

**THE USAGE OF ANALYTICAL PROCEDURES BY YEMENI  
AUDITORS: A DESCRIPTIVE ANALYSIS**

BY

MOHAMMED ABOBAKER MOHAMMED BA-ABBAD

89212

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## **ABSTRACT**

This study sets out to investigate the extent to which Yemeni auditors use analytical review procedures through different audit firms' size. It also examines the stage of auditing procedure in which analytical review procedures are implemented by Yemeni auditors. Moreover, the study determines the relationships between the importance's factors and the use of analytical review procedures. The findings of the study have indicated that the analytical procedures were utilized on high percentage by audits in larger and high experienced audit firms compared to small and low experienced audit firms where the results have shown low percentage. Nevertheless, the role of auditors' perception towards analytical procedures has proved to have a significant effect of usage of analytical procedures.

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## **List of Abbreviations**

APs	Analytical Procedures
IFAC	International Federation of Accountants

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of study

Auditors utilize many types of audit procedures to collect audit evidence such as inspection, observation, inquiry, confirmation, recalculation, re-performance, and analytical procedures. Analytical procedures refer to analysis of significant ratios and trends including the resulting investigations of fluctuations and relationships that are inconsistent with other relevant information or which deviate from predicted amounts (Chow, 2009).

The international standard in auditing No. 520 “Analytical procedures”, define the analytical procedures” the term “*analytical procedures*” as *evaluations of financial information through analysis of plausible relationships among both financial and non-financial data. Analytical procedures also encompass such investigation as is necessary of identified fluctuations or relationships that are inconsistent with other relevant information or that differ from expected values by a significant amount*”(IFAC, 2009).

Substantive analytical procedures are widely used in practice and are an increasingly important source of audit evidence. (Asare and Wright, 2001). For example, Kreutzfeldt and Wallace (1986) report that 40% of the errors encountered during an audit engagement were detected by use analytical procedures.

Chow, (2009) argued the timing and purpose of Analytical procedures may be performed at any of all three stages in the audit procedures: the planning stage, the testing stage and the completion stage. During the planning stage, analytical procedures can be used as risk assessment process. They help external auditors identify significant matters requiring special consideration later in the audit engagement, such as to: (1) understand the client's industry and business. (2) Assess going concern. (3) Indicate possible error in statements. (4) Reduce detailed tests. In addition to, during the testing stage, analytical review procedures can be used as substantive procedures in collecting appropriate audit evidence. They can be performed together with other substantive procedures (substantive tests of transactions and tests of details of balances) and they help to: (1) indicate possible misstatements. (2) Reduce detailed tests. Also, during the completion stage, analytical review procedures can be used as part of an overall review of the financial statements for the auditors to reach conclusions about the fair presentation of the financial statements. The analytical procedures help the external auditors to take a final review of the audited financial statements objectively and help to: (1) assess going concern. (2) Indicate possible misstatements.

This study tries to investigate the relationship between variables effecting the use of analytical procedures (auditor experience auditor firm size, and general auditor perception towards analytical procedures).

### *Auditor Experience*

Experience refers to the nature of the events someone or something has undergone. Experience is what is happening to people all the time - as they long they exist. Auditing experience refers to auditing events that undergone on auditors during time. In other words,

auditor experience indicates to the number of years auditing work is practiced by the auditor. With respect to the analytical procedures and its correlation with the auditor experience, several studies have been carried out to investigate this issue (Cho& Lew, 2000).

According to O'Donnell (2002), examined whether error specific experience can improve auditors performance during analytical procedure. In afield experience used analytical procedure to diagnose the reason for an unexpected interperiod change in an account balance. The researcher Have been classified the experience to the following types. (1) General audit experience was measured by the number of months of work by the auditor in the auditing profession. (2) Industry experience was measured by the number of industrial companies that have been checked using the analytical procedures. (3) Error-specific experience was measured by the number of previous engagements during which a participant was involved in making adjusting entries for overhead allocations. The sample included 28 participants with 2 to 13 years of general audit experience. They are used the analytical review procedures explanation of the decrease in gross profit. The researcher distribute questionnaire to the participants to explain the reasons of decrease the profit. The researcher found that, for participants with high experience, (experience in identify error by analytical procedures) were the best in explanation, determine the errors than the participants with less experience.

According to Biggs & Wild (1984), through their study in United States of America to investigate the extant American auditors use the analytical procedures. They found that there is a strong relationship between auditor's experience and the use of analytical procedures, especially using the advanced procedures. Also, Senoon (1992) examined the extent of using analytical procedures by Egyptian auditors. This study indicates that there is a strong correlation between the use of APs and auditor's experience. On the other hand, Asha (1992)

investigated the using of the three levels of APs; namely; non quantity analysis, simply quantity analysis, and advanced quantity analysis, among Jordanian auditors. It was found that there is no relationship between the use of APs and auditor's experience.

#### *Audit Firm Size*

Audit firm size categorize audit firms according to sizes of firms ,the major categorization is big firm and non big audit firm, big firm present biggest firms around the world, and non big firms present another sizes like local auditor in specific country and another international audit firms. According to previous studies that studied the relationship between the audits firm size and extant of use analytical procedures, some of these studies distribute audit firm size to big and small and others distribute to big, medium and small firm. According to Lin, and Fraser (2003) which studied the relationship between use of APs and audit firm size in Canada. They distributed the firms to big five (in that time) and non big five. Researchers also distributed non big five to large medium and small local audit firms. They indicate in their study to, at the planning and substantive testing stages, differences of use analytical review procedures are apparent between larger and Big 5 (in that time) firms and smaller firms (small firms and medium-sized) in other words; the use of analytical procedures in large firm is high than small and medium size firm. Also Fraser, Hatherly, and Lin (1997) studied the relationship audit firm size and use APs in U.K., also researches categorized the sizes of firms to big 6 (in that time) and non big 6 (large, medium and small). The researchers found the usage of analytical review procedures are consistently high among all sizes of audit firms. But the research indicates that usage of analytical review procedures by small firms at final review stage of the audit is limited than large firms. Gharaibeh (2003) wanted in his study to identify the extent use analytical procedures by Jordanian auditors through apply

International Standards on Auditing No. 520 on the analytical procedure; he studied the relationship between the use of analytical review procedures and each of experience and size of audit firm. The researcher found in this study, there is no relationship between the size of the firm and the use of analytical procedures. There are difference of usage the analytical review procedures but not refer to sizes of firms

#### *Auditor Perception towards Analytical Procedures*

The auditor's confidence in analytical review procedures is expected to have an effect on the utilization of such procedures during the course of an audit. As McKee (1982) notes, "many of the new analytical techniques were not taught in most undergraduate programs as recently as a decade ago. Consequently, many practitioners do not possess an adequate understanding of such techniques and do not use them". The auditor's knowledge of analytical review techniques, including the understanding of when such procedures are applicable and the expertise necessary to carry out the procedures and interpret the results, is crucial to analytical review utilization.

According to Lin & Fraser (2003) although Canadian external auditors appear to place more reliance on analytical procedures to justify reductions in substantive testing, there are limits to this reliance, which suggest that while auditing firms may have increased their use of analytical procedures with the expectation of efficiency gains, these may be realized at present only partially. Ameen and Strawser (1994) studied the Use of Analytical Procedures in large audit firms (big six in that time) and small audit firms in U.S. They investigated usage of six procedures. The results indicate that auditors perceive analytical procedures to be

more appropriate than substantive tests of details in certain situations. This reflects of auditor's perception for analytical procedures.

The extent of analytical review procedures utilized in an audit would depend upon the auditor's knowledge of analytical review procedures and their perception of the effectiveness of analytical review procedures. Analytical review procedures applied in the planning stages of the audit can change the entire course of the audit, since the results of such procedures are used to plan the extent of both substantive analytical review procedures and substantive tests of detail. Thus, auditors will tend to perform extensive preliminary analytical review, and will tend to rely upon the results of those procedures, only when they feel comfortable with analytical review. Thus, the extent of analytical review procedures performed in the planning stages of the audit should bear a positive relationship to the auditor's knowledge of analytical review and their perception of its effectiveness (Tandy, 1987). Also Asha (1992) indicate in his study, the Jordanian's auditors whose perception of the importance and benefits of using analytical procedures are more usage of APs. On the other hand AL-Hamoud, & AL-Samurai (1998) wanted in their study to know the interest of Libya auditors for analytical procedures, extent of use analytical procedures and what the obstacles that prevent the usage are. They found in their study, 83% of the auditors perceptive of the importance of analytical review procedures. and 17 % of Libyan auditors less usage of analytical procedures because the perception of effectiveness by them is less than those have more perceptive of analytical procedures.

## **1.2 Problem Statement**

In the recent time, several strategies and policies have been adopted and implemented by Yemen that takes gradually the country up to the market-oriented economy. These include the wide implementation of privatization programs that alter the ownership of companies from governmental and public ones to a private sector (Al-Tamimi and Zeidan, 2004). Consequently, the number of projects and investments in Yemen is expected to increase in the current time. Under this scene, commercial laws, and accounting and audit regulations in Yemen are still governed by the Yemeni company Act No. (22), for the year 1997 that require all companies to have their financial statements audited by external auditor. In the same line, the audit profession practicing Act No. (26), for the year 1999 regulates that there is not any mandatory basis for auditors to comply with the International Auditing Standards (The international standard in auditing No. 520 “Analytical procedures” is one of these important and basic in work standards). And, yet, Yemen neither has adopted International Accounting Standards nor it develops national standards. In such case, it has been stated by the audit profession practicing law (26/1999) that auditors are subject to work under the shed of basic auditing rules which, in fact, are characterized by a great amount of ambiguity by not identifying the real concept and meaning of the basic auditing rules. Al-Tamimi (2002) indicates that there is paucity to identify the audit market in Yemen; in the environment where there are not any determined Accounting and Auditing standards to be known for implementation and adoption.

The United Nations Convention against Corruption in Yemen indicated that there is a need for the role of the private sector in battling against corruption, the use of the audit standards, and the implementation of penalties in order to preserve the integrity of private sector entities (Al-Matary, 2008).

In Yemen context the implementation of Analytical Procedures is unidentified. That is particularly because there are not any auditing international standards adopted by the country neither developed. To the best knowledge of the researcher, no prior study has been found to investigate this issue. Thus, this study attempts to investigate the implementation level of analytical procedures among external auditors in Yemen and the determinants influencing the level of implementation.

### **1.3 Research Questions**

The purposes of this study are to answer the following questions:

- 1) To what extent the Yemeni audit firms use the analytical procedures? Are the audit firms' size effects of usage?
- 2) Do auditors' experiences affect the extent of the use of analytical procedures?
- 3) What are the important factors driving the use of analytical procedures?
- 4) What is the auditor's general perception towards analytical procedures?

### **1.4 Significance of the Study**

This study discusses a critical subject that appertain external auditors and auditing profession in The Republic of Yemen, especially the researcher did not find a previous study dealing with the analytical procedures used by auditors in the Republic of Yemen, and therefore, will highlight the importance of this issue for the advancement of the profession, which still need

a great effort by practitioners of profession as well as legislators and all those interested to bring it to the required level.

In addition, the Significance of this study is probably useful for the interested bodies as follows:

A – Auditors: the study will highlight the importance of the analytical review and its role in contributing to the discovery of errors, as well as the extent of the obligation of international accounting standards, which reinforces the commitment to these procedures and standards.

B - Regulators and supervising the auditing profession in the Republic of Yemen (Ministry of Trade and Industry, Commission of Chartered Accountants, Yemeni Society of Chartered Accountants, the Supreme Council for the profession of accounting and auditing), from the great role to bring together profession which makes the knowledge of the extent of compliance with international standards in general and the standards of analytical review procedures, in particular also the obstacles and problems of application of analytical review procedures that will be provided by this study

## **1.5 Scope of study**

The scope of this study is conducted on the audit environment in entire Yemen. Specifically, the study focuses on the use of APs in local and international auditing offices.

## **1.6 Organization of Study**

This study is divided into five chapters. The first chapter introduces the study, while the second chapter deals with the literature review of usage of analytical procedures. The research methodology is explained in the third chapter. Discussion and results will be in the forth chapter and the final chapter, which is chapter five discusses the summary the conclusion.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1. Audit Profession in Yemeni Context**

Audit profession in Yemen has substantially changed during the last two decades due to the new policies implemented by the Yemeni government which, subsequently, have changed the audit market. These changes include the incremental implementation of privatization policy in 1995 which, in turn, changed the public companies' ownership and the issuance of the company law No.22 in 1997 that regulates the companies incorporating in the Yemeni environment. Furthermore, it mandates the companies' financial statements to be audited by external auditors. As a result, there is an increasing demand for audit services in Yemen that has led the Yemeni government, consequently, to issue the Law of the Central Agency for Control Audit No. 39 and the auditing law No.26 in 1999 which regulates the auditor work in the Yemeni audit market.

The committees and organizations supervising the auditing profession in Yemen can be highlighted as the following (Al-Saih, 1998; Al-Amoudi, 2001):

##### **2.1.1. Certified Public Accountants Licensed Committee**

This committee is incorporating under the supervision of the Ministry of Industry and Trade.

It works on achieving the following tasks:

- Reviewing applications for licensed Chartered Accountant;
- Conducting examinations of applicants applying for a licensed Chartered Accountant; and

- Working on projects related to the audit profession that have been assigned by the Ministry of Industry and Trade.

### **2.1.2. Certified Public Accountants Association in Yemen**

It was established in June 1993 in accordance with Article (11) of the Chartered Accountants Act No. (31), for the year 1992. Recently, this act has been replaced by the Chartered Accountants Act No. 26 issued in 1999. The membership of the Certified Public Accountants Association is permitted only to the certified accountants. The main objective of the Institute of Chartered Accountants is to develop the profession of accounting and auditing to the level of quality that achieves the international recognition.

The main challenge the Association is facing that is hindering it from achieving its functions and goals is the lacking of financially support. It relies mainly on the limited members' contributions from members, and the financially support from institutions and companies benefiting from its accounting services.

### **2.1.3. Central Organization for Control and Auditing (COCA)**

It was established in 1992 by Act No. (39) through which its roles and aims as a regulatory body have been identified as following:

- To achieve effective control over public funds and ensure proper management; and
- To contribute in developing and upgrading the performance of accounting and auditing profession in Yemen.

#### **2.1.4. Ministry of Industry and Trade of Yemen**

The Ministry of Industry and Trade issues profession practice license after its Committee's recommendation, the auditor's competent department in the Ministry of Industry and Trade tries to accomplish the following tasks:

- Issuing, renewing the Chartered Accountants license and reporting the licensee names from Chartered Accountants in a yearly basis;
- Supervision and field control of the auditors' offices to ensure the accuracy of execution of the provisions of law; and
- Presenting a monthly statement in the notice board for licensed auditors who are permitted to practice the profession on the basic requirement.

#### **2.2. Analytical Procedures:**

There are many studies search about analytical review procedures in many countries due to the importance of the analytical review procedures for auditors. Some of these studies focus on extent of use analytical procedures by external auditors. And others researches subjects like the effects of use APs in detecting fraud and errors. All of these studies indented the APs as powerful tools in auditing stages that help the auditors in every stage (planning, testing, and completion phase) of auditing to collect audit evidence.

Lin and Fraser (2003), studied the use of analytical procedures by auditors in Canada and augments understanding of the impact of audit standards on professional practice. This study did survey about extent of use analytical procedures by different size of audit firms. The researcher distribute the firm size to big five and non-big five, and distribute non big five to large medium and small firm according to the number of partners. Also, examined is the

frequency and effectiveness of the use of analytical procedures in Canada in comparison with the U.K. On other hand, this study examined effectiveness of importance factors in evaluating unexpected fluctuations and driving increased use of analytical procedures. Their results demonstrate that, the use of APs is consistently high among all sizes of firm in Canada and is broadly comparable to use by U.K. and U.S. firms. The use of APs at the planning stage of the audit, however, appears to be significantly lower for the smallest category of firm than in the U.K. A majority of firms have made APs mandatory at the final review stage of the audit and increasingly firms require their use during audit planning and testing. The extent of use varies significantly according to firm size and with the stage of the audit. Big 5 and other large firms use APs more extensively than do medium and small firms. The difference is particularly significant at the audit planning and testing stages. In general, the use of APs by small firms at other than the final review stage of the audit is strictly limited.

Fraser, Hatherly, and Lin (1997) studied the extent of usage analytical review by external auditors in U.K. varies significantly according to firm size and with each audit stage. This paper designed to deepen understanding of AR. This study distribute the firm size to big five and non big five, and distribute non big five to large medium and small firm according to the number of partners. Also, examined is the frequency and effectiveness of use analytical procedures in U.K. This research aim to: ascertain the extent of use of analytical review, determine the relative use of different techniques, examine the role of AR in the evidence collection process, ascertain the perceived effectiveness of AR, and of specific AR techniques, in error detection, and identify factors which have influenced recent changes in the use of AR. Their results demonstrate that, the use of analytical procedures is consistently high among all sizes of firm; however the extent of use varies significantly according to the size of the firm once the stage of audit work is taken into account. The use of analytical

procedures at the planning stage of the audit, however, appears to be significantly lower for the smallest category. Extent of use varies significantly according to firm size and with the stage of the audit. Big 6 and other large firms use analytical procedures more extensively than do medium and small firms.

O'Donnell (2002), examined whether error specific experience can improve auditors performance during analytical procedure. In afield experience, it used analytical procedure to diagnose the reason for an unexpected interperiod change in an account balance. Researcher Have been classified the experience to the following types. (1) General audit experience was measured by the number of months of work by the auditor in the auditing profession. (2) Industry experience was measured by the number of industrial companies that have been checked using the analytical procedures. (3) Error-specific experience was measured by the number of previous engagements during which a participant was involved in making adjusting entries for overhead allocations. The sample included 28 participants with 2 to 13 years of general audit experience. They are used the analytical review procedures explanation of the decrease in gross profit. The researcher distribute questionnaire to the participants to explain the reasons for decrease in profit. The researcher found that, for participants with high experience, (experience in identify error by analytical procedures) were the best in explanation, determine the errors than the participants with less experience.

Ameen and Strawser (1994) studied through their research to understand of extant of use of six analytical procedures by auditors in United States of America, these procedures are: (1)Comparisons involving the prior year's audited balance; (2) ratio analysis involving the unaudited account balance; (3) judgmental trend analysis; (4) judgmental scanning; (5) time-series analysis; and (6) statistical regression analysis. The sample of this study were 100

auditors form the big 6 auditing company at that time, and 90 auditors from small size auditing company. These study findings are: (1) APs appear to be used extensively in the planning, substantive testing, and review stages of the audit examination. (2) Auditors appear to rely on relatively simple APs in conducting the audit examination. (3) Comparison of the current balance to the previous year's balance and scanning were the most frequently-used APs. (4) Both ratio analysis and judgmental trend analysis were also used relatively frequently. (5) The increase in use of the computer by auditor's effect of increase use analytical procedures in auditing. (6) Practitioners may believe that the potential benefit from use complex APs does not justify the added cost.

Mulligan and Inkster (1999), studied the use of analytical procedures in the United Kingdom. Their paper reports on a questionnaire completed by audit partners in the United Kingdom (UK), investigating their usage of analytical procedures in the external audit. They examined extent of use analytical review procedures through three stages of auditing by different audit firms size (big 6, large, medium, and small). In other hand, this study not ignored to study some factor that influencing the increased use of analytical procedures. Also not ignored to study the influence of audit environments on the balance between analytical procedures and detailed testing. The main Results from this survey indicate that Big 6 and large firms use analytical procedures more extensively than medium and small firms. At the planning stage, Big 6 firms' use of analytical procedures is significantly more extensive than for other firms, whilst Big 6 and large firms have significantly greater usage of analytical procedures at the substantive testing stage. Despite increasing usage and the perceived importance of the impact of technology on usage, simple analytical techniques continue to dominate. However, this research demonstrates that Big 6 firms are significantly more likely to use sophisticated statistical techniques at the planning stage in order to assess risk and gain an understanding of

the client. However, for all firms, statistical techniques are more likely to be used at the substantive testing stage where favourable results may justify lower levels of detailed testing with significantly greater use of sophisticated techniques by Big 6 firms when compared to others at this stage. Lack of expertise is the main reason which prevents Big 6 auditors from using statistical techniques.

According to Biggs and Wild (1984), through their study in the United States of America to understand the extant American's auditors use of the analytical procedures. Researchers sample the auditors in four auditing companies from the big - eight auditing companies in that time. They study the relationship between use analytical review procedures and discover the errors. Also it is observed that the relationship between auditors experience and use APs. Their findings are: (1) the results indicate that scanning the data and standard ratio analysis is high percentage in use (scanning data 95.9% and ratio analysis is 89.4%). because there are low cost and easy to implement. (2) Only a small percentage of auditors indicated having ever used regression models (11.4%) and the time series models (8.1%) analysis. (3) The others categories of APs were using 27.6 %. (4) There is strong relationship between auditor's experience and use analytical procedures, specially use the advanced procedures.

According to Senoon (1992), who studied the extant of use analytical procedures by the Egypt's auditors and know what procedures are more frequently used. He found 72.1% from Egypt auditors use the APs above of the average level. And 27.9% do not use the APs. Also this study indicates there is strong relationship between use APs and auditor's experience. Asha (1992) indicate in his study that examined the use of APs for the three levels (non quantity analysis, simple quantity analysis, and advanced quantity analysis) Jordanian's auditors and he found that: (1) Jordanian's auditors use non quantity and simple quantity

analysis more than use advanced analysis. (2) There is no relationship between use APs and auditor's experience. (3) The auditors realized the importance of APs.

According to Chow (2009) the analytical procedures are powerful tools that have the potential to increase the efficiency of audit since it is a relatively low-cost procedure that seems to have considerable power in identifying errors or irregularities and in guiding audit. Also, it helps auditors to understand the client's industry and business, and assess going concern. Therefore, he advises auditors to use these tools. Analytical review procedures is defined as the diagnostic process of identifying and determine the cause of unexpected fluctuations in accounts balances and financial ratios. The benefit associated with analytical procedure is considered substantial if they are proven to reduce the most expensive audit tasks (namely, the test of details), decrease the risk that a material error will go undetected, and if they are constructed to be stable across companies and time horizons ( Hoitash, Kogan, and Vasarhelyi 2006). According to Mulligan & Inkster (1999), analytical procedures defined as the analysis of relationships: (i) between financial data, or between financial and nonfinancial data, deriving from the same period; or (ii) between comparable financial information deriving from different period, to identify consistencies and predicted patterns or significant fluctuations and unexpected relationships, and the results of investigations thereof. The difference in the auditing environment has led to the rise of several new standards on APs for example American Institute of Certified Public Accountants (AICPA), Auditing Practices Board (APB) , Auditing Practices Committee (APC) and so many other countries some of them adopt international standard in audit and others have their own standards (local standards).

## **2.3. Purpose and Timing of Analytical Procedures**

Analytical review procedures perhaps are being used at three stages in the auditing process: The planning stage, the testing stage and the completion stage.

### **2.3.1. Planning Phase**

During the planning phase of the audit, the auditors are used analytical procedures to draw attention to audit areas with significant potential for misstatement. For example, an accounts receivable turnover calculation during the planning phase can signal potential valuation problems. The planning phase analytical procedures are also used to enhance the auditors understanding of the client's operations and the transactions and events that have occurred since the last audit data. Also during the planning phase, analytical procedures can help auditors to assess going concern and reduce detailed tests (Guy, Alderman, & Winters, 1996; Chow, 2009).

### **2.3.2. Testing Phase**

Substantive testing provides evidence as to the fairness of financial statement balances and consists of tests of details of transactions and balances and analytical procedures. The auditor's reliance on substantive tests to achieve a particular audit objective derives from tests of details of transactions and balances, from analytical procedures, or from a combination of both, depending upon the expected effectiveness and efficiency of each type of procedure. In applying tests of details, the auditor uses evidence obtained from the details tested to form conclusions about the aggregate. Although not required, analytical procedures may be used during audit fieldwork as audit evidence. Unlike the objective of attraction to

potential problem areas in the planning phase, in the fieldwork phase analytical procedures are used as audit evidence to reduce the scope of other substantive tests (Al Hamoud, 1991; Arens & Loebbecke, 2000; Chow, 2009).

### **2.3.3. Completion Phase**

The analytical procedures always are performed during the final review phase of audit. Analytical procedures used in the overall or final review stage of the audit help the auditor to assess the adequacy of the substantive tests performed, the sufficiency of the evidential matter obtained, and the validity of the conclusions reached, including the opinion on the financial statements taken as whole. Also During the completion phase, analytical procedures can help to assess going concern also indicate possible misstatements. The application of analytical procedures during the final review should be performed by someone having in depth knowledge of the entity and extensive knowledge and experience in auditing. Usually, the engagement partner or the senior manager on an engagement performs this review (Arens, Elder, & Beasley, 2003; Al-Hamoud, 1991).

## **2.4. Summary**

The analytical procedures are one of the procedures, which are being used by auditor to collect the evidences that support auditing results. Analytical procedures are powerful tools that have the potential to increase the auditing efficiency. The above literature shows that the usage of analytical procedures in different countries. And fluctuations of usage as well as the factors that affect the usage of analytical review procedures are auditor experience, audit firm size, IT usage, and Auditor perception towards APs. Some studies found conflict in their

relationship with analytical review procedures usage. Based on the above literature and considering Yemen as third world country, the present study is an attempt to investigate the usage of analytical review procedures in Yemen.

## **CHAPTER 3**

### **METHODS**

#### **3.1. Introduction**

This chapter illustrates the research methodology of the study. First, the chapter highlight on the sampling and procedures of collect the data in Yemen auditing context. Secondly, the researcher highlights questionnaire design. Thirdly, the researcher will discuss the feedback of survey and data screen. Finally, data analysis is presented in last sections.

#### **3.2. Sampling procedures**

The population, for the present study, consists of the 113 external auditors operating in Yemen. The external auditors in the context of Yemen are divided into Big 4 offices, and non-Big 4 offices. The total number of auditors in Yemen who have renewed their licenses in 2009 is 113 auditors (big 4, international, and local auditors) (Yemeni Chartered Accountant Journal 2009). Importantly, the sample size chosen to distribute out the questionnaires to consists of 84 auditors operating in the four biggest cities in Yemen (Sana'a, Aden, Ta'izz, and Al Mukalla). The chosen of the four biggest cities in Yemen is used because of the fact that most of the commercial activities are practicing in these regions (Certified Public Accountants Association in Yemen, 2009). From the total sample size chosen (84), 14 auditors were excluded because there was a difficulty encountered by the researcher to locate their offices. They do not have online websites and the address and contact numbers provided by the Certified Public Accountants Association in Yemen were invalid. One procedure has been applied by the researcher to decrease the number of the excluded auditors due to the

difficulty of locating their offices which is the snowballing sampling. Under this circumstance, the researcher has asked every auditor about the location of the invalid auditors' addresses in the region. Therefore, the final sample size in this study consists of 70 auditors working in the four major cities in Yemen.

### **3.3. Questionnaire design**

Questionnaires are the most widely used data collection technique in surveys and provide a very efficient way of creating matrix of data required for analysis. The questionnaire of this study has been adopted and adapted from the previous study of Lin and Fraser (2003). Since the context of study is Yemen, a Middle East country where Arabic language is the mother tongue language, the researcher has translated the questionnaire into Arabic language and, then, distributed out in Arabic language.

The questionnaire consists of nine questions that aim, generally, to measure the extent of using "Analytical Procedures" (APs) among external auditor in Yemen. Specifically, the first question measures the audit work experience based on the number of years experienced by the auditor in the audit work field. The number of experienced years are divided in the question as a ranging optional choices from 'less than five years' to the extent of option "20 years and above." The second question is designed to measure the affiliation of the local auditor to international audit firms (Big4 as a first tier audit firms and international audit firms as a second tier audit firms). This question is a dichotomous measurement whether there is an affiliation or not. The third question is divided into two sections. The first section (a) measures the auditor firm size based on the Bi4/ non-Big4 using multiple choices. The non-Big4 are measured based on the number of partners. The second section (b) highlights

the position of the person filling out the questionnaire. The forth question is also divided into two sections referring to as (a) and (b). Section (a) measures the percentage of using APs among the auditors in which this section is given a ranking measurement ranging from zero use to 100%. Section (b) measures the percentage of using APs, as in section (a), during the three audit stages referred to as initial planning, substantive testing, and final review.

Further, question number five aims to measure the level of compulsory of applying the APs during the three audit stages of planning, substantive testing, and final review. This question is measured as a dichotomous measurement which is using APs is required or optional during every stage of the audit function. The sixth question measures the use of APs' techniques during the audit function. A Likert Scale of five ranks is used to measure the APs' techniques (1=very often to 5=never). The seventh question is divided into three section referred to as (section a, b, and c). Section (a) measures the approximate percentage of financial statement errors, generally, detected in using the 'APs' and 'Tests of detail.' The errors detected are assigned optional choices ranging from zero error at the 'APs' and 'Tests of detail' to 100% errors at 'APs' and 'Tests of detail.' Section (b) measures whether the percentage of the errors in the financial statements that could be detected by using APs is the same or different if Tests of detail are applied. And, section (c) ranks the importance of APs' techniques in terms of their relative effectiveness in detecting material errors. A likert scale of 1 to 5 rank is used to indicate the underlying importance.

The eighth question is also divided into three sections referred as (sections a, b, and c). Section (a) measures the level of changes in the use of APs over the last 15 years. This question is assigned open and close options (increased, unchanged, and decreased). Section (b) measures the perception of importance of the factors that contribute to the use of APs over

the last 15 years. Section (c) measures the general perception of the effectiveness of using APs during the audit function. A Likert scale of measures are assigned from (1=extremely effective) to (5= extremely ineffective). The ninth question measures the type of assurance that is provided by the usage of APs in the evidence collection process. Open optional choices are assigned to measure this question.

### 3.4. Feedback and data screen

The study used 70 questionnaires that were distributed in four biggest cities in Yemen (Sanaa, Aden, Ta'izz, and Al Mukalla). This is due to the concentration of economic activities in those cities, and according to the list of auditors in Yemen published by Certified Public Accountants Association (2009), notes that the highest number of auditors are localized in the biggest cities. However, overall respondents are 51 even though the percentage of respondents versus population is 45% (population are 113 auditors) and percentage of respondents versus questionnaires distributed is 73%. High percentage of auditors and high number of respondents concentrate in Yemen capital (Sanaa). The table below illustrates the number of questionnaires distributed, number of respondents, and percentage of responses for each city.

Table 3.1: Survey distribution and responses

City	Number of questionnaires	Number of respondents	Percentage of responses
Sanaa	39	30	77%
Aden	15	8	53%
Ta'izz	9	7	77%
Al Mukalla	7	6	86%
overall	70	51	73%

### **3.5. Data Analysis**

The data were analyzed using SPSS 12.0 software. The analysis also included descriptive statistics, reliability, factor analysis, and logistic regression analysis. The reliability and the factor analysis were used to determine the reliability and validity of the instruments.

## CHAPTER 4

## RESULTS

### 4.1 Introduction

This chapter highlights the survey results of the study which includes the extent and frequency of use, the procedures used, and reliance on analytical procedures. Also, it highlights the general perception towards analytical procedures.

### 4.2 Survey Results.

#### 4.2.1. Extent and frequency of use.

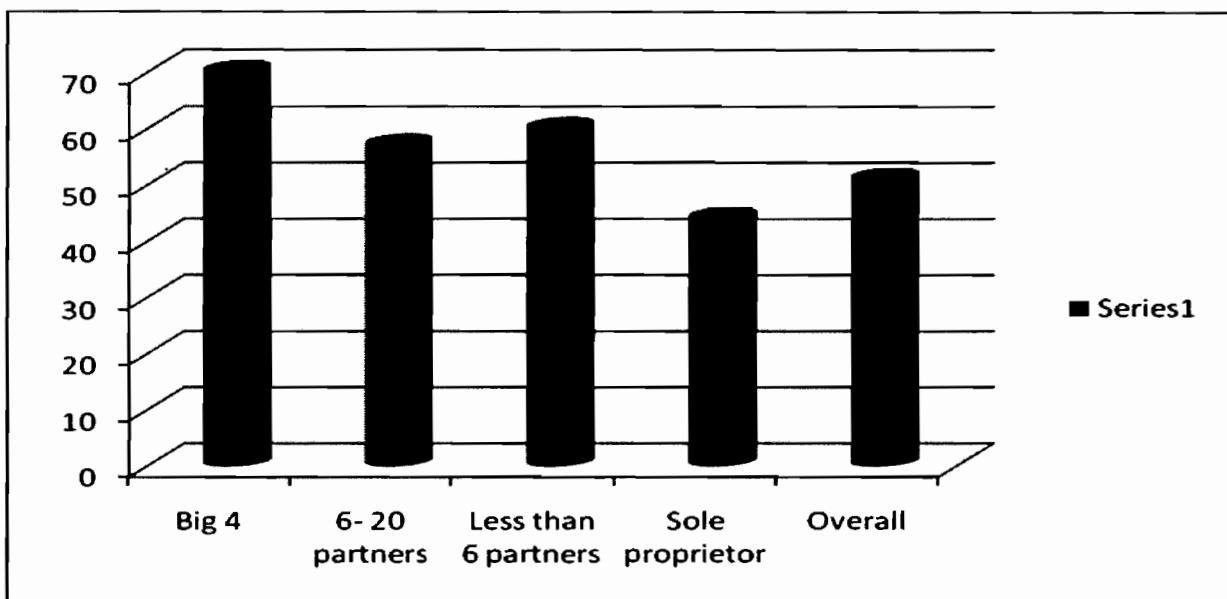
Researcher asked respondents to indicate the proportion of audits on which APs were used. Table 4.1 Auditors' use of analytical procedures by different size of firms indicates wide variation in the use of APs, ranging from less than 20% to more than 90%. Overall, 23.5% of respondents indicated that they used APs on between 21 and 40% of audits and 41.2% reported use of APs on between 41 and 60% and a further 25.5% reported use of APs on between 61 and 80%. The mean extent of use was 51%. APs were utilized on 70% of audits carried out by Big 4 firms as compared to 44% of audits conducted by small firms.

Table 4.1: Auditors' usage of analytical procedures by different size of firms

Percentage of audits on which APs used	Number and percent of auditors									
	Big 4		6- 20 partners		Less than 6		Sole proprietor		Overall	
	Number	%	Number	%	Number	%	Number	%	Number	%
0-20							2	7	2	4
21-40					2	14	10	33	12	23.5
41-60	1	25	2	67	5	36	13	43	21	41
61-80	2	50	1	33	5	36	5	17	13	25.5
81-100	1	25			2	14			3	6
	4	100	3	100	14	100	30	100	51	100
Mean extent of use (%)		70		57		60		44		51

These results are comparable with those from research conducted in the U.S. (Ameen and Strawer, 1994). One partial explanation for the greater use of analytical procedures by larger firms is the client size. Larger clients are more likely to have strong internal control structures that facilitate the generation of reliable accounting data and supporting documents for analytical procedures use (Hirst and Koonce, 1996; Mulligan and Inkster, 1999).

Figure 4.1: Auditors' use of analytical procedures by different size of firms



*Note.* Since the Y-axis is percentage of use analytical procedures and x-axis is audit firm size.

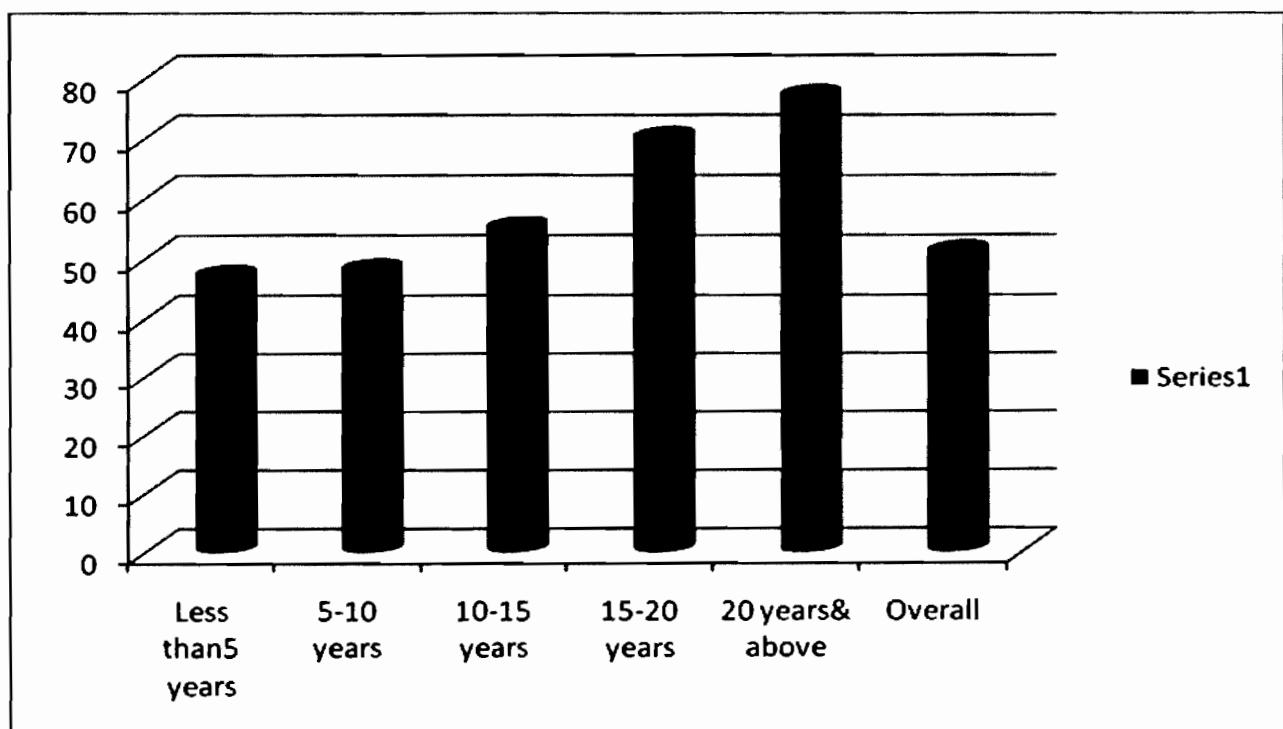
Also, researcher asked respondents to indicate their working experience in auditing and linked it with the proportion of APs were used. Table 4.2 usage of analytical procedures by auditor's experience, indicates wide variation in the use of APs, ranging from less than 20% to more than 90%. Overall, 23.5% of respondents indicated that they used APs on between 21 and 40% of audits and 41.2% reported use of APs on between 41 and 60% and a further 25.5% reported use of APs on between 61 and 80%. The mean extent of use was 51%. APs

were utilized on 47% of audits carried out by less than 5 years experience as compared to 77% of audits conducted by 20 years and above experience.

Table 4.2: Analytical procedures usage depending on auditor's experience

Percentage of audits on which APs used	Auditor's Experience											
	Less than 5 years		5-10 years		10-15 years		15-20 years		20 years & above		Overall	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
0-20	1	3.5	1	8	0	0	0	0	0	0	2	4
21-40	10	36	2	15	0	0	0	0	0	0	12	23.5
41-60	10	36	7	54	3	75	1	33.3	0	0	21	41
61-80	6	21	3	23	1	25	1	33.3	2	67	13	25.5
81-100	1	3.5	0	0	0	0	1	33.3	1	33	3	4
	28	100	13	100	4	100	3	100	3	100	51	100
Mean extent of use (%)	47		48		55		70		77		51	51

Figure 4.2: Analytical procedures usage depending on auditor's experience



Note. Since the Y-axis is percentage of use analytical procedures and x-axis is Auditor's Experience

Table 4.3: Extent, frequency and effectiveness of use of APs in Yemen

<b>Panel A: Percentage of audits on which APs are used.</b>					
	Big 4	6- 20 partners	Less than 6	Sole proprietor	Mean(%)
Planning	70	63	49	35	43
Substantive tests	60	50	54	33	42
Review	70	63	59	38	48

<b>Panel B: Procedures used: frequency by firm size. ( 1 = very often, 5 = never)</b>					
	Big 4	6- 20 partners	Less than 6	Sole proprietor	Mean
Scanning analysis	1.75	1.66	1.86	2.20	2.04
Trend analysis	1.25	1.33	2.00	2.27	2.06
Ratio analysis	1.75	1.66	2.21	2.33	2.22
Reasonableness test	1.00	2.00	2.43	2.66	2.43
Regression	1.25	2.33	2.29	2.66	2.43

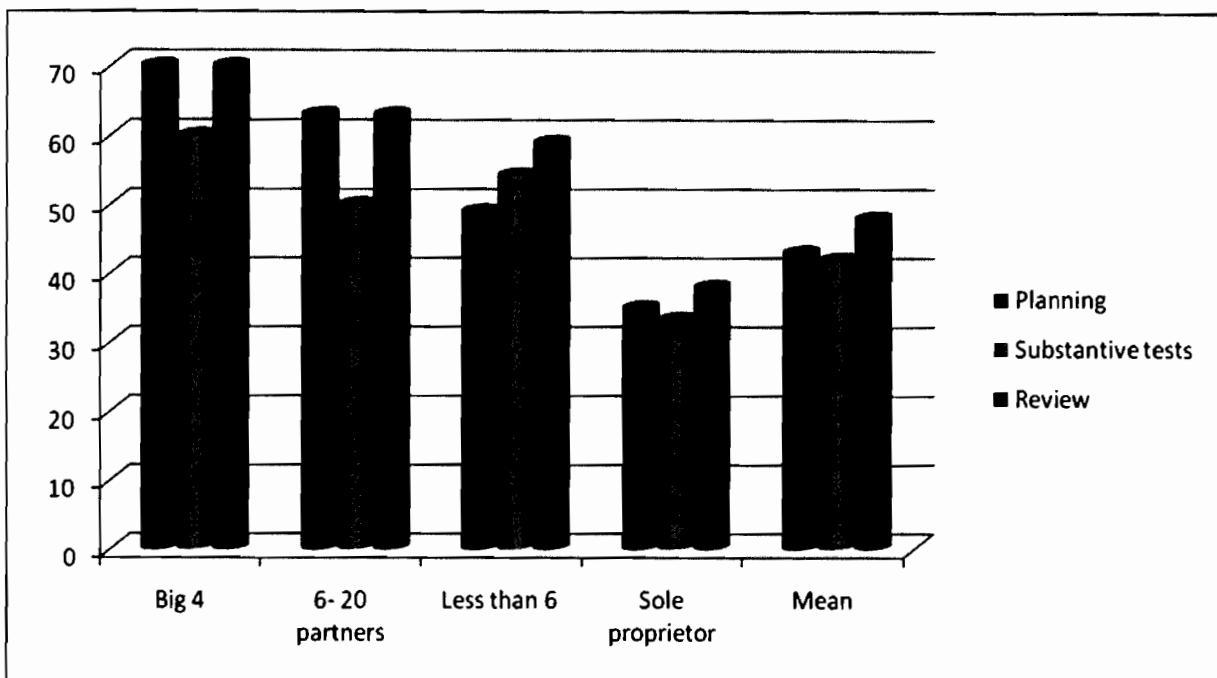
  

<b>Panel C: Procedures used: effectiveness by firm size. (1 = effective, 5 = least effective)</b>					
	Big 4	6- 20 partners	Less than 6	Sole proprietor	Mean
Scanning analysis	3.50	3.66	1.86	1.93	2.14
Trend analysis	2.25	1.33	3.00	2.30	2.43
Ratio analysis	1.75	2.66	3.14	2.60	2.69
Reasonableness test	3.00	3.33	2.71	3.70	3.35
Regression	4.50	4.00	4.29	4.47	4.39

Panel A of Table 4.3 reports the proportion of audits on which APs were used at each audit stage and provides a direct comparison between stages. It can be seen that use at the planning and testing stages was 43 and 42%, respectively. At the final review stage usage was almost universally extensive, with a mean of 48%.

At the final review stage, usage was almost universally extensive, with a mean of 48%. At the planning, substantive testing and review stages the differences were apparent between larger firms and smaller firms. APs were utilized on 70%, 60%, and 70% of planning, substantive tests, and review stages respectively, carried out by Big 4 firms as compared to 35%, 33%, and 38% of planning, substantive tests, and review stages audits respectively, conducted by small firms. In these areas of the audit, smaller firms utilized APs far less extensively than did larger firms.

**Figure 4.3: Percentage of audits on which APs are used**

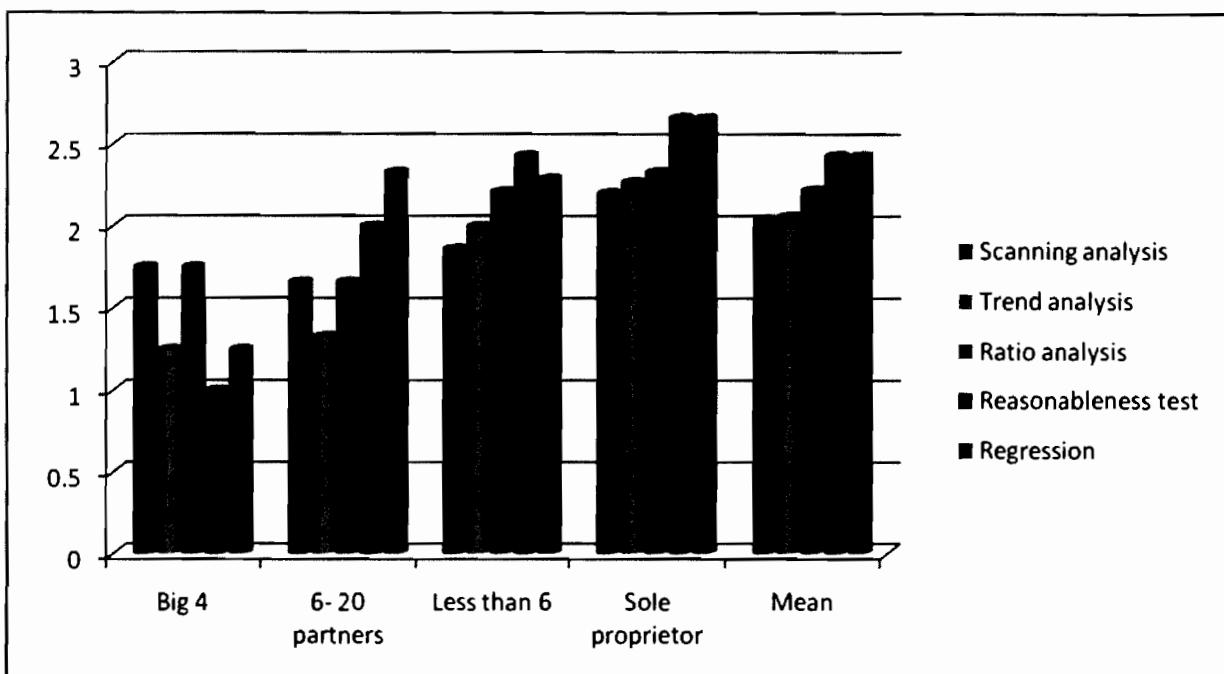


*Note.* Since the Y-axis is percentage of use analytical procedures and x-axis is audit firm size

#### 4.2.2. Procedures used.

Table 4.3 of Panel B gives the respondents' use of different analytical procedures techniques (Scanning analysis, Trend analysis, Ratio analysis, Reasonableness test, and Regression analysis) split by different size of firm. Table 4.3 shows that, scanning and trend analysis to be regarded as more feasible at audit. On the other hand, Trend and Ratio analyses dominate in large firms than small firms. Overall, big 4 and large firms trend to high usage of all techniques, and tend small firms to medium usage of these techniques. When compared to the earlier U.K. survey (Fraser et al., 1997), our results show little movement towards the use of more quantitatively-based techniques.

**Figure 4.4: Procedures used: frequency by firm size**



*Note.* Since the Y-axis (1 = very often, 5 = never)

#### 4.2.3. Reliance on analytical procedures.

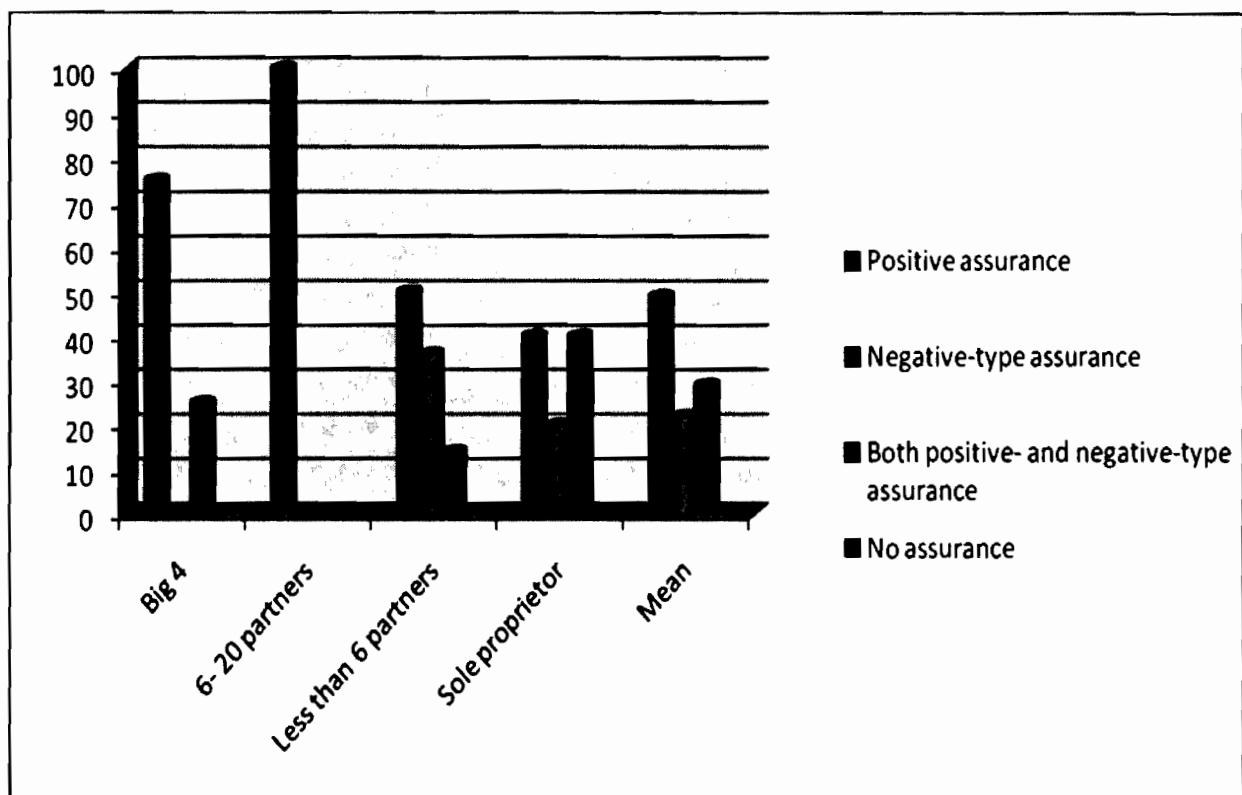
**Table 4.4: Types of assurance**

Types of assurance provided	Percentage of respondents				
	Big 4	6- 20 partners	Less than 6 partners	Sole proprietor	Mean (%)
Positive assurance	75	100	50	40	49
Negative-type assurance	0	0	36	20	22
Both positive- and negative-type assurance	25	0	14	40	29
No assurance	0	0	0	0	0

Table 4.4 demonstrates that a clear majority of respondents (49%) believed that APs provide either positive assurance (as for tests of detail) and (29%) believed that APs provide both positive and negative type assurance (less assurance than tests of detail). A minority (22%) of

those auditors who responded to the survey would reduce the level of detailed testing when the results of APs are favourable.

Figure 4.5: Types of assurance



*Note.* Since the Y-axis is Percentage of respondents and x-axis is audit firm size.

#### 4.2.4. Change in use.

Table 4.5: Importance of factors driving increased use of APs (1 = very important, 5 = very unimportant)

	Big 4	6- 20 partners	Less than 6	Sole proprietor	Mean
Increased fee pressures	2.50	2.66	2.43	2.50	2.49
Increased professional guidance	2.00	2.33	2.29	2.33	2.29
Increased reliance as a direct source of evidence	1.75	2.00	2.50	2.73	2.55
Overall change in audit approach	1.75	1.33	2.43	2.9	2.59
Influence of auditing standards	1.25	1.66	2.57	3.23	2.80
Increased use of computers	1.00	1.33	1.57	1.43	1.43

Table 4.5 shows the importance of various factors for the increased use of APs over that period. “Overall Increased use of computers” is considered to be the most important factor contributing to the increased use of APs. In general, respondents rated “the influence of the auditing standard” as the least important driver of change. However, the standard appears to be significantly more influential for big 4 and large firms as compared with small firms. Furthermore, small firms acknowledge fee pressures, increased reliance on APs as a direct source of evidence, and changes in audit approach to be less important than do Big 4 and other large firms.

Evidence from both the U.K. (Mulligan and Inkster, 1999) and the U.S. (Ameen and Strawer, 1994; Blocher and Loebbecke, 1993) suggests that auditing standards on APs have had greater impact upon the practice of smaller firms than that of larger or Big 5 firms in that time. However, lack of standards for regulates auditors’ work in Yemen is important reason in weakly usage of analytical procedures.

#### **4.2.5. General perception toward analytical procedures.**

Table 4.6 shows the effect of general perception for the increased use of APs by different audit firm’s size. General perception toward analytical procedures differ cross different firms size. However, overall trend to be medium effect in audit firms in Yemen. Auditor perception appear differ between big 4 firms and smaller firms. High perception correspondence with high use of analytical procedures in big 4 firms comparable with small firms that indicated less use of analytical procedures in table 4.1. this maybe, refer to auditor's knowledge of analytical review techniques or reliance on analytical procedures, including the understanding of when such procedures are applicable and the expertise necessary to carry out the

procedures and interpret the results, is crucial to analytical review utilization( McKee, 1982; Lin & Fraser, 2003).

Table4.6: Auditor Perception towards Analytical Procedures (1=extremely, 5 = extremely ineffective)

	<b>Big 4</b>	<b>6- 20 partners</b>	<b>Less than 6 partners</b>	<b>Sole proprietor</b>	<b>Mean</b>
Perceived effect versus of APs	1.50	2.00	1.93	2.20	2.06

### 4.3 Summary

This study answers four questions. Firstly, the extent of use analytical procedures by different audit firm size. Generally, analytical procedures were utilized on high percentage of audits carried out by Big 4 firms as compared to low percentage of audits conducted by small firms. Secondly, different experiences of auditors versus extent of use analytical procedures. In this section high experience auditors used high percentage of analytical review procedures as comparable with low experience auditors. Thirdly, important factors driving the use of analytical procedures. Generally, increased use of computers is considered to be the most important factor contributing to the increased use of APs. In other words, influence of auditing standards is considered to be the least important factor contributing to the increased use of APs. Fourthly, general perception of auditor's towards analytical procedures. The participant was asked to respond on a scale that ranged from (1) extremely effective to (5) extremely ineffective. Respondent provided different answers, that is, big 4 proved high perception towards analytical procedures comparable with small firms.

## **CHAPTER 5**

### **SUMMARY AND CONCLUSION**

#### **5.1 Introduction**

This chapter highlights the summary and concludes the study. Firstly, it presents the summary of the study. Second part in this was discussed the implementation of this study. Thirdly, highlights limitation of this study. The fourth part presents possible future research. The final part concludes the study.

#### **5.2 Summary**

This paper investigates the extent to which Yemeni auditors use analytical procedures. It aims to answer the flowing research questions: (i) To what extent do the Yemeni audit firms use the analytical procedures?, (ii) Does the audit firms' size affects of usage?, (iii) Do auditors experience effect of extent of use analytical procedures?, (iv) What are the importance's factors driving the use of analytical procedures? And, (v) what is the auditor's general perception towards analytical procedures?

To achieve the purpose of this study, researcher distributed a number of questionnaires in four biggest cities in Yemen (Sana'a, Aden, Ta'izz, and Al Mukalla). The Overall respondents are 51 who answered of questionnaires. However, the percentage of respondents versus population is 45% (population are 113auditors). Researcher arrival to the mean extent of use was 51%. APs were utilized on high percentage of audits carried out by Big 4 firms as compared to low percentage of audits conducted by small firms. However, at the planning,

substantive testing, and review stages differences were apparent between larger firms and smaller firms. Also big 4 and other large firms tend to high usage of all techniques, and small firms tend to medium usage of these techniques. We can say there is positive relationship between the audit firm size and use analytical procedures in every audit stages. Greater use of APs refers to mandate auditing standards in big firms. One partial explanation for the greater use of APs by larger firms is the client size. Larger clients are more likely to have strong internal control structures that facilitate the generation of reliable accounting data and supporting documents for APs use (Hirst & Koonce, 1996; Mulligan & Inkster, 1999). Furthermore, high experience auditors use high percentage of analytical review procedures as comparable to low experience auditors. Auditing experience refers to auditing events that undergone on auditors during time. In other words, auditor experience indicates to the number of years auditing work is practiced by the auditor. With respect to the analytical procedures and its correlation with the auditor experience, several studies have been carried out to investigate this issue (Biggs & Wild 1984; Senoon 1992; Asha 1992; Cho& Lew, 2000; O'Donnell 2002).

Important factors driving the use of analytical procedures include the increased use of computers which is considered to be the most important factor contributing to the increased use of APs. On the other hand, influence of the auditing standard as the least important driver of change. However, the standard appears to be significantly more influential for big 4 and large firms as compared to small firms. This refers to the fact that there is not any mandatory basis for auditors to comply with the International Auditing Standards and yet, Yemen has neither adopted International Accounting Standards nor has it developed its own national standards.

General perception towards analytical procedures differs across different firm sizes. However, the overall trend is to be medium effect in audit firms in Yemen. Auditor perception appears to differ between big 4 firms and smaller firms. The auditor's confidence in analytical review procedures is expected to have an effect on the utilization of such procedures during the course of an audit. As McKee (1982) notes, "many of the new analytical techniques were not taught in most undergraduate programs as recently as a decade ago. Consequently, many practitioners do not possess an adequate understanding of such techniques and do not use them". The auditor's knowledge of analytical review techniques, including the understanding of when such procedures are applicable and the expertises necessary to carry out the procedures and interpret the results are crucial to analytical review utilization.

### **5.3 implementation of this study**

Auditors in Yemen are facing many obstacles that limit their use of analytical review procedures. The results show that the more auditors' perception towards analytical procedures is weak the more it leads to less usage of analytical procedures. Moreover, it leads to lack of standards for regulating auditors' work. In other words, Yemeni's Act does not mandate the auditors in Yemen to follow international standards in auditing where analytical procedures are considered to be one of these standards or to develop the local standards. On the other hand, obstacles related to overall change in audit approach, less reliance on professional guidance and lower audit fees play a least role in reducing the use of analytical procedures.

#### **5.4 limitation of this study**

The sample size chosen to distribute out the questionnaires consisted of 84 auditors operating in the four biggest cities in Yemen (Sana'a, Aden, Ta'izz, and Al Mukalla). The chosen of the four biggest cities in Yemen was used because of the fact that most of the commercial activities are being practiced in these regions (Certified Public Accountants Association in Yemen, 2009). From the total sample size chosen (84), 14 auditors were excluded because there was difficulty encountered by the researcher to locate their offices. They do not have online websites and the addresses and contact numbers provided by the Certified Public Accountants Association in Yemen were invalid; although, the researcher got another list from Ministry of Industry and Trade but this list has many mistakes in addresses and contact numbers. In other words, the changed addresses and telephone numbers for auditors were not updated in the list.

#### **5.5 possible future research**

The study was limited to the extent of use of some techniques. Therefore, future studies should attempt to examine other techniques on usage of analytical procedures. Future studies should also try to investigate other factors driving increased use of analytical procedures like auditors industry specialist. The research used survey to investigate the usage of analytical procedures, but a laboratory study, which the auditors will present case study of audits, could provide further evidence on the factors important in the auditor's decision regarding the utilization of analytical review procedures. Also future research could attempt to control the environment in which the audit decisions are made.

## **5.6 Conclusion**

The analytical procedures are considered one of the procedures used by auditor to collect evidences that support auditing results. Analytical procedures are powerful tools that have the potential to increase the auditing efficiency.

In Yemen context, the extent of using analytical procedures by audit firm size was different according to firm size and auditor's experience. Generally, analytical procedures were utilized on high percentage by audits in larger and high experienced audit firms compared to small and low experienced audit firms where the results have shown low percentage. Moreover, the role of auditors' perception towards Analytical procedures has proved to have a significant effect of usage of the analytical procedures.

Based on the above mentioned results, the researcher put a number of recommendations:

1. Amendment Act No. 26 of 1999 by including a clear and explicit legal text to compel auditors in Yemen adopting the accounting and auditing standards.
2. The parties who have supervisory authority or regulation of the profession in Yemen must organise workshops, courses or seminars on analytical procedures to increase the knowledge in analytical procedures and the contribution to development the profession.
3. Conducting further future studies on many topics related to the auditing profession in the Republic of Yemen, such as audit fees in the Republic of Yemen and to obligate auditors to apply Act No. 26 of 1999 on audit profession.

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