkbox"/> | No |
| 3 | <input type="checkbox"/> | Partly |

[Q26] If your answer to question 25 is "Yes" or "Partly", please specify.

[Q27] Are you involved with the implementation of control changes?

- | | | |
|---|--------------------------|--------|
| 1 | <input type="checkbox"/> | Yes |
| 2 | <input type="checkbox"/> | No |
| 3 | <input type="checkbox"/> | Partly |

[Q28] If your answer to question 27 is "Yes" or "Partly", please elaborate if possible.

[Q29] Are you involved in administering or operating any internal controls?

- | | | |
|---|--------------------------|--------|
| 1 | <input type="checkbox"/> | Yes |
| 2 | <input type="checkbox"/> | No |
| 3 | <input type="checkbox"/> | Partly |

[Q30] If your answer to question 29 is "Yes" or "Partly", please elaborate if possible.

SECTION B

QUESTION 1: INSTRUCTIONS TO CASE MATERIAL FOR EXTERNAL AUDITORS

PLEASE DO NOT CONSULT EACH OTHER WHEN ANSWERING THIS SECTION. "YOUR INDIVIDUAL JUDGEMENT" IS VERY IMPORTANT TO THIS RESEARCH.

The introduction passage below is a description of a payroll cycle which serves as a background information to the cases that accompanies it. Please read the introduction passage below before attempting to answer the cases.

INTRODUCTION

You are the auditor in charge of the year-end statutory audit of ABC Limited. Your firm has performed the annual audit for the past several years, but this is the first year that you have been assigned to be the auditor in charge of the fieldwork. The previous work done on payroll did not result in any material concerns.

ABC Limited produces air conditioners in an assembly-line operation. During the year under review, net sales were about £40 million. You have decided that your investigation of the company's internal control system should be undertaken before you determine further audit procedures which should be applied.

You have assistants to review the existing internal control system and the operation of that system in the various areas of the company's operations; for instance, they will investigate the internal controls pertaining to cash receipts; the controls over accounts receivable; the controls over payrolls, etc. In conducting these reviews, your assistants will use internal control questionnaires.

You will review the completed questionnaires and then evaluate the strength of the existing controls. Based upon your evaluation, you will then prescribe the audit procedures to be applied in each area.

In this experiment, you are only concerned with the internal controls over payroll. The company has about 270 factory employees. The employees are paid monthly, and the total annual payroll is approximately £2½ million. Hourly wage rates are established in the union contract. The company has not yet computerized all aspects of its accounting system although it is thinking of doing so in the near future. Thus, the calculation of the payroll and the related record-keeping and other tasks are performed manually.

When a new employee is hired by the company, the personnel department sends a copy of the P45, other forms and details of voluntary deductions to the payroll department. The personnel department also notifies the payroll department when a worker's employment is terminated.

A time clock is used. The cards are kept in a rack beside the clock, and factory employees are required to punch in and out every day. The payroll department uses the time cards as input to the payroll computation process. Other input, in the form of authorized wage rates and authorized deductions, is obtained from the personnel department. After the payroll cheques are prepared, they are sent to the controller's office, along with any cheques that were spoiled in the preparation process. Spoiled cheques are properly destroyed.

The controller signs the cheques and sends them to the treasurer's office. The treasurer prepares a cheque for the exact amount of the total net pay to transfer funds from the general bank account to the imprest payroll bank account. After the treasurer signs this cheque, his secretary makes the deposit in the imprest payroll bank account on the day before the payroll cheques are to be issued.

After the cheques have been distributed to the employees, any unclaimed cheques are returned to the controller immediately. After holding the cheques for two days, the controller deposits them in a special bank account and records a liability. Reconciliation of the payroll bank account is done monthly.

The employees directly concerned with the payroll system have been with the company an average of 5 years with the range being 2 to 10 years.

YOU ARE TO ASSUME THAT THE INTERNAL CONTROL PROCEDURES DESCRIBED IN THE INTRODUCTION PASSAGE ARE FULLY COMPLIED WITH.

You are asked to evaluate the quality of the internal control system by putting a cross("X") on the line which has "extremely weak" and "extremely strong" written at each end. The cross("X") which you put on the line would represent your strength of belief regarding the quality of internal control system that you are evaluating.

QUESTION 1: INSTRUCTIONS TO CASE MATERIAL FOR INTERNAL AUDITORS

CASE MATERIAL FOR INTERNAL AUDITORS

The introduction passage below is a description of a payroll cycle which serves as a background information to the cases that accompanies it. Please read the introduction passage below before attempting to answer the cases.

INTRODUCTION

You are the leader of a group of internal auditors who has been put in charge of the fieldwork for the audit of a subsidiary company, ABC Limited. This subsidiary has been a member of the group for many years and as such has been subject to review by both internal and external audit on many occasions. However, this is the first year that you have been assigned to be the auditor in charge of the fieldwork. The previous work done on payroll did not result in any material concerns.

ABC Limited produces air conditioners in an assembly-line operation. During the year under review, net sales were about £40 million. You have decided that your investigation of the company's internal control system should be undertaken before you determine further audit procedures which should be applied.

You have assistants who will review the existing internal control system and the operation of that system in the various areas of the company's operations; for instance, they will investigate the internal controls pertaining to cash receipts; the controls over accounts receivable; the controls over payrolls, etc. In conducting these reviews, your assistants will use internal control questionnaires.

You will review the completed questionnaires and then evaluate the strength of the existing controls. Based upon your evaluation, you will then prescribe the audit procedures to be applied in each area.

In this experiment, you are only concerned with the internal controls over payroll. The company has about 270 factory employees. The employees are paid monthly, and the total annual payroll is approximately £2½ million. Hourly wage rates are established in the union contract. The company has not yet computerized all aspects of its accounting system although it is thinking of doing so in the near future. Thus, the calculation of the payroll and the related record-keeping and other tasks are performed manually.

When a new employee is hired by the company, the personnel department sends a copy of the P45, other forms and details of voluntary deductions to the payroll department. The personnel department also notifies the payroll department when a worker's employment is terminated.

A time clock is used. The cards are kept in a rack beside the clock, and factory employees are required to punch in and out every day. The payroll department uses the time cards as input to the payroll computation process. Other input, in the form of authorized wage rates and authorized deductions, is obtained from the personnel department. After the payroll cheques are prepared, they are sent to the controller's office, along with any cheques that were spoiled in the preparation process. Spoiled cheques are properly destroyed.

The controller signs the cheques and sends them to the treasurer's office. The treasurer prepares a cheque for the exact amount of the total net pay to transfer funds from the general bank account to the imprest payroll bank account. After the treasurer signs this cheque, his secretary makes the deposit in the imprest payroll bank account on the day before the payroll cheques are to be issued.

After the cheques have been distributed to the employees, any unclaimed cheques are returned to the controller immediately. After holding the cheques for two days, the controller deposits them in a special bank account and records a liability. Reconciliation of the payroll bank account is done monthly.

The employees directly concerned with the payroll system have been with the company an average of 5 years with the range being 2 to 10 years.

YOU ARE TO ASSUME THAT THE INTERNAL CONTROL PROCEDURES DESCRIBED IN THE INTRODUCTION PASSAGE ARE FULLY COMPLIED WITH.

You are asked to evaluate the quality of the internal control system by putting a cross("X") on the line which has "extremely weak" and "extremely strong" written at each end. The cross("X") which you put on the line would represent your strength of belief regarding the quality of internal control system that you are evaluating.

QUESTIONS COMMON TO BOTH EXTERNAL AND INTERNAL AUDITORS

You are required to make 8 evaluations, one for each of 8 sets of answers which your assistants might bring to you.

FOR THE PURPOSE OF Q1, YOU ARE TO ASSUME THAT YOU HAVE INSTRUCTED YOUR ASSISTANTS TO EXAMINE ONLY 8 INTERNAL CONTROL PROCEDURES PERTAINING TO PAYROLL. EACH PROCEDURE IS IN THE FORM OF A QUESTION WHICH YOUR ASSISTANTS HAVE ANSWERED BY "YES" OR "NO" DEPENDING ON THE RESULTS OF THEIR EXAMINATIONS.

YOU WILL THEN BASED YOUR JUDGEMENT OF THE STRENGTH OF INTERNAL CONTROL ON THE INTERNAL CONTROL PROCEDURES DESCRIBED IN THE INTRODUCTION PASSAGE AND THE 8 INTERNAL CONTROL PROCEDURES WHICH ARE STATED IN THE FORM OF A QUESTIONNAIRE. INTERNAL CONTROL PROCEDURES WITH A "YES" ANSWER INDICATES THAT THE INTERNAL CONTROL PROCEDURE IS "PRESENT" AND "FULLY COMPLIED WITH".

QUESTION 1

Now, please evaluate the following 8 cases.

PLEASE LEAVE BLANK

[Q1] CASE NUMBER 1

--	--	--	--

INTERNAL CONTROL QUESTIONNAIRE

Internal control procedures	Yes	No
1. Are time cards and other source documents checked before processing by the payroll department for casts and calculations?		✓
2. Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?		✓
3. Is there adequate physical security over personal files which contain information relevant to the audit?		✓
4. Are the duties of those preparing the payroll rotated?		✓
5. Are the names on the payroll checked periodically against the active employee file of the personnel department?		✓
6. Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?	✓	
7. Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?	✓	
8. Are formal procedures established for changing names, pay rates and deductions?		✓

Based on the internal control procedures described in the introduction passage AND the above internal control questionnaire, please mark a cross("X") on this scale representing your strength of belief regarding the quality of the internal control system.

extremely weak	extremely strong

QUESTION 1

PLEASE LEAVE BLANK

[Q1] CASE NUMBER 2

--	--	--	--

INTERNAL CONTROL QUESTIONNAIRE

Internal control procedures	Yes	No
1. Are time cards and other source documents checked before processing by the payroll department for casts and calculations?		✓
2. Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?		✓
3. Is there adequate physical security over personal files which contain information relevant to the audit?		✓
4. Are the duties of those preparing the payroll rotated?		✓
5. Are the names on the payroll checked periodically against the active employee file of the personnel department?	✓	
6. Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?	✓	
7. Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?		✓
8. Are formal procedures established for changing names, pay rates and deductions?		✓

Based on the internal control procedures described in the introduction passage AND the above internal control questionnaire, please mark a cross("X") on this scale representing your strength of belief regarding the quality of the internal control system.

extremely weak	extremely strong

QUESTION 1

PLEASE LEAVE BLANK

[Q1] CASE NUMBER 3

--	--	--	--

INTERNAL CONTROL QUESTIONNAIRE

Internal control procedures	Yes	No
1. Are the names on the payroll checked periodically against the active employee file of the personnel department?	✓	
2. Is there adequate physical security over personal files which contain information relevant to the audit?		✓
3. Are time cards and other source documents checked before processing by the payroll department for casts and calculations?		✓
4. Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?		✓
5. Are formal procedures established for changing names, pay rates and deductions?		✓
6. Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?	✓	
7. Are the duties of those preparing the payroll rotated?		✓
8. Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?	✓	

Based on the internal control procedures described in the introduction passage AND the above internal control questionnaire, please mark a cross("X") on this scale representing your strength of belief regarding the quality of the internal control system.

-----	-----
extremely weak	extremely strong

QUESTION 1

PLEASE LEAVE BLANK

[Q1] CASE NUMBER 4

--	--	--	--

INTERNAL CONTROL QUESTIONNAIRE

Internal control procedures	Yes	No
1. Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?	✓	
2. Are the names on the payroll checked periodically against the active employee file of the personnel department?	✓	
3. Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?	✓	
4. Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?	✓	
5. Are the duties of those preparing the payroll rotated?	✓	
6. Are time cards and other source documents checked before processing by the payroll department for casts and calculations?	✓	
7. Is there adequate physical security over personal files which contain information relevant to the audit?	✓	
8. Are formal procedures established for changing names, pay rates and deductions?	✓	

Based on the internal control procedures described in the introduction passage AND the above internal control questionnaire, please mark a cross("X") on this scale representing your strength of belief regarding the quality of the internal control system.

|-----|
extremely weak extremely strong

QUESTION 1

PLEASE LEAVE BLANK

[Q1] CASE NUMBER 5

--	--	--	--

INTERNAL CONTROL QUESTIONNAIRE

Internal control procedures	Yes	No
1. Are the names on the payroll checked periodically against the active employee file of the personnel department?	✓	
2. Is there adequate physical security over personal files which contain information relevant to the audit?		✓
3. Are time cards and other source documents checked before processing by the payroll department for casts and calculations?		✓
4. Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?		✓
5. Are formal procedures established for changing names, pay rates and deductions?	✓	
6. Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?	✓	
7. Are the duties of those preparing the payroll rotated?		✓
8. Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?	✓	

Based on the internal control procedures described in the introduction passage AND the above internal control questionnaire, please mark a cross("X") on this scale representing your strength of belief regarding the quality of the internal control system.

extremely weak	extremely strong

QUESTION 1

PLEASE LEAVE BLANK

[Q1] CASE NUMBER 6

--	--	--	--

INTERNAL CONTROL QUESTIONNAIRE

Internal control procedures	Yes	No
1. Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?		✓
2. Are the names on the payroll checked periodically against the active employee file of the personnel department?	✓	
3. Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?	✓	
4. Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?	✓	
5. Are the duties of those preparing the payroll rotated?	✓	
6. Are time cards and other source documents checked before processing by the payroll department for casts and calculations?		✓
7. Is there adequate physical security over personal files which contain information relevant to the audit?		✓
8. Are formal procedures established for changing names, pay rates and deductions?	✓	

Based on the internal control procedures described in the introduction passage AND the above internal control questionnaire, please mark a cross("X") on this scale representing your strength of belief regarding the quality of the internal control system.

_____	_____
extremely weak	extremely strong

QUESTION 1

PLEASE LEAVE BLANK

[Q1] CASE NUMBER 7

--	--	--	--

INTERNAL CONTROL QUESTIONNAIRE

Internal control procedures	Yes	No
1. Are the names on the payroll checked periodically against the active employee file of the personnel department?		✓
2. Is there adequate physical security over personal files which contain information relevant to the audit?		✓
3. Are time cards and other source documents checked before processing by the payroll department for casts and calculations?		✓
4. Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?		✓
5. Are formal procedures established for changing names, pay rates and deductions?		✓
6. Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?	✓	
7. Are the duties of those preparing the payroll rotated?		✓
8. Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?	✓	

Based on the internal control procedures described in the introduction passage AND the above internal control questionnaire, please mark a cross("X") on this scale representing your strength of belief regarding the quality of the internal control system.

extremely weak	extremely strong

QUESTION 1

PLEASE LEAVE BLANK

[Q1] CASE NUMBER 8

--	--	--	--

INTERNAL CONTROL QUESTIONNAIRE

Internal control procedures	Yes	No
1. Are time cards and other source documents checked before processing by the payroll department for casts and calculations?		✓
2. Are the tasks of both timekeeping and payment of employees adequately separated from the task of payroll preparation?		✓
3. Is there adequate physical security over personal files which contain information relevant to the audit?	✓	
4. Are the duties of those preparing the payroll rotated?	✓	
5. Are the names on the payroll checked periodically against the active employee file of the personnel department?	✓	
6. Are the tasks of both payroll preparation and payment of employees adequately separated from the task of payroll bank account reconciliation?	✓	
7. Are management reports used to monitor the reliability of payroll data through comparisons with budgets and following up of variance reports?	✓	
8. Are formal procedures established for changing names, pay rates and deductions?	✓	

Based on the internal control procedures described in the introduction passage AND the above internal control questionnaire, please mark a cross("X") on this scale representing your strength of belief regarding the quality of the internal control system.

|-----|

extremely weak extremely strong

QUESTION 2

[Q2] Can you please give any insights into the factors you were considering when you placed your crosses on the scales for the cases in Question 1.

QUESTION 3

[Q3] Now that you have completed indicating your strength of belief regarding the quality of the internal control systems on the "line" provided, please allocate a number out of 20 points to each of the eight internal control procedures in such a way as to indicate the relative importance of each internal control procedure to your ratings. The number you can choose from is 0 to 20. "0" indicates that the internal control procedure is "not at all important".

THE MORE IMPORTANT THE INTERNAL CONTROL
PROCEDURE IS, THE LARGER THE NUMBER THAT SHOULD
BE ASSIGNED TO IT.

PLEASE GIVE A MARKED SCORE FOR EACH CONTROL
PROCEDURE.

<u>Internal control procedures</u>	<u>Points</u>
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.....	<input type="text"/> <input type="text"/> /20
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.....	<input type="text"/> <input type="text"/> /20
3. There is adequate physical security over personal files which contain information relevant to the audit?	<input type="text"/> <input type="text"/> /20
4. The duties of those preparing the payroll are rotated.....	<input type="text"/> <input type="text"/> /20
5. The names on the payroll are checked periodically against the active employee file of the personnel department.....	<input type="text"/> <input type="text"/> /20
6. The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.	<input type="text"/> <input type="text"/> /20
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.	<input type="text"/> <input type="text"/> /20
8. Formal procedures are established for changing names, pay rates and deductions.....	<input type="text"/> <input type="text"/> /20

QUESTION 4

[Q4] ASSUMING THAT ALL OF THE 8 INTERNAL CONTROL PROCEDURES ARE PRESENT AND FULLY COMPLIED WITH IN THE COMPANY, please rate the extent to which the "control objectives" can be met by each of the internal control procedures, in the matrix on the next page of this questionnaire.

"CONTROL OBJECTIVES" ARE GOALS WHICH IF ACHIEVED WOULD INDICATE THAT THE SYSTEM HAS FUNCTIONED SATISFACTORILY.

You are required to write down the appropriate number in each box of the matrix provided below, using this numbering scale:

1	2	3	4	5	6	7

does very slightly adequately strongly very fully
not slightly strongly
ach- achieves achieves achieves achieves achieve achieves
ieve

For example, if you think that the internal control procedure relating to line 1 of the matrix, ("Time cards and other source documents are checked before processing by the payroll department for casts and calculations") will "adequately achieve" the "Completeness" control objective then you should put a "4" in the appropriate box. Here are some examples which have been entered on the matrix shown below.

<u>Extent to which control objective/objectives are met</u>	<u>Type of control objectives met</u>	<u>Ratings</u>
Adequately achieves	Completeness	4
Very slightly achieves	Existence	2
Slightly achieves	Presentation & Disclosure	3
Does not achieve	Rights & Obligations	1
Fully achieves	Valuation	7

Internal control procedures	Complete-ness	Exis-tence	Presenta-tion & Disclosure	Rights & Obligations	Valua-tion
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.	4	2	3	1	7
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.					

Internal control procedures	Completeness	Existence	Presentation & Disclosure	Rights & Obligations	Valuation
3. There is adequate physical security over personal files which contain information relevant to the audit.					
4. The duties of those preparing the payroll are rotated.					
5. The names on the payroll are checked periodically against the active employee file of the personnel department.					
6. The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.					
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.					
8. Formal procedures are established for changing names, pay rates and deductions.					

QUESTION 4

FOR [Q4] AND [Q5], PLEASE DO NOT GIVE YOUR OPINION WHETHER THE OBJECTIVES ARE IMPORTANT IN A PAYROLL AUDIT. WE ARE ASKING FOR YOUR OPINION ON WHETHER THE INTERNAL CONTROL PROCEDURES ARE ABLE TO MEET THE CONTROL OBJECTIVES.

Now, please complete this matrix with respect to the internal control objectives.

Key: **COMPLETENESS.** Existing payroll transactions are properly recorded.

EXISTENCE. Recorded payroll are for work actually performed by non-fictitious customers.

PRESENTATION AND DISCLOSURE. Payroll transactions are properly classified.

RIGHTS AND OBLIGATIONS. Payroll transactions are properly authorized and are rightfully the company's obligations.

VALUATION. Recorded payroll transactions are for the amount of time actually worked and at the proper rates, and withholdings are properly calculated.

Internal control procedures	Completeness	Existence	Presentation & Disclosure	Rights & Obligations	Valuation
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.					
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.					

QUESTION 4

Internal control procedures	Com- plete- ness	Exist- ence	Pres- ent- ation & Discl- osure	Rights & Oblig- ation	Valu- ation
3. There is adequate physical security over personal files which contain information relevant to the audit.					
4. The duties of those preparing the payroll are rotated.					
5. The names on the payroll are checked periodically against the active employee file of the personnel department.					
6. The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.					

Internal control procedures	Completeness	Existence	Presentation & Disclosure	Rights & Obligation	Valuation
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.					
8. Formal procedures are established for changing names, pay rates and deductions.					

QUESTION 5

[Q5] ASSUMING THAT ALL OF THE 8 INTERNAL CONTROL PROCEDURES ARE PRESENT AND FULLY COMPLIED WITH IN THE COMPANY, please rate the extent to which each of the control objectives can be met by the overall internal control system (combination of all the internal control procedures that exist),

[Q5a] How would you rate the extent to which the "Completeness" control objective is achieved?
Please mark the appropriate number with a cross("X").

1	2	3	4	5	6	7
does very not slightly ach- achieves ieve	slightly ach- achieves	adequately ach- achieves	strongly ach- achieves	very ach- achieves	strongly achieve	fully achieves

[Q5b] How would you rate the extent to which the "Existence" control objective is achieved?
Please mark the appropriate number with a cross ("X").

1	2	3	4	5	6	7
does very not slightly ach- achieves ieve	slightly ach- achieves	adequately ach- achieves	strongly ach- achieves	very ach- achieves	strongly achieve	fully achieves

[Q5c] How would you rate the extent to which the "Presentation and Disclosure" control objective is achieved?
Please mark the appropriate number with a cross("X").

1	2	3	4	5	6	7
does very not slightly ach- achieves ieve	slightly ach- achieves	adequately ach- achieves	strongly ach- achieves	very ach- achieves	strongly achieve	fully achieves

QUESTION 5

[Q5d] How would you rate the extent to which the "Rights and Obligations" control objective is achieved?

Please mark the appropriate number with a cross("X").

1	2	3	4	5	6	7

does	very	slightly	adequately	strongly	very	fully
not	slightly				strongly	
ach-	achieves	achieves	achieves	achieves	achieve	achieves
ieve						

[Q5e] How would you rate the extent to which the "Valuation" control objective is achieved?

Please mark the appropriate number with a cross("X").

1	2	3	4	5	6	7

does	very	slightly	adequately	strongly	very	fully
not	slightly				strongly	
ach-	achieves	achieves	achieves	achieves	achieve	achieves
ieve						

QUESTION 6

[Q6a] Do you think that the system of internal controls which we have been working with in this questionnaire would (if complied with) be able to achieve the given internal control objectives?

Please tick () the appropriate answer.

1		Yes
2		No

If "No", please explain the reasons for your answer

[Q6b] Bearing in mind the answer you have just given (Q6a) above, now please consider again and mark with a cross ("X") on the scale to represent your strength of belief regarding the quality of this internal control system.

PLEASE LEAVE BLANK

--	--	--	--

| _____ |
extremely weak extremely strong

QUESTION 7

[Q7] Based on your experience, how would you rate the "internal control procedure risk" with respect to each internal control procedure?

"INTERNAL CONTROL PROCEDURE RISK" IS THE PROBABLE RISK THAT AN INTERNAL CONTROL PROCEDURE WOULD FAIL TO DETECT OR CORRECT MATERIAL ERRORS THAT OCCUR EVEN THOUGH THE INTERNAL CONTROL PROCEDURE IS BEING FOLLOWED.

Please use the following scale in completing the matrix on the next page of this questionnaire.

1 2 3 4 5 6 7

|_____||_____||_____||_____||_____||_____||

extremely very low average high very extremely
low low high high

For example, if you think there is an "EXTREMELY LOW" risk that the internal control procedure relating to line 1 of the matrix (that is "Time cards and other source documents are checked before processing by the payroll department for casts and calculations") would FAIL TO DETECT OR CORRECT material errors that occur, then you would rate it as "1".

So you would then complete the matrix on the next page in the following manner:

Internal control procedures	Rating
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.	1
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.	
3. There is adequate physical security over personal files which contain information relevant to the audit.	
4. The duties of those preparing the payroll are rotated.	
5. The names on the payroll are checked periodically against the active employee file of the personnel department.	
6. The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.	
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.	
8. Formal procedures are established for changing names, pay rates and deductions.	

You will also rate the remaining lines of the matrix, please.

QUESTION 7

Now, please complete the following matrix.

Internal control procedures	Rating
1. Time cards and other source documents are checked before processing by the payroll department for casts and calculations.	
2. The tasks of both timekeeping and payment of employees are adequately separated from the task of payroll preparation.	
3. There is adequate physical security over personal files which contain information relevant to the audit.	
4. The duties of those preparing the payroll are rotated.	
5. The names on the payroll are checked periodically against the active employee file of the personnel department.	
6. The tasks of both payroll preparation and payment of employees are adequately separated from the tasks of payroll bank account reconciliation.	
7. Management reports are used to monitor the reliability of payroll data through comparisons with budget and following up of variance reports.	
8. Formal procedures are established for changing names, pay rates and deductions.	

QUESTION 8

[Q8] ASSUMING THAT ALL OF THE 8 INTERNAL CONTROL PROCEDURES ARE PRESENT IN THE COMPANY and based on your experience as an auditor, how would you rate the "internal control risk" with respect to the overall internal control system (combination of all internal control procedures)?

"INTERNAL CONTROL RISK" IS THE PROBABLE RISK THAT THE OVERALL INTERNAL CONTROL SYSTEM WOULD FAIL TO DETECT OR CORRECT MATERIAL ERRORS THAT OCCUR EVEN THOUGH ALL THE INTERNAL CONTROL PROCEDURES WERE BEING FOLLOWED.

Please mark the appropriate number with a cross("X").

1	2	3	4	5	6	7
_____ _____ _____ _____ _____ _____						
extremely low	very low	low	average	high	very high	extremely high

QUESTION 9

[Q9a] Do you think that the system of internal controls which we have been working with in this questionnaire would (if complied with) be able to detect or correct material errors that occur?

Please tick () the appropriate answer.

- | | | |
|---|--|-----|
| 1 | | Yes |
| 2 | | No |

If "No", please explain the reasons for your answer.

[Q9b] Bearing in mind the answer you have just given [Q9a] above, now please consider again and mark with a cross ("X") on the scale to represent your strength of belief regarding the quality of the internal control system.

PLEASE LEAVE BLANK

--	--	--	--

extremely weak	extremely strong

APPENDIX 5d: FOLLOW-UP LETTERS FOR PRIMARY QUESTIONNAIRE

Appendix 5di): First follow-up letter on primary questionnaire from the supervisor

4 May 1994

Please bear with me for sending you this letter in connection with Hasnah's research questionnaire which we believe you now have and is awaiting your completion.

My purpose in writing is to express my appreciation to you for agreeing to complete this questionnaire and to stress how important it is to Hasnah's research that she gets back from you a completed questionnaire. The timing of your response is less important than her need to receive this response from you. Hasnah has selected 64 external auditors and also a set of 64 internal auditors. The two sets match intrms of experience, qualifications, etc. As you will realise, it was not easy for us to find this number of people who were willing to assist in the research and since the participants have been carefully selected according to their profiles, it would be almost impossible to find satisfactory substitutes.

Hasnah's research is dependent on her receiving back these questionnaires, completed. So I would be very relieved, as would Hasnah, if you could find the time within your busy schedule to answer the questionnaire, please.

We will, of course, keep in touch with the progress of the research-which I think is quite important in prcatical terms.

With every good wish,

Andrew Chambers
Professor of Audit and Control

Appendix 5dii): Second follow-up letter on primary questionnaire from the researcher

4 May 1994

Dear Sir/ Madam,

INTERNAL AND EXTERNAL AUDITORS: THEIR JUDGEMENTS AND PERCEPTIONS ON INTERNAL CONTROL

I do hope you received our earlier correspondence. We would very much like to hear from you, please, regarding the questionnaire we sent to you earlier. We would much appreciate your cooperation in sending the questionnaire to us as soon as you conveniently can so that we can carry on with the analysis.

If you have reservations about the questionnaire we still hope that you will complete it. We piloted the questionnaire before sending it to you and are now confident it meets our research requirements although, as with most questionnaires, this may not always be apparent to those who complete them!

If you have recently returned the completed questionnaire prior to receiving this letter, please ignore this letter.

Thank you for your cooperation.

Yours sincerely,

(HASNAH HAJI HARON)

Appendix 5diii): Third follow-up letter on primary questionnaire from the supervisor

13 June 1994

As you know, we badly need your completed questionnaire. I enclose another copy in case you cannot locate the first one. It is less important *when* we receive your response than that we *do* receive it. We realise we are burdening you greatly with this but would be most grateful if you could help, please.

We selected you from a list of names put forward as being able to assist us in this research. Every external auditor selected was "matched" by an internal auditor (and vice versa, of course). Each matched pair of questionnaires is unique. A response rate of less than 100% weakens the results very significantly and we cannot satisfactorily substitute for "nul" responses as this might bias the data in that a substitute for a "nul" response might complete the questionnaire in a significantly different way.

As Hasnah's supervisor, I am becoming anxious about this: Hasnah has invested so much in her Ph.D.

If there is any way I can reciprocate for your helpfulness - please don't hesitate to ask. We will, of course, be keeping you informed about the results of the research - which I believe will be important and in no way threatening to anyone.

Yours sincerely,
Andrew Chambers

Andrew Chambers
Professor of Audit & Control

Appendix 5div): Fourth follow-up letter on primary questionnaire from the supervisor

21 July 1994

About three months ago your name was put forward as someone who would be willing to assist in our research (some of the names we have may have been put forward by their "bosses" without the names' knowledge). We're now writing to ask you to help by completing the enclosed questionnaire - which could take up to 1½ hours. The questionnaire is unique to a particular "matched pair" of auditors comprising one external and one internal auditor - and we need both completed to be useful to us.

The research is exploring whether internal and external auditors reviewing the same system reach similar conclusions - and, if not, in what ways do they differ and what might be the reasons. We consider this research to be particularly important in view of the current emphasis upon internal control and the need for coordination between internal and external auditors. We shall be giving our helpers progress reports as our research progresses.

The research is being conducted by Hasnah Haron, a university accounting academic who is engaged upon her Ph.D under my supervision. I do hope you will be able to help. We don't ask you lightly as we realise it is a lot to ask - but your contribution will be very valuable however you answer the questions.

Please note that there are no incorrect answers. If there are other participants in your firm, please do not discuss the questionnaire with them as your individual response is very important to this research. Your answers will be kept strictly confidential and will solely be used for academic purposes.

Your sincerely,
Andrew

Andrew Chambers
Professor of Audit & Control

APPENDIX 5e: ADDITIONAL PARTICIPANTS TO FILL IN PRIMARY QUESTIONNAIRE

Appendix 5ei): Cover letter for additional participants to fill in primary questionnaire from the supervisor

12 August 1994

Dear Sir,


I have a Ph.D research student who is exploring the topical issue of whether external auditors and internal auditors come to similar conclusions about systems of internal control. Her research method requires that she analyses 64 matched pairs of questionnaires. She is still a few short of the number she needs.

Accordingly, I am writing to you, being the first time we have approached your firm, to ask you if you would be so kind as to arrange for the enclosed questionnaire to be completed by a member of your staff who corresponds to the Profile given on the cover sheet of the questionnaire.

I can assure you that the research analysis will divorce the identity of individuals and firms from the data.

It would be immensely valuable to us if you could help us in this way. The questionnaire takes about 1½ hours to complete. If you are unable to help could you please return the questionnaire in the envelope provided.

Thank you in advance - we shall be keeping you in touch with the results of the research.

Yours sincerely,


Andrew Chambers
Professor of Audit & Control

Appendix 5eii): Profile list of auditors attached to questionnaire

PLEASE WRITE IN CAPITAL LETTERS.

NAME

NAME OF FIRM/ORGANISATION

ADDRESS:

Please arrange for the questionnaire to be completed by a member of your staff who fits ALL 3 criterias (as marked by a " " in the appropriate boxes):

1. Current position(status)

- | | |
|--------------------------|--|
| <input type="checkbox"/> | Partner/ Head or Deputy Head of Internal Audit |
| <input type="checkbox"/> | Manager/ Audit Manager |
| <input type="checkbox"/> | Senior/ Senior Internal Auditor |
| <input type="checkbox"/> | Junior/ Internal Auditor |

2.

- | | |
|--------------------------|--|
| <input type="checkbox"/> | Have COMPLETED and PASSED one or more of the following exams as at 31 December 1993:
CACA(Char. Assoc. of Certified Account.)
CIMA(Char. Institute of Management Account.)
CA(Char. Account. English,Irish or Scottish)
CIA(Certified Internal Auditor)
MIIA(passed by examination)
CIPFA(Char. Inst. of Public Financ.Account.) |
|--------------------------|--|

- | | |
|--------------------------|---|
| <input type="checkbox"/> | Have NOT COMPLETED and PASSED one or more of the following exams as at 31 December 1993:
CACA(Char. Assoc. of Certified Account.)
CIMA(Char. Institute of Management Account.)
CA(Char. Account. English,Irish or Scottish)
CIA(Certified Internal Auditor)
MIIA(passed by examination)
CIPFA(Char. Inst. of Public Financ. Account.) |
|--------------------------|---|

3. Length of AUDITING experience:

- | | |
|--------------------------|---|
| <input type="checkbox"/> | less than or equal to 3 yrs |
| <input type="checkbox"/> | more than 3 yrs but less than or equal to 6 yrs |
| <input type="checkbox"/> | more than 6 yrs |

MESSAGE TO THE AUDITOR WHO COMPLETES THIS QUESTIONNAIRE:

PLEASE DO NOT DISCUSS WITH COLLEAGUES HOW YOU COMPLETE THIS QUESTIONNAIRE AS IT IS YOUR INDIVIDUAL RESPONSE WHICH IS NEEDED.

Appendix 5fi): Matching up and initial selection of EAs and IAs from the list of available auditors

EA

Auditor No	Experience level	Management level	Educational level	Total avail	Select
	inexp	prtnr	prof		
	inexp	prtnr	nprof		
	inexp	mgr	prof		
	inexp	mgr	nprof		
<u>10322,10417</u>	inexp	sr	prof	2	2
<u>11623,11624,11626</u>	inexp	sr	nprof	3	3
<u>10435,10437,10436</u>	inexp	jr	prof	3	1
<u>10440,10832,10833,10836</u> <u>11629</u> <u>11630,11631</u>	inexp	jr	nprof	7	7
<u>11402</u>	modexp	prtnr	prof	1	1
	modexp	prtnr	nprof		
<u>10814,10815</u> <u>11012,11011</u>	modexp	mgr	prof	4	3
	modexp	mgr	nprof		
<u>10317,10318,10319,10321,10420,10421,10424,10425,10817,10819,10821,11317</u> <u>11625,11627,11628</u>	modexp	sr	prof	15	7
<u>10428</u>	modexp	sr	nprof	1	1

<u>10430,10432</u> <u>10433,10434</u> <u>10438,10439</u> <u>10429</u>	modexp	jr	prof	7	6
<u>10431</u>	modexp	jr	nprof	1	1
<u>10301,10302</u> <u>10401,10402</u> <u>10403,10404</u> <u>10406,10407</u> <u>10801,10803</u> <u>10806,10807</u> <u>10809,</u> <u>11001,11002</u> <u>11301,11401</u> <u>11403,11404</u> <u>11405,11601</u> <u>11602,10405</u>	veryexp	prtnr	prof	22	13
<u>10408</u>	veryexp	prtnr	nprof	1	1
<u>10309,10310</u> <u>10409,10410</u> <u>10411,10412</u> <u>10413,10414</u> <u>10415,10416</u> <u>10811,10816</u> <u>11009,11010</u> <u>10809,11609</u> <u>11610,11611</u> <u>11612</u>	veryexp	mgr	prof	19	12
	veryexp	mgr	nprof		
<u>10320,10418</u> <u>10419,10422</u> <u>10423,10426</u> <u>11417</u>	veryexp	sr	prof	7	2 4
<u>10427</u> <u>11318</u>	veryexp	sr	nprof	2	2
	veryexp	jr	prof		
	veryexp	jr	nprof		

Total
THERE ARE 15 GROUPS OF EAs.

95

64

IA

Auditor No	Experience level	Management level	Educational level	Total avail	Select
	inexp	head & dephd	prof		
	inexp	head & dephd	nprof		
	inexp	aud mgr	prof		
	inexp	aud mgr	nprof		
<u>24011</u> <u>24612</u> 24808 24911 26407 25407	inexp	sria	prof	6	2
24810 <u>24909</u> 26409, <u>26411</u> 25007, 25511	inexp	sria	nprof	6	3
<u>24713</u> 25216	inexp	ia	prof	4	3
<u>23214</u> <u>24815, 24816</u> <u>24817</u> <u>26413, 25506</u> <u>26711, 23814</u>	inexp	ia	nprof	8	7
<u>25202</u>	modexp	head & dephd	prof	1	1
	modexp	head & dephd	nprof		
<u>24104, 24105</u> <u>26406</u>	modexp	aud mgr	prof	3	3
23313 23913 26404, 23801	modexp	aud mgr	nprof	4	-

<u>23708</u> 23907, 23908 <u>24010</u> 24607, 24611 24707, 24709 24807 24910 <u>25207, 25211</u> <u>26706, 26707</u> <u>26907, 26908</u>	modexp	sria	prof	16	7
23207 24012 24609 24708 24812 24908 25307, 25308 25509, <u>23816</u>	modexp	sria	nprof	10	1
<u>23217,</u> <u>23713</u> <u>24114, 24115</u> 24116, 24613 <u>24614, 25214</u> 25217, 25218 <u>26713, 26725</u>	modexp	ia	prof	12	6
23215 24814 24818 <u>26709, 26710</u> 25504, 25505 25510 23813	modexp	ia	nprof	9	1

23701,23702 23703,23705 23706,23712 24001,24002 <u>24101</u> 24601,24602 <u>24701</u> 24801,24802 <u>24901</u> ,24902 <u>25201</u> <u>25301</u> <u>25401</u> <u>25701</u> 26401 26701,26712 26717, <u>26718</u> <u>26801</u> 26901 <u>23711,25001</u> 25503, <u>25501</u> 23807	veryexp	head &dephd	prof	32	13
<u>23901</u> 24003 24803 25203 25901 26301 25508,23803	veryexp	head & dephd	nprof	8	1

<u>23204</u> <u>23306</u> 23704 <u>23714</u> <u>23904</u> <u>24005</u> <u>24106</u> <u>24604, 24605</u> <u>24704, 24705</u> 24805, 24806 <u>24904, 24905</u> <u>25204, 25205</u> 25206 <u>25904, 25905</u> 26705, 26715 26719 <u>25512, 26704</u> 25004, 23806	veryexp	aud mgr	prof	27	12
23206 23905 24004 24706 24804 25304 26104 26703, 23804	veryexp	aud mgr	nprof	9	-
23211, 24608 <u>23707</u> 23307 23709, 23710 23909 24007, 24008 24009, 26708 <u>24407</u> 24809, 24811 25208, 25209 25210, <u>25212</u> 25907, <u>25909</u> 25910 26714, 26722 26807, <u>23809</u>	veryexp	sria	prof	25	4
<u>25408</u> <u>25908</u> 25507	veryexp	sria	nprof	3	2

24113 24413,24414 25213,25215 25913,25915 26716,26724 23815	veryexp	ia	prof	10	-
25118	veryexp	ia	nprof	1	

Total

194

64

THERE ARE 19 GROUPS OF IAs.

Appendix 5fii): Final matching up and selection of the 64 pairs of auditors

Firms	Auditors selected	Total
inexp,sria,prof	24011(10322) 24612(10417)	2
inexp,sria,nprof	25007(11624) 24909(11623) 26411(11626)	3
inexp,ia,prof	24813(10437) 23213(10435) 24713(10436)	3
inexp,ia,nprof	23214(10440) 24815(10832) 24816(10833) 24817(10836) 25506(11629) 26413(11630) 26711(11631)	7
modexp,hd&dephd, prof	25202(11402)	1
modexp,aud mgr,prof	26406(11012) 24104(10814) 24105(11011)	3
modexp,sria,prof	26707(10421) 25211(10321) 23708(10317) 23907(10318) 26907(10819) 26908(11317) 24010(10319)	7
modexp,sria,nprof	23816(10428)	1
modexp,ia,prof	24614(10434) 23217(10429) 26713(10439) 25214(10438) 24114(10432) 23713(10430)	6
modexp,ia,nprof	26709(10431)	1

very,exp,hd&dephd prof	24601(10405) 24901(10806) 24701(10803) 25501(11404) 25201(11002) 23711(10301) 26718(11601) 26801(11602) 25001(11001) 25301(11301) 25401(11403) 24101(10302) 25701(11405)	13
veryexp,hd&dephd, nprof	23901(10408)	1
veryexp,audmgr,prof	24005(10414) 24604(10811) 24905(11009) 23204(10309) 24704(10816) 25512(11010) 25204(11609) 23704(10411) 23904(10413) 24106(10809) 23306(10310) 25904(11610)	12
veryexp,sria,prof	23307(10320) 23809(11417)	2
veryexp,sria,nprof	25408(10427) 25908(11318)	2

TOTAL

64

Appendix 5fiii): Assignment of set numbers to the 64 matched pairs of auditors at random

AUDITOR NO		SET NO
EA	IA	
10301	23711	10
10302	24101	15
10309	23204	1
10310	23306	2
10317	23708	14
10318	23907	36
10319	24010	20
10320	23307	22
10321	25211	46
10322	24011	25
10405	24601	30
10408	23901	27
10411	23714	3
10413	23904	34
10414	24005	52
10417	24612	19
10421	26707	39
10427	25408	24
10428	23816	48
10429	23217	64
10430	23713	49

EA	IA	SET NO
10431	26709	32
10432	24114	63
10434	24614	58
10418	24407	42
10436	24713	6
10422	25909	61
10438	25214	7
10439	26713	16
10440	23214	57
10803	24701	37
10806	24901	60
10809	24106	54
10811	24604	11
10814	24104	18
10816	24704	21
10819	26907	44
10832	24815	56
10833	24816	31
10836	24817	12
11001	25001	5
11002	25201	17
11009	24905	59
11010	25512	38

EA	IA	SET NO
11011	24105	62
11012	26406	8
11301	25301	28
11317	26908	33
11318	25908	40
11402	25202	53
11403	25401	9
11404	25501	26
11405	25701	29
11417	23809	13
11601	26718	47
11602	26801	51
11609	25204	55
11610	25904	4
11623	24909	23
11624	25007	35
11626	26411	45
11629	25506	41
11630	26413	50
11631	26711	43

Source: Random numbers, pg 690, Table 8, Appendix.
Ott, Lyman. 1977. An Introduction to Statistical Methods
and Data Analysis. California: Duxbury Press.
(First 2 digits, horizontally, starting with first
number).

APPENDIX 5g: NON-RESPONSE BIAS

Appendix 5gi): Results of t-tests - early versus late reply for respondents selected at "random"

	<u>Total no.</u>
GROUP 1 - EQ 1: early reply (after 15/4/94 but before 31/5/94)	60
GROUP 2 - EQ 2: late reply (after 31/5/94 but before 21/7/94)	37
	<u>97</u>

Ratings of the 8 cases

CASE	FINDINGS							
Case 1	Group 1 (early)				Group 2 (late)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	60	1.6575	1.054	37	1.8768	1.349	-.89	.374
Case 2	Group 1 (early)				Group 2 (late)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	60	.8770	.641	37	.7708	.571	.83	.411
Case 3	Group 1 (early)				Group 2 (late)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	60	1.5245	.804	37	1.8341	1.049	-1.64	.105
Case 4	Group 1 (early)				Group 2 (late)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	4.7368	.604		37	4.5841	.937	.89	.380
Case 5	Group 1 (early)				Group 2 (late)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	60	2.2127	.970	37	2.2505	1.037	-.18	.856
Case 6	Group 1 (early)				Group 2 (late)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	60	2.4882	1.098	37	2.6522	.955	-.75	.455
Case 7	Group 1 (early)				Group 2 (late)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	60	1.7953	.915	37	2.1311	1.220	-1.44	.154
Case 8	Group 1 (early)				Group 2 (late)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	60	2.8252	1.086	37	2.9024	.920	-.36	.720

Appendix 5gii): Results of t-tests - reply from "randomly" versus "non-randomly" selected respondents

	<u>Total no.</u>
GROUP 1 - EQ 1: random (after 15/4/94 but before 21/7/94)	97
GROUP 2 - EQ 2: non-random (after 21/7/94 but before 15/12/94)	31
	<u>128</u>

Ratings of the 8 cases

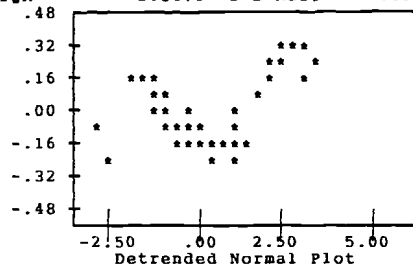
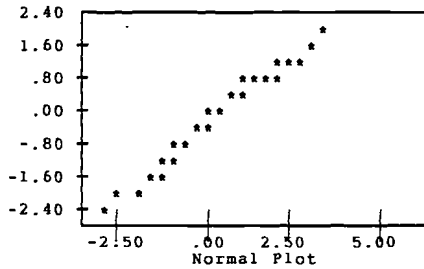
CASE	FINDINGS							
Case 1	Group 1 (random)				Group 2 (non-random)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	97	1.7411	1.173	31	1.7019	1.189	-.16	.872
Case 2	Group 1 (random)				Group 2 (non-random)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	97	.8365	.614	31	.6416	.476	-1.62	.109
Case 3	Group 1 (random)				Group 2 (non-random)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	97	1.6426	.913	31	1.8281	1.045	.95	.344
Case 4	Group 1 (random)				Group 2 (non-random)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	97	4.6786	.748	31	4.8235	.583	.99	.325
Case 5	Group 1 (random)				Group 2 (non-random)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	97	2.2271	.991	31	2.5984	1.162	1.74	.084
Case 6	Group 1 (random)				Group 2 (non-random)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	97	2.5507	1.043	31	2.7965	.992	1.15	.250
Case 7	Group 1 (random)				Group 2 (non-random)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	97	1.9234	1.049	31	1.7716	1.004	-.71	.480
Case 8	Group 1 (random)				Group 2 (non-random)			
	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>n</u>	<u>mean</u>	<u>sd</u>	<u>t val</u>	<u>sig</u>
	97	2.8547	1.021	31	2.8255	1.179	-.13	.894

APPENDIX 6: EXAMINATION OF VARIABLES

Appendix 6ai): Examination of variables (difference between EAs' and IAs' ratings of the cases) to determine whether they are normally distributed or otherwise

** If K-S (Lilliefors) is not significant, then it is NORMALLY DISTRIBUTED.

EXINDCN1 (DIFFERENCE OF EAS AND IAS RATINGS OF CASE 1)
 Valid cases: 64.0 Missing cases: .0 Percent missing: .0
 Mean .2233 Std Err .1681 Min -2.7500 Skewness .3840
 Median .0950 Variance 1.8094 Max 3.5000 S E Skew .2993
 5% Trim .2032 Std Dev 1.3451 Range 6.2500 Kurtosis -.0016
 IQR 1.8475 S E Kurt .5905

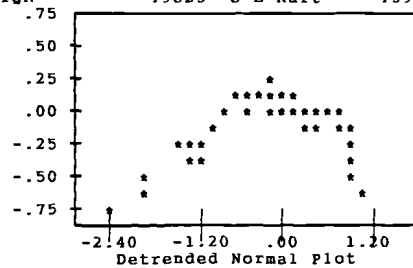
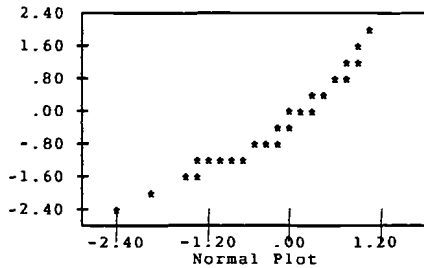


K-S (Lilliefors) Statistic .0854

df 64 Significance * > .2000

* NORMAL DISTRIBUTION

EXINDCN2 (DIFFERENCE OF EAS AND IAS RATINGS OF CASE 2)
 Valid cases: 64.0 Missing cases: .0 Percent missing: .0
 Mean -.1447 Std Err .0970 Min -2.4000 Skewness -.8041
 Median -.0600 Variance .6017 Max 1.0600 S E Skew .2993
 5% Trim -.1021 Std Dev .7757 Range 3.4600 Kurtosis .3584
 IQR .9825 S E Kurt .5905

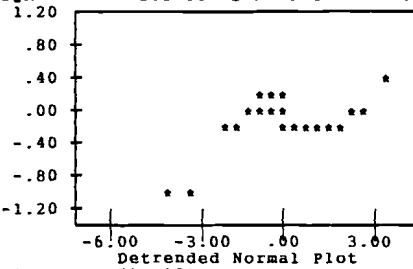
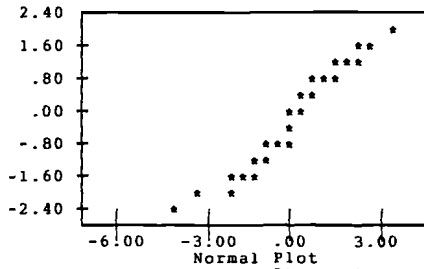


K-S (Lilliefors) Statistic .1026

df 64 Significance * .0912

* NORMAL DISTRIBUTION

EXINDCN3 (DIFFERENCE OF EAS AND IAS RATINGS OF CASE 3)
 Valid cases: 64.0 Missing cases: .0 Percent missing: .0
 Mean .0300 Std Err .1607 Min -4.0300 Skewness -.4111
 Median .0000 Variance 1.6529 Max 3.3700 S E Skew .2993
 5% Trim .0571 Std Dev 1.2857 Range 7.4000 Kurtosis 1.6721
 IQR 1.3400 S E Kurt .5905



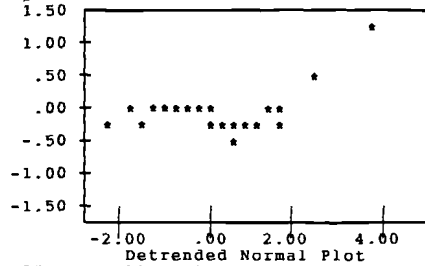
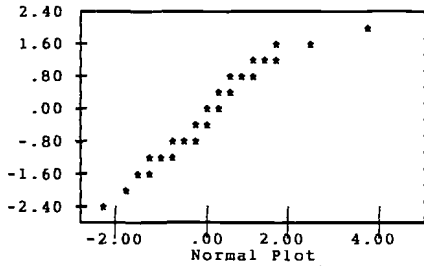
K-S (Lilliefors) Statistic .0745

df 64 Significance * > .2000

* NORMAL DISTRIBUTION

EXINDCN4 (DIFFERENCE OF EAS AND IAS RATINGS OF CASE 4)
 Valid cases: 64.0 Missing cases: .0 Percent missing: .0

Mean	-.0175	Std Err	.1270	Min	-2.2200	Skewness	.6983
Median	-.0300	Variance	1.0325	Max	3.6900	S E Skew	.2993
5% Trim	-.0537	Std Dev	1.0161	Range	5.9100	Kurtosis	2.2192
				IQR	1.0450	S E Kurt	.5905



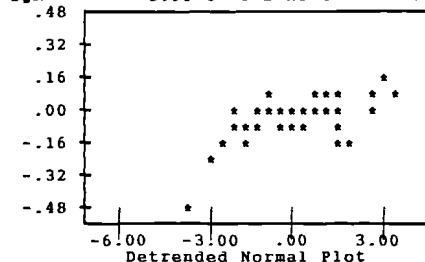
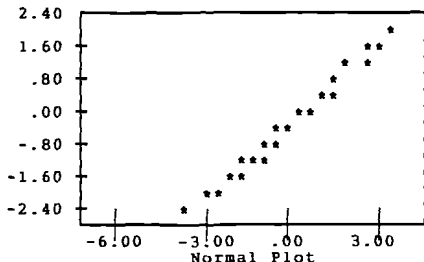
K-S (Lilliefors) Statistic .0974

df 64 Significance * > .2000

* NORMAL DISTRIBUTION

EXINDCN5 (DIFFERENCE OF EAS AND IAS RATINGS OF CASE 5)

Valid cases:	64.0	Missing cases:	.0	Percent missing:	.0		
Mean	.1477	Std Err	.1783	Min	-3.5900	Skewness	-.1429
Median	.1550	Variance	2.0350	Max	3.3800	S E Skew	.2993
5% Trim	.1569	Std Dev	1.4265	Range	6.9700	Kurtosis	-.0506
				IQR	1.9325	S E Kurt	.5905



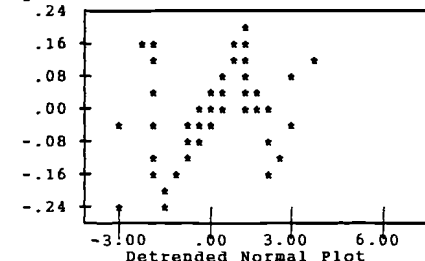
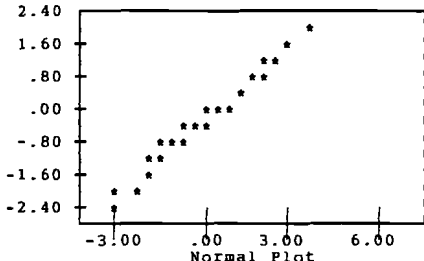
K-S (Lilliefors) Statistic .0414

df 64 Significance * > .2000

* NORMAL DISTRIBUTION

EXINDCN6 (DIFFERENCE OF EAS AND IAS RATINGS OF CASE 6)

Valid cases:	64.0	Missing cases:	.0	Percent missing:	.0		
Mean	.0950	Std Err	.1929	Min	-3.2500	Skewness	-.0169
Median	.0800	Variance	2.3815	Max	3.6300	S E Skew	.2993
5% Trim	.0899	Std Dev	1.5432	Range	6.8800	Kurtosis	-.6198
				IQR	2.4800	S E Kurt	.5905



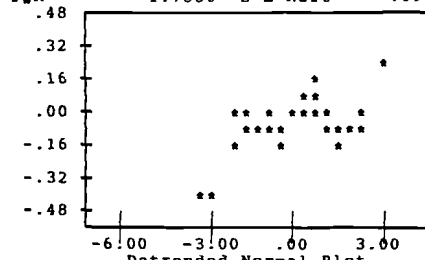
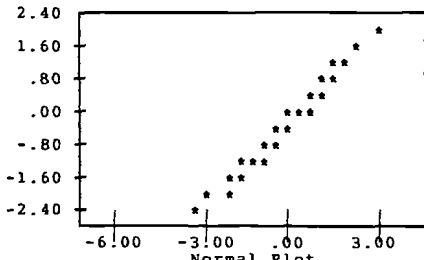
K-S (Lilliefors) Statistic .0648

df 64 Significance * > .2000

* NORMAL DISTRIBUTION

EXINDCN7 (DIFFERENCE OF EAS AND IAS RATINGS OF CASE 7)

Valid cases:	64.0	Missing cases:	.0	Percent missing:	.0		
Mean	.0047	Std Err	.1585	Min	-3.2200	Skewness	-.1532
Median	.0450	Variance	1.6073	Max	3.1200	S E Skew	.2993
5% Trim	.0174	Std Dev	1.2678	Range	6.3400	Kurtosis	-.0714
				IQR	1.7850	S E Kurt	.5905



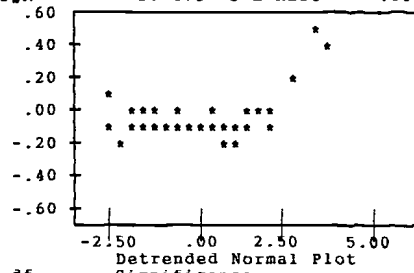
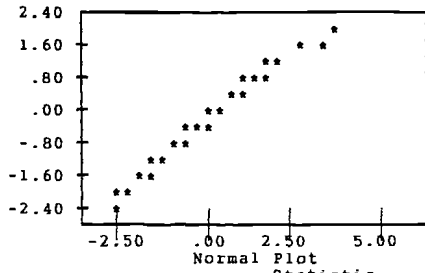
K-S (Lilliefors) Statistic .0574

df 64 Significance * > .2000

* NORMAL DISTRIBUTION

EXINDCN8 (DIFFERENCE OF EAS AND IAS RATINGS OF CASE 8)

Valid cases:	64.0	Missing cases:	.0	Percent missing:	.0
Mean	.1243	Std Err	.1691	Min	-2.6600
Median	.0750	Variance	1.8307	Max	3.7200
5% Trim	.0949	Std Dev	1.3530	Range	6.3800
				IQR	1.7275
				Skewness	.2779
				S E Skew	.2993
				Kurtosis	.1059
				S E Kurt	.5905

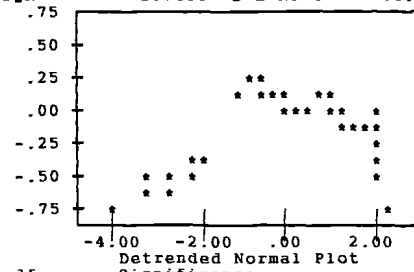
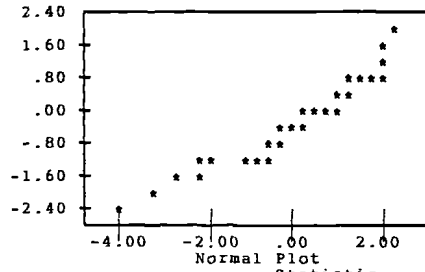


K-S (Lilliefors) Statistic .0536 df 64 Significance * > .2000

* NORMAL DISTRIBUTION

EXINDCO (DIFFERENCE OF EAS AND IAS RATINGS OF "CO" APPROACH)

Valid cases:	64.0	Missing cases:	.0	Percent missing:	.0
Mean	.1252	Std Err	.1832	Min	-3.9600
Median	.2500	Variance	2.1478	Max	2.3400
5% Trim	.2063	Std Dev	1.4655	Range	6.3000
				IQR	1.7400
				Skewness	-.8247
				S E Skew	.2993
				Kurtosis	.3762
				S E Kurt	.5905

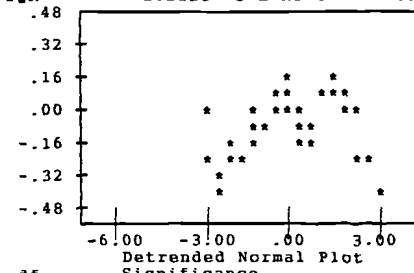
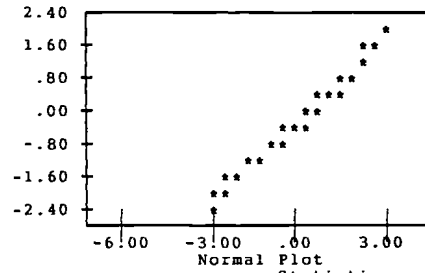


K-S (Lilliefors) Statistic .1033 df 64 Significance * .0868

* NORMAL DISTRIBUTION

EXINDCR (DIFFERENCE OF EAS AND IAS RATINGS OF "CR" APPROACH)

Valid cases:	64.0	Missing cases:	.0	Percent missing:	.0
Mean	.1959	Std Err	.1847	Min	-2.9400
Median	.2350	Variance	2.1822	Max	2.9100
5% Trim	.2251	Std Dev	1.4772	Range	5.8500
				IQR	2.2325
				Skewness	-.2402
				S E Skew	.2993
				Kurtosis	-.5968
				S E Kurt	.5905

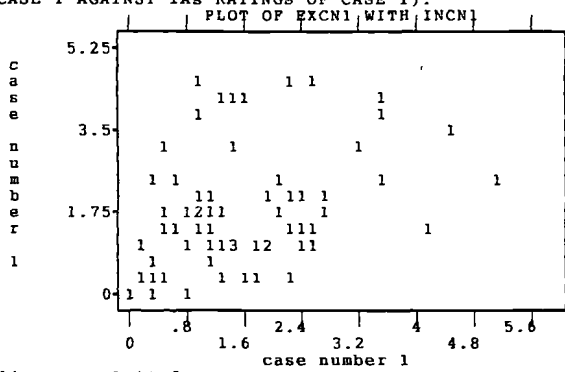


K-S (Lilliefors) Statistic .0642 df 64 Significance * > .2000

* NORMAL DISTRIBUTION

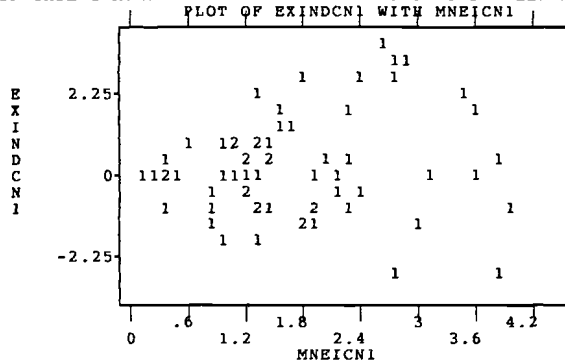
Appendix 6a11): Examination of closeness of EAs' and IAs' ratings of the different cases by means of "plots"

PLOT /PLOT EXCN1 WITH INCN1 (PLOT OF EAs RATINGS OF CASE 1 AGAINST IAs RATINGS OF CASE 1).



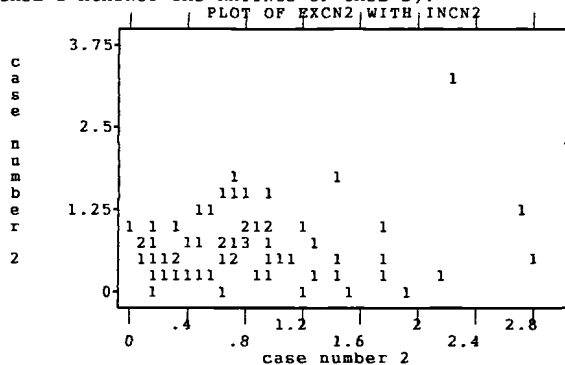
64 cases plotted.

PLOT /PLOT EXINDCN1 WITH MNEICN1 (PLOT OF DIFFERENCE IN RATINGS OF CASE 1 AGAINST MEAN RATINGS OF CASE 1 BETWEEN EAs AND IAs).



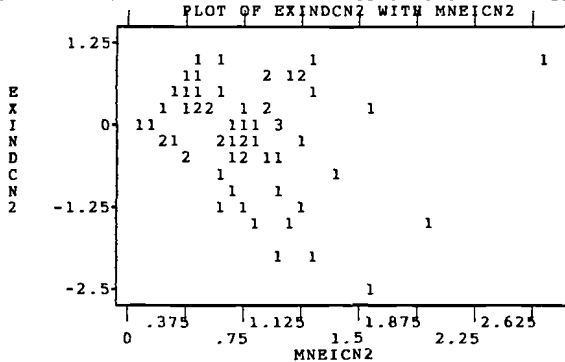
64 cases plotted.

PLOT /PLOT EXCN2 WITH INCN2 (PLOT OF EAs RATINGS OF CASE 2 AGAINST IAs RATINGS OF CASE 2).



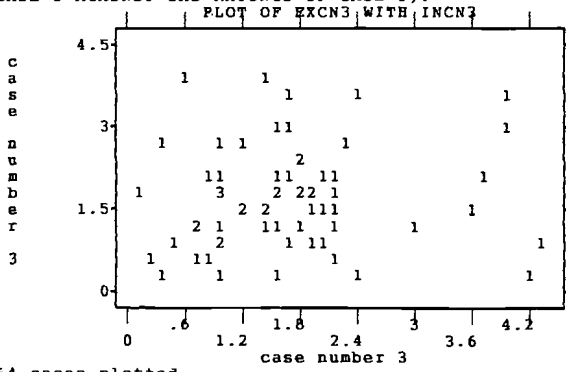
64 cases plotted.

PLOT /PLOT EXINDCN2 WITH MNEICN2 (PLOT OF DIFFERENCE IN RATINGS OF CASE 2 AGAINST MEAN RATINGS OF CASE 2 BETWEEN EAs AND IAs).



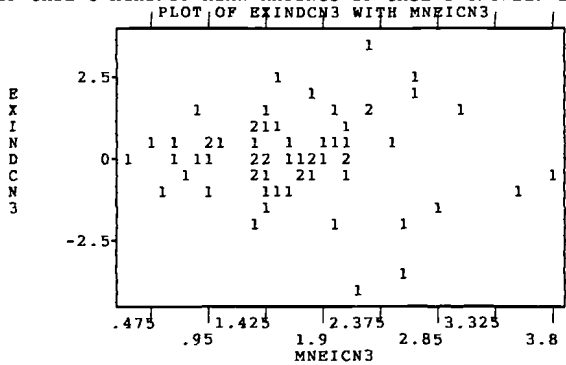
64 cases plotted.

PLOT /PLOT EXCN3 WITH INCN3 (PLOT OF EAs RATINGS OF CASE 3 AGAINST IAs RATINGS OF CASE 3).



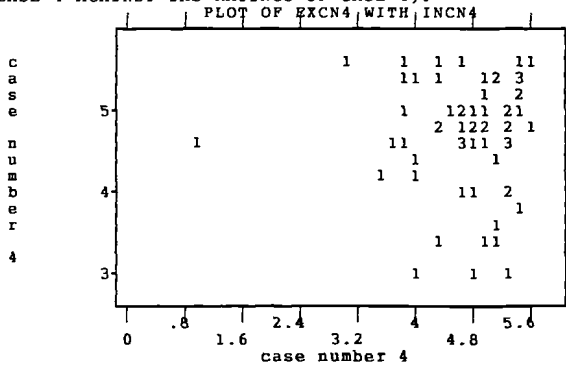
64 cases plotted.

PLOT /PLOT EXINDCN3 WITH MNEICN3 (PLOT OF DIFFERENCE IN RATINGS OF CASE 3 AGAINST MEAN RATINGS OF CASE 3 BETWEEN EAs AND IAs).



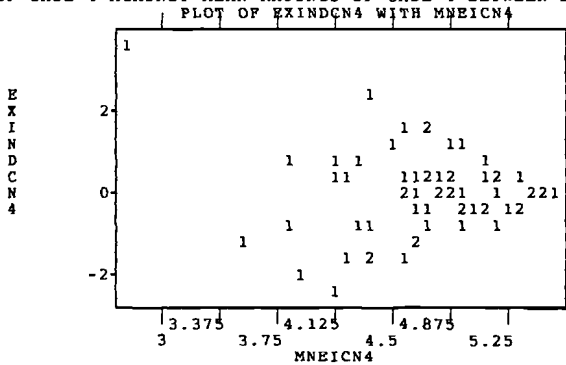
64 cases plotted.

PLOT /PLOT EXCN4 WITH INCN4 (PLOT OF EAs RATINGS OF CASE 4 AGAINST IAs RATINGS OF CASE 4).



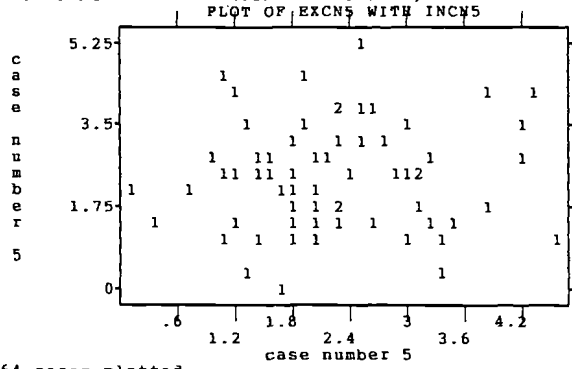
64 cases plotted.

PLOT /PLOT EXINDCN4 WITH MNEICN4 (PLOT OF DIFFERENCE IN RATINGS OF CASE 4 AGAINST MEAN RATINGS OF CASE 4 BETWEEN EAs AND IAs).

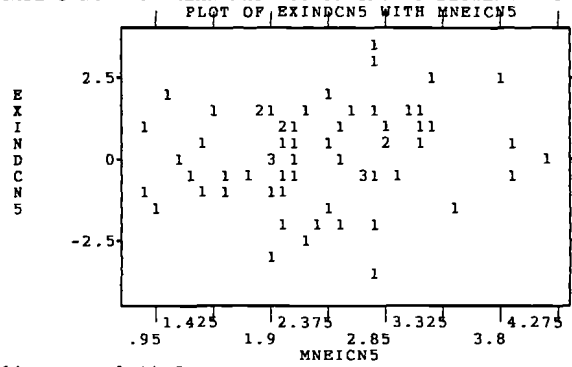


64 cases plotted.

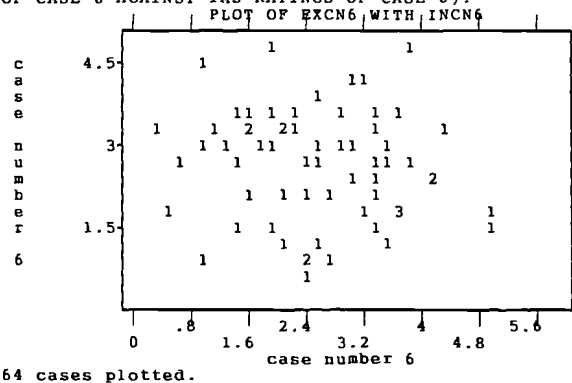
PLOT /PLOT EXCN5 WITH INCN5 (PLOT OF EAs RATINGS OF CASE 5 AGAINST IAs RATINGS OF CASE 5).



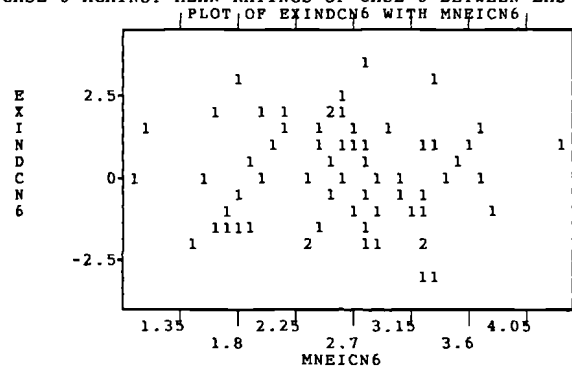
PLOT /PLOT EXINDCN5 WITH MNEICN5 (PLOT OF DIFFERENCE IN RATINGS OF CASE 5 AGAINST MEAN RATINGS OF CASE 5 BETWEEN EAs AND IAs).



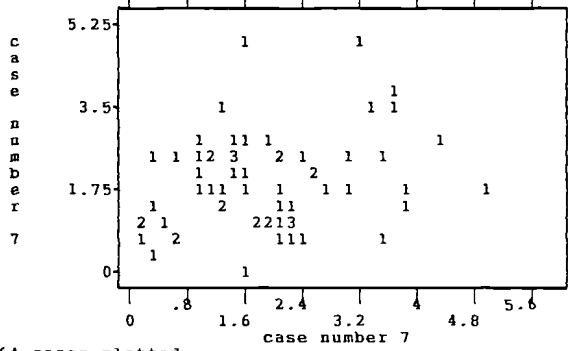
PLOT /PLOT EXCN6 WITH INCN6 (PLOT OF EAs RATINGS OF CASE 6 AGAINST IAs RATINGS OF CASE 6).



PLOT /PLOT EXINDCN6 WITH MNEICN6 (PLOT OF DIFFERENCE IN RATINGS OF CASE 6 AGAINST MEAN RATINGS OF CASE 6 BETWEEN EAs AND IAs).

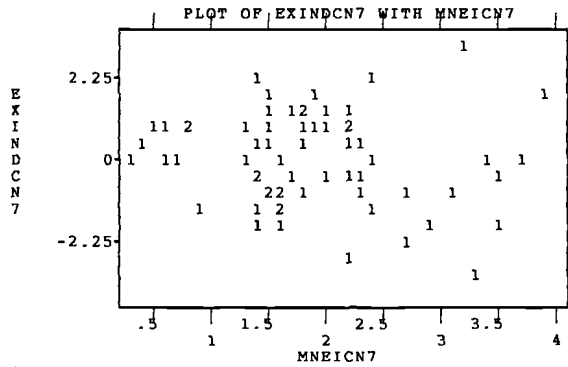


PLOT /PLOT EXCN7 WITH INCN7 (PLOT OF EAs RATINGS OF CASE 7 AGAINST IAs RATINGS OF CASE 7).



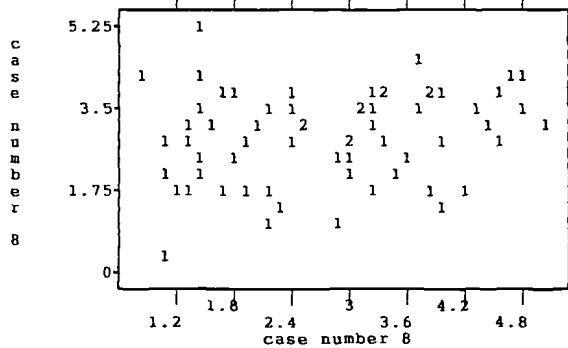
64 cases plotted.

PLOT /PLOT EXINDCN7 WITH MNEICN7 (PLOT OF DIFFERENCE IN RATINGS OF CASE 7 AGAINST MEAN RATINGS OF CASE 7 BETWEEN EAs AND IAs).



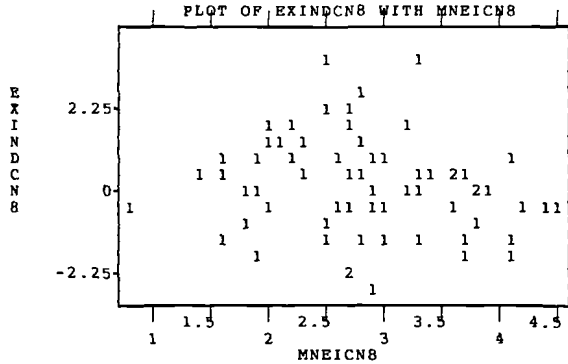
64 cases plotted.

PLOT /PLOT EXCN8 WITH INCN8 (PLOT OF EAs RATINGS OF CASE 8 AGAINST IAs RATINGS OF CASE 8).



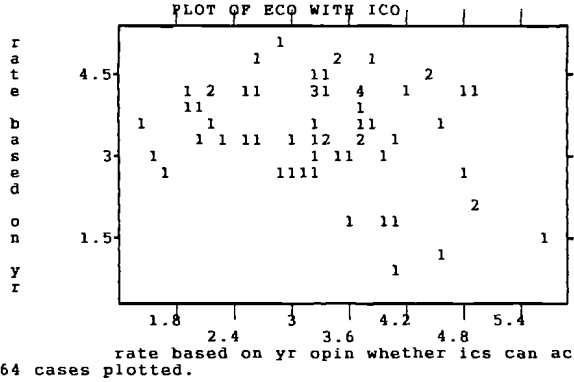
64 cases plotted.

PLOT /PLOT EXINDCN8 WITH MNEICN8 (PLOT OF DIFFERENCE IN RATINGS OF CASE 8 AGAINST MEAN RATINGS OF CASE 8 BETWEEN EAs AND IAs).

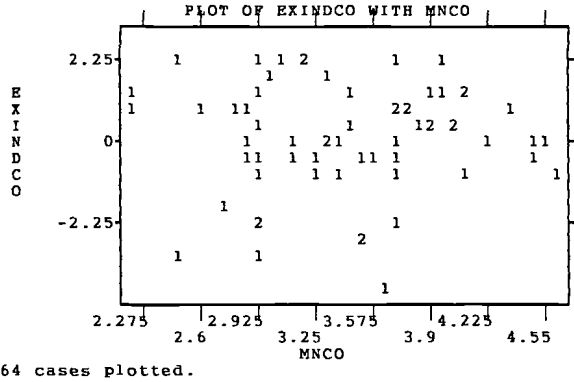


64 cases plotted.

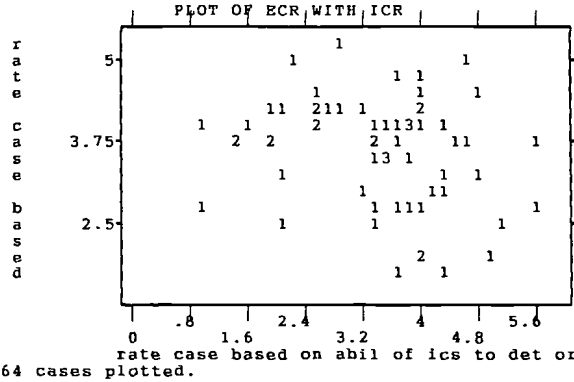
PLOT /PLOT ECO WITH ICO (PLOT OF EAs RATINGS OF CASE BY "CO" APPROACH AGAINST IAs RATINGS OF CASE BY "CO" APPROACH).



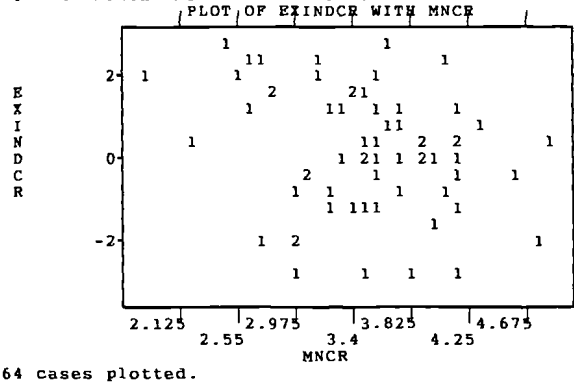
PLOT /PLOT EXINDCO WITH MNCO (PLOT OF DIFFERENCE IN RATINGS OF CASE BY "CO" APPROACH AGAINST MEAN OF CASE BY "CO" APPROACH BETWEEN EAs AND IAs).



PLOT /PLOT ECR WITH ICR (PLOT OF EAs RATINGS OF CASE BY "CR" APPROACH AGAINST IAs RATINGS OF CASE BY "CR" APPROACH).

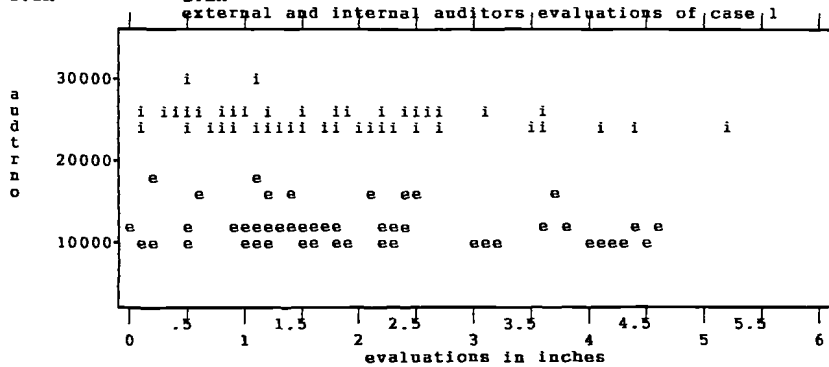


PLOT /PLOT EXINDCR WITH MNCR (PLOT OF DIFFERENCE IN RATINGS OF CASE BY "CR" APPROACH AGAINST MEAN OF CASE BY "CR" APPROACH BETWEEN EAs AND IAs).

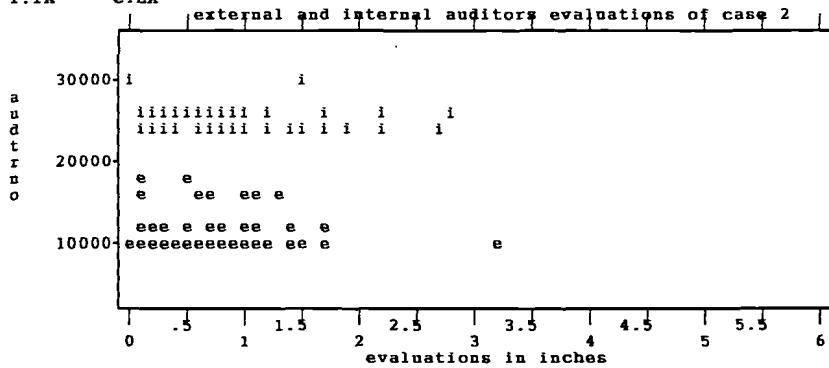


Appendix 6aiii): Examination of closeness of EAs' and IAs' ratings of the different cases by means of an "overlay plots"

```
plot symbols = 'i' 'e' /format=overlay
/title='external and internal auditors evaluations of case 1'
/hszize=60/vertical='audtrno ' min(5000) max(32000)
/horizontal='evaluations in inches' min(0) max(6)
/plot=audtrno with cn1.
i:IA
e:EA
```

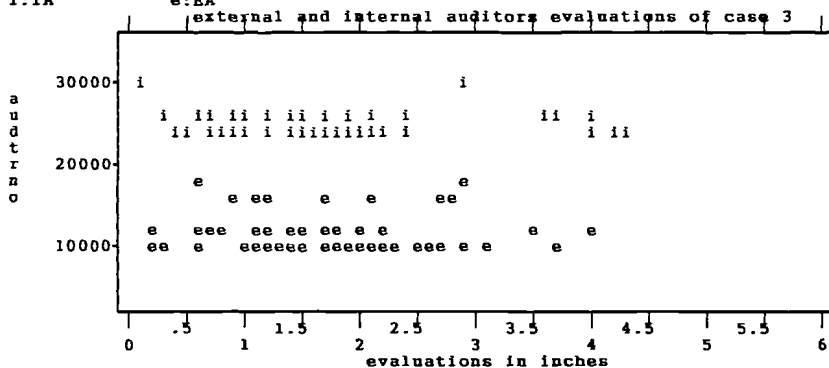


```
a:AUDTRNO WITH CN1 $:Multiple occurrence 128 cases
plot symbols = 'i' 'e' /format=overlay
/title='external and internal auditors evaluations of case 2'
/hszize=60/vertical='audtrno ' min(5000) max(32000)
/horizontal='evaluations in inches' min(0) max(6)
/plot=audtrno with cn2.
i:IA
e:EA
```



a:AUDTRNO WITH CN2 \$:Multiple occurrence 128 cases

```
plot symbols = 'i' 'e' /format=overlay
/title='external and internal auditors evaluations of case 3'
/hszize=60/vertical='audtrno ' min(5000) max(32000)
/horizontal='evaluations in inches' min(0) max(6)
/plot=audtrno with cn3.
i:IA
e:EA
```

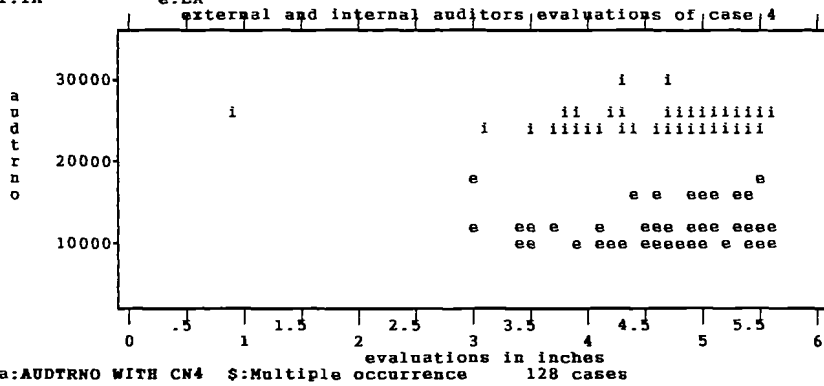


a:AUDTRNO WITH CN3 \$:Multiple occurrence 128 cases

```

plot symbols = 'i' 'e' /format=overlay
/title='external and internal auditors evaluations of case 4'
/hsz=60/vertical='audtrno ' min(5000) max(32000)
/horizontal='evaluations in inches' min(0) max(6)
/plot=audtrno with cn4.
i:IA
e:EA

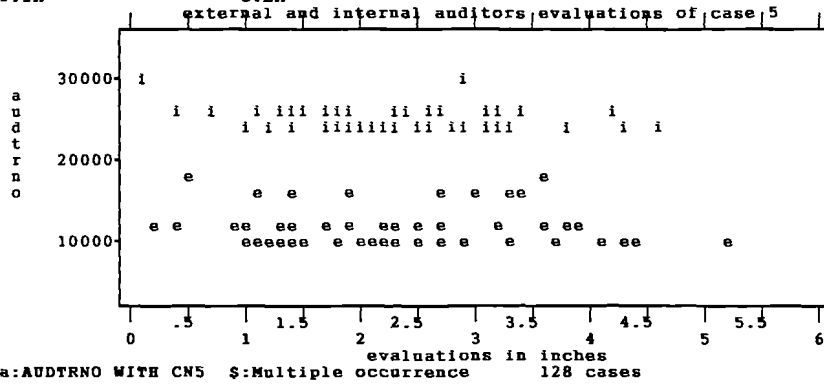
```



```

plot symbols = 'i' 'e' /format=overlay
/title='external and internal auditors evaluations of case 5'
/hsz=60/vertical='audtrno ' min(5000) max(32000)
/horizontal='evaluations in inches' min(0) max(6)
/plot=audtrno with cn5.
i:IA
e:EA

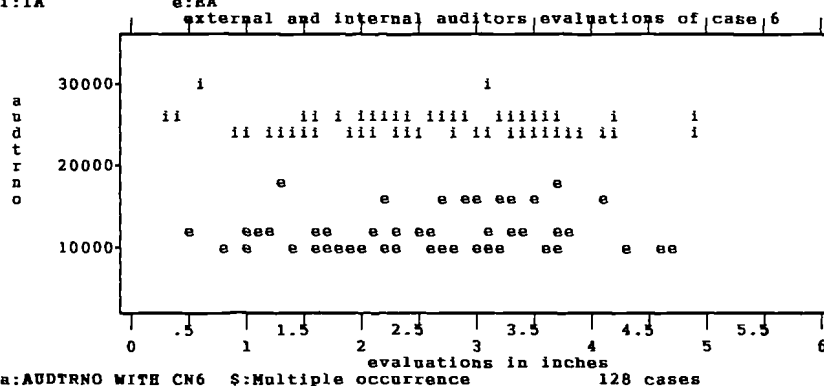
```



```

plot symbols = 'i' 'e' /format=overlay
/title='external and internal auditors evaluations of case 6'
/hsz=60/vertical='audtrno ' min(5000) max(32000)
/horizontal='evaluations in inches' min(0) max(6)
/plot=audtrno with cn6.
i:IA
e:EA

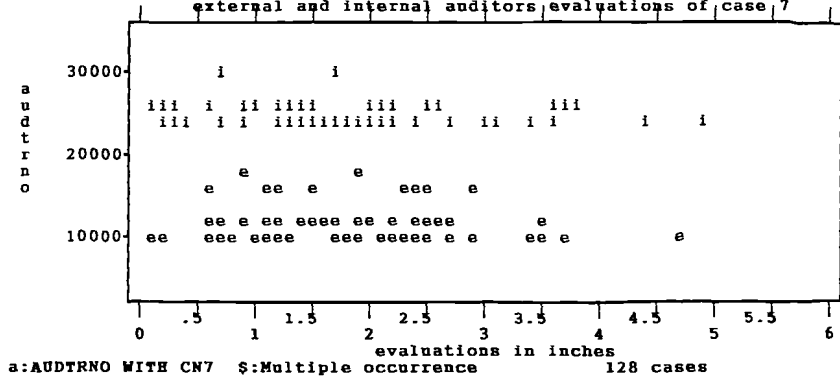
```



```

plot symbols = 'i' 'e' /format=overlay
/title='external and internal auditors evaluations of case 7'
/hsz=60/vertical='audtrno' min(5000) max(32000)
/horizontal='evaluations in inches' min(0) max(6)
/plot=audtrno with cn7.
i:IA
e:EA

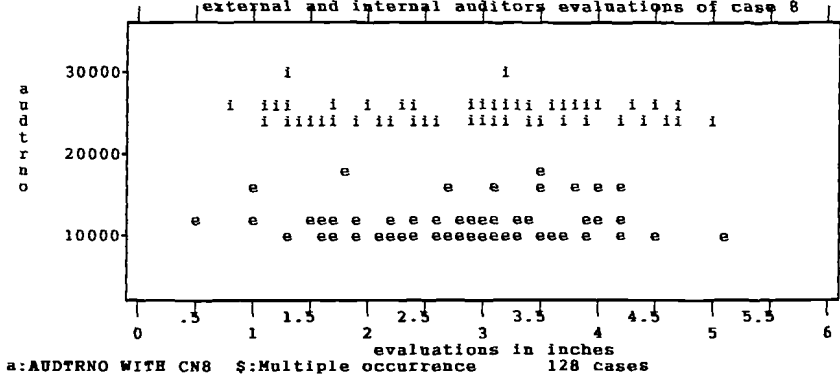
```



```

plot symbols = 'i' 'e' /format=overlay
/title='external and internal auditors evaluations of case 8'
/hsz=60/vertical='audtrno' min(5000) max(32000)
/horizontal='evaluations in inches' min(0) max(6)
/plot=audtrno with cn8.
i:IA
e:EA

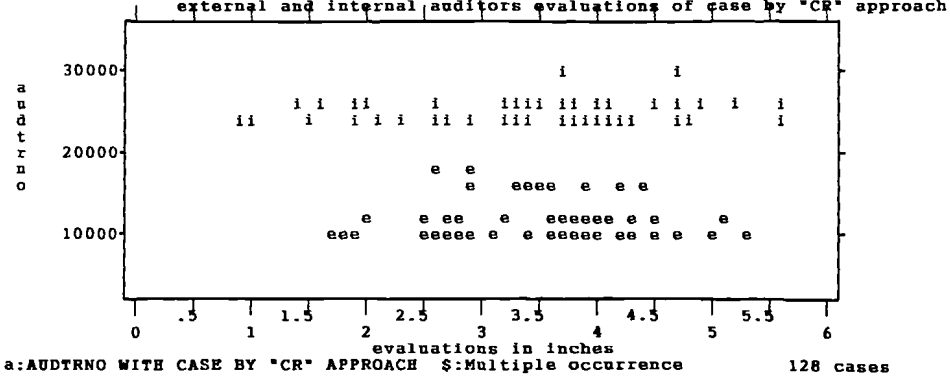
```



```

plot symbols = 'i' 'e' /format=overlay
/title='external and internal auditors evaluations of case by "CR" approach'
/hsz=60/vertical='audtrno' min(5000) max(32000)
/horizontal='evaluations in inches' min(0) max(6)
/plot=audtrno with case by "CR" approach.
i:IA
e:EA

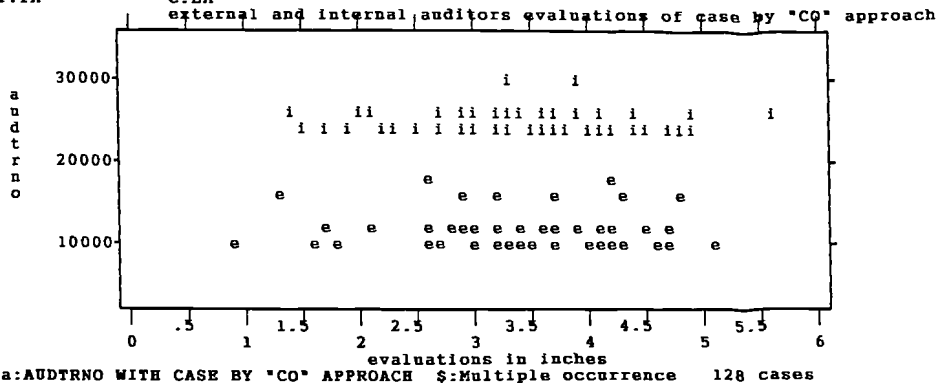
```



```

plot symbols = 'i' 'e' /format=overlay
/title='external and internal auditors evaluations of case by "CO" approach
/hsz=60/vertical='audtrno ' min(5000) max(32000)
/horizontal='evaluations in inches' min(0) max(6)
/plot=audtrno with case by "CO" approach.
i:IA
e:EA

```



Wilcoxon matched-pairs signed-rank test(non-parametric)

- - - - Wilcoxon Matched-pairs Signed-ranks Test
 ECOMPA complete-ctrds and oth source doc for c
 with ICOMPA complete-ctrds and oth source doc for c
 Mean Rank Cases
 23.09 22 - Ranks (ICOMPA Lt ECOMPA)
 28.21 29 + Ranks (ICOMPA Gt ECOMPA)
 12 Ties (ICOMPA Eq ECOMPA)
 --
 63 Total
 Z = -1.4529 2-tailed P = .1463

- - - - Wilcoxon Matched-pairs Signed-ranks Test
 ECOMPB completeness- timek & pymnt seprtd fr pa
 with ICOMPB completeness- timek & pymnt seprtd fr pa
 Mean Rank Cases
 29.30 20 - Ranks (ICOMPB Lt ECOMPB)
 23.87 31 + Ranks (ICOMPB Gt ECOMPB)
 13 Ties (ICOMPB Eq ECOMPB)
 --
 64 Total
 Z = -.7218 2-tailed P = .4704

- - - - Wilcoxon Matched-pairs Signed-ranks Test
 ECOMPC complete- adeq physical security over pe
 with ICOMPC complete- adeq physical security over pe
 Mean Rank Cases
 24.06 18 - Ranks (ICOMPC Lt ECOMPC)
 21.42 26 + Ranks (ICOMPC Gt ECOMPC)
 20 Ties (ICOMPC Eq ECOMPC)
 --
 64 Total
 Z = -.7236 2-tailed P = .4693

- - - - Wilcoxon Matched-pairs Signed-ranks Test
 EEXISC existence-adeq physical security over pe
 with IEXISC existence-adeq physical security over pe
 Mean Rank Cases
 25.50 27 - Ranks (IEXISC Lt EEXISC)
 25.50 23 + Ranks (IEXISC Gt EEXISC)
 14 Ties (IEXISC Eq EEXISC)
 --
 64 Total
 Z = -.4923 2-tailed P = .6225

- - - - Wilcoxon Matched-pairs Signed-ranks Test
 ECOMPD completeness- duties preprg payroll ac r
 with ICOMPD completeness- duties preprg payroll ac r
 Mean Rank Cases
 24.16 19 - Ranks (ICOMPd Lt ECOMPd)
 24.72 29 + Ranks (ICOMPd Gt ECOMPd)
 16 Ties (ICOMPd Eq ECOMPd)
 --
 64 Total
 Z = -1.3231 2-tailed P = .1858

- - - - Wilcoxon Matched-pairs Signed-ranks Test
 ECOMPE complete-names on payr checkd agnst acti
 with ICOMPE complete-names on payr checkd agnst acti
 Mean Rank Cases
 24.84 29 - Ranks (ICOMPE Lt ECOMPE)
 27.52 22 + Ranks (ICOMPE Gt ECOMPE)
 12 Ties (ICOMPE Eq ECOMPE)
 --
 63 Total
 Z = -.5390 2-tailed P = .5899

- - - - Wilcoxon Matched-pairs Signed-ranks Test
 ECOMPF complete-preptn & pymnt seprtd fr payrl
 with ICOMPF complete-preptn & pymnt seprtd fr payrl
 Mean Rank Cases
 27.14 14 - Ranks (ICOMPf Lt ECOMPf)
 22.67 33 + Ranks (ICOMPf Gt ECOMPf)
 15 Ties (ICOMPf Eq ECOMPf)
 --
 62 Total
 Z = -1.9471 2-tailed P = .0515

- - - - Wilcoxon Matched-pairs Signed-ranks Test
 ECOMPg complete-mgmt repts use to monit reliab
 with ICOMPg complete-mgmt repts use to monit reliab
 Mean Rank Cases
 23.45 30 - Ranks (ICOMPg Lt ECOMPg)
 26.25 18 + Ranks (ICOMPg Gt ECOMPg)
 14 Ties (ICOMPg Eq ECOMPg)
 --
 62 Total
 Z = -1.1846 2-tailed P = .2362

- - - - Wilcoxon Matched-pairs Signed-ranks Test
 ECOMPH complete-formal proced est for chngg nam
 with ICOMPH complete-formal proced est for chngg nam
 Mean Rank Cases
 29.46 24 - Ranks (ICOMPH Lt ECOMPH)
 29.53 34 + Ranks (ICOMPH Gt ECOMPH)
 4 Ties (ICOMPH Eq ECOMPH)
 --
 62 Total
 Z = -1.1497 2-tailed P = .2503