

Chapter 4 METHODOLOGY

4.0 Introduction

Previous chapter explained the framework of the study that incorporated three theories, agency theory, RDT and BDT, and conjectured the hypotheses. Hence by establishing key variables of interest and other potentially influential factors, it gives a better impression of the breadth of the problem of the study. This chapter explains the research design for the study and measurement of the independent variables that involve audit committee experts.

4.1 Methodological Approach

In general there are three types of methodological approaches in researches, namely the positivist perspective, interpretive perspective and critical perspective. The positivist paradigm arose from a philosophy known as logical positivism, which is based on rigid rules of logic and measurement, truth, absolute principles and prediction (Weaver and Olson, 2006). According to Chua (1986), the mainstream accounting research is dominated by a belief of physical realism, where the world is seen as an objective reality and exists independently of human beings. The interpretive perspective sees human actions as the result of external influences that have both intentions and reflections, and takes place within a structure of rules which binds the participants. Whereas, the critical perspective expands on the scope of the interpretive approach by focusing on the ownership of knowledge and the associated social, economic and political implications (Smith, 2007).

In this study, the audit committee is discussed as an objective fact, hence leads to a distinction between the observations and the theoretical constructs used to represent

empirical reality (Chua, 1986). This belief in empirical testability has been expressed in the positivist belief that there exists a theory, an independent set of observation statements that can be used to conform or verify the truth of a theory. Thus, the assumption falls within the mainstream research paradigm (Ryan *et al.*, 2002, Chua, 1986), or the positivist perspective (Smith, 2007). Furthermore, positive accounting research demonstrates a strong commitment to what researchers labelled as research objectives. Whereby, the research is viewed as a process of constructing precise and economical theories validated by well-designed tests using large and unbiased samples (Ryan *et al.*, 2002).

The study starts with three theories namely, the behavioural decision theory, resource dependence theory and agency theory, and proceeds to generate specific predictions to test the hypotheses as a deductive reasoning, whereby the methodology of a positivist research helps to facilitate with the selection of the most appropriate method to be utilised. In general there are two major processes of reasoning that will provide better explanations and more reliable predictions (Smith, 2007). The two processes of reasoning are 'deductive' and 'inductive' reasoning. Whereby, inductive reasoning moves from specific facts to general, but with tentative conclusion (Cooper and Schindler, 2001). Inductive reasoning starts with specific observations from which theories can be generated. On the contrary, deductive reasoning starts with the theory and proceeds to generate specific predictions which follow from its application, as this study applies. This hypothetico-deductive methodology exists for empirical studies that are designed to test the predictive abilities of different accounting methods (Ryan *et al.*, 2002; Chua, 1986).

In the positivist paradigm, theories are used as instrumental theoretical framework, which are not themselves subjected to empirical tests. The empirical research is generally concerned with establishing the relationship between variables. These variables are properties of events or phenomenon that are being developed from a well designed measurement system. Subsequently, this study generally concerns with establishing the relationship or association between audit committee experts and financial reporting quality. Whereby the independent variables are recognised as the financial reporting quality and dependent variables are the audit committee experts. Variables are properties of events or phenomenon through defined measurement system, hence there must be a theory of measurement that encloses the objectives of the measurement process, states the standards against which measurement will be made (Ryan *et al.*, 2002). Thus, in order to measure the audit committee experts as per the first research question, certain essential elements are developed that was provided by the behavioural decision theory. Therefore, to achieve the information pertaining the audit committee, the study has to embrace sources used to generate research based on historical documents, corporate annual reports and company disclosures (Smith, 2007).

Content analysis is a method of analysing documents that will allow the researcher to test theoretical issues to enhance understanding of the data. Quantitative content analysis flows from a positivist research tradition and is deductive in its approach (White and Marsh, 2006; Weaver and Olson, 2006). Smith (2007) defines content analysis as a method that uses a set of procedures to make valid inferences from texts and is usually applied to the analysis of archival data. The aim is to attain a condensed and broad description of the phenomenon and the outcome of the analysis that describes the concepts or categories of the phenomenon (Elo and Kyngas, 2008). Hence, corporate annual reports are considered as an archival data that provide information

regarding audit committee experts, that eventually be used in testing the hypotheses. This method of analysis will be used to answer the second research question, on the relationship between audit committee experts and financial reporting quality. The analysis requires that the units developed reflect the objectives for which the data were collected. Since research questions concern with the quality of audit committee experts' association with financial reporting quality, the information searched are the background of audit committees that had been predetermined during the measurement process and designed, and using samples that represent financial reporting quality. Since hypotheses must be testable, their content must be measurable if not directly observable. Under the deductive approach, that is suitable in a highly structured environment, involving the empirical testing of theoretical models. Therefore, the reliability on the quantitative and statistical methods are highly dependent (Smith, 2007). The final point with the mainstream accounting research is the theory interpretation, where the theoretical analysis and results are reconcile. Subsequently, careful consideration is given in evaluating the relationship or association between theory and practical application, where great emphasis is placed upon intellectual or rational analysis.

The knowledge that is gained through observation on these audit committees information from annual reports, together with a concrete reality and objectivity, with human behaviour as deterministic in nature, adopts a scientific approach and puts the research within the mainstream paradigm. Consequently, under the mainstream research paradigm, the world is viewed with a concern for regulation. Similarly, the results from the study will hope to enlighten the regulation on determining quality audit committees based on their expertise that concerns the functioning of accounting.

4.2 Profiling the Expert

The following are the variables of interests and the relevant measurements the study intends to perform. The variables are based on the academic and regulator literature.

4.2.1 Pilot Study

Before the study arrive at the measurement and definition of audit committee experts, a pilot study is first carried out. The objective is to find benchmarks or guidelines regarding directors' information that could be useful to determine the study's definition of experts. Supported by prior studies, these criteria will be used to define audit committee experts.

The pilot study was to find details regarding the audit committees' background. A total of 186 items of audit committee information, from 37 companies that were reported in the Securities Commission annual reports from 1999 until 2007, were hand collected. Information regarding directors' background was acquired from the disclosure in the director's information in the corporate annual reports. However, information on prior number of years of working experience was insufficient. Nevertheless, areas of prior or current working experience were at least revealed as were professional qualifications or bodies from where they gained their professional recognition. In terms of education background, there were some directors who had taken courses including the Advanced Management Programme (AMP) such as, from Wharton University, Master of Business Administration (MBA), Doctor in Business Admin (DBA), and Doctor of Philosophy (PhD), as well as other relevant postgraduate diplomas (see Table 4.1). The pilot study shows the outcome from the background research on audit committees' background information; consistent with Singer and Bruhns (1991), academic qualifications can be valid predictors of high level job performance.

From prior literature in the previous chapter three, experts are recognised through two basic elements; namely, qualifications and work experience. Hence, results from the pilot study, are divided into three sub headings – Qualification and Work Experience – with qualification being divided into two as had been identified in section 3.2.

From the pilot study (see Table 4.1), 50 percent of audit committee members have at least a degree. Nearly 22 percent acquired a masters' degree. And 36 percent of audit committees in the pilot study attained recognised accounting professional qualifications. This may suggest that nearly one third of companies have audit committees with accounting background as required by the listing requirements and MCCG. For prior working experience, those with accounting and auditing background are almost at par with those who acquired experience in the banking and finance sectors, at 29 and 31 percent, respectively. Nearly 21 percent of these had held a senior management position such as CFO or CEO, consistent with Carcello *et al.* (2006).

Looking at the academic qualification, almost all audit committees acquired reasonable academic achievements with at least 50 percent obtained a bachelor degree. While nearly one fifth acquired a masters' degree and ten percent acquired doctor of philosophy. The professional qualification shows that other fields also are present among audit committee members, suggesting that the company appoints audit committee members from diverse background to assist in the audit committee functions.

Table 4.1 Audit Committee Pilot Study

Audit Committees Expert's from Literature	Details	%
1a Qualification: Academic	a. Sijil Pelajaran Malaysia (SPM) or Malaysian Certificate of Education (MCE) (Equivalent to 'O' levels).	1
	b. Diploma.	9
	c. Bachelors Degree.	50
	d. Masters Degree.	22
	e. Doctor of Philosophy.	10
1b Qualification: Professional	a. Professional Accounting Bodies (ACCA, CIMA, ICAEW, CPA, AICPA, MIA, MICPA).	36
	b. Lawyer.	7
	c. Engineer.	6
	d. Others.	5
2 Work Experience	a. Accounting, Auditing.	29
	b. Finance.	31
	c. Tax.	1
	d. Partner Audit Firm.	7
	e. Senior Management Position.	21
	f. Practice Law.	5
	g. Partner Legal Firm.	3
	h. Academic.	3

Sources : Compiled by the author.

(Note: The pilot study finds one of each categories over the total number of audit committees in sample, and not proportioned.)

Table 4.2, shows the percentage of similar studies and their comparisons in terms of experience as former CFOs or in auditing, and the composition of CPA within the audit committee board members. It also shows that Malaysian firms follow the listing requirements where at least one of the audit committee members is a CPA, or someone with professional accounting recognition. The pilot study shows that 36 percent are CPAs, which is equivalent to one third or at least three members of the audit committee members.

Consistent with prior literature (Defond *et al.*, 2005; Carcello *et al.*, 2006), experience in accounting and auditing and finance, and professionally qualified or certified accountant, are the important characteristics to be considered as an expert. Furthermore, Solomon *et al.* (1999) shows evidence that suggests direct experience enhances the knowledge. Therefore, specific accounting experience carries some weight because audit committees duties that require a high degree of accounting sophistication (see Defond *et al.*, 2005; Carcello *et al.*, 2006; Krishnan and Visvanathan, 2009; Dickins *et al.*, 2009).

Table 4.2 Prior Studies on Audit Committee Experts

<i>Background of experts</i>	Iskandar and Abdullah (2004)	Defond <i>et al.</i>, (2005)	Carcello <i>et al.</i> (2006)	Raghunandan and Rama (2007)	This Study
<i>Experience in Audit</i>	-		12 %	41 % ¹	29 %
<i>Prior experience as CFO</i>	-	17%	21 %		21 %
<i>CPA or equivalent</i>	30%		19%		36 %

Sources : Compiled by the author.

¹Defines accounting expert as those who have experience as public accountant or auditor or principal officer, controller, or principal accounting officer.

4.3 Independent Variables

Previously, audit committee experts are identified as audit committee members with professional accounting affiliation, audit committee members with postgraduate qualification and audit committee members with senior managerial experience. Consistent with prior literature in Table 3.1, the study extends the audit committee experts into four different types (see Table 3.1, and Figure, 3.4) such as, audit committee financial experts (A), audit committee accounting experts (B), audit committee experts (C) and non-accounting experts (D). To illustrate further, the Table 4.3 below summarises the variables.

Table 4.3 Summary of Variables

Variables	Basic Framework	Final Framework
<i>Dependent</i>	Fraudulent Financial Reporting	Earnings Management
<i>Independent</i>	ACC EXP PG (see Figure 3.2)	A B C D (see Figure 3.4)

Note : **ACC**=Proportion of AC members with professional accounting affiliations; **EXP**=Proportion of AC members with senior managerial experience; **PG**=Proportion of AC members with postgraduate qualifications; **A**=Proportion of AC members with accounting professional affiliation, postgraduate qualification, and managerial experience; **B**=Proportion of AC members with accounting professional affiliation and managerial experience; **C**=Proportion of AC members with any professional affiliation qualification, postgraduate qualification and managerial experience; **D**=Proportion of AC members without any professional affiliation, but only postgraduate qualification and managerial experience;

4.3.1 Accounting Affiliated, Postgraduate or Experienced Audit Committees

The study measures audit committee experts with accounting affiliated, postgraduate qualification and senior managerial experience, consistent with Krishnan and Lee (2009), Sharma *et al.* (2009), Raghunandan and Rama (2007), Carcello *et al.* (2006), and Defond *et al.* (2005). The measurements are shown as follows (Table 4.4). These variables will be used to test the hypotheses in association to fraudulent financial reporting that has smaller number of observations.

Table 4.4 Measurement of Accounting Affiliated (ACC), Postgraduate (PG) and Managerial Experience (EXP) Audit Committees

Independent Variable	Definition	Measurement
ACC	Proportion of audit committee directors with accounting affiliations, to audit committee size.	$AC\ experts = \frac{\sum_{i=1}^n d_i}{n}$ <p>Where; n = number of audit committee members, d = number of audit committee with accounting affiliations.</p>
PG	Proportion of audit committee directors with postgraduate qualifications, to audit committee size.	
EXP	Proportion of audit committee directors with senior managerial experience, to audit committee size.	

For instance, for company B who has a member with any accounting certification (or postgraduate qualification or senior managerial experience) the score is 1/3, or 0.33, given total number of audit committee is 3.

4.3.2 An Extension on Expertise

As shown in chapter 3, the audit committee expertise is expanded to capture RDT among the boards' that represent the social context the firm is embedded as posited by Pfeffer (1972, 1973). As shown in Figure 3.5, there are four types of expertise in the extended framework. These variables will be used to test the hypotheses in association to earnings management that has larger number of observations, than the fraudulent financial reporting.

The study measures type A, B, C and D audit committees, as the proportion of directors with the required qualification to the number of size of audit committee size, consistent with Krishnan and Lee (2009), Sharma *et al.* (2009), Baxter and Cotter (2009), Raghunandan and Rama (2007), Carcello *et al.* (2006), and Defond *et al.* (2005). The measurement is shown as follows (Table 4.5):

Table 4.5 Measurement of Type A,B,C and D Audit Committees.

Independent Variable	Definition	Measurement
A	Proportion of AC members with accounting professional affiliation, post graduate qualification, and managerial experiences.	$\text{Experts} = \frac{\sum_{i=1}^n d_i}{n}$ <p>Where; n = number of audit committee members, d = number of audit committee with accounting affiliations.</p>
B	Proportion of AC members with accounting professional affiliation and managerial experiences.	
C	Proportion of AC members with any professional affiliation qualification (e.g. architect, lawyer), post graduate qualification and managerial experiences.	
D	Proportion of AC members without any professional affiliation, but only post graduate qualification and managerial experiences.	

For instance, if company ABC has two members with type A audit committees the score is $2/3$, or 0.67 given the total number of audit committee members is three.

4.4 Dependent Variable 1 - Fraudulent Financial Reporting (FFR)

The objective of the study is to examine the association or relationship of audit committee expertise and financial reporting quality. Firstly, to assist in answering the second research question, the first proxy for financial reporting quality is fraudulent financial reporting which has been identified in chapter 3 as among the financial reporting quality indicators. This is supported by reports from the Securities Commission, that the most common violations that occurred in 2007, involved false financial reporting by companies (Securities Commission, 2007b). The SC gives strong emphasis on investors' protection, and takes serious responsibility in overseeing the disclosure of important information to the investing public. Companies must reflect true and accurate information in their financial statements so that investors can rely on the truth of the information disclosed in corporation proposals and financial documents so they can make informed decisions about their investments (Securities Commission, 2007b). This is consistent with earlier studies to proxy financial reporting quality with fraudulent financial reporting (see Beasley, 1996 and POB, 2000; Erickson *et al.*, 2006; Cohen *et al.*, 2007; Zhao and Chen, 2008).

4.4.1 Definition

In brief, fraudulent financial reporting (FFR) includes, false and misleading statements and, or information, submitted to authorities and also investors (122B SIA, 32B SCA, 33E SCA, 152(2) SCA). This is consistent with Fich and Shivdasani (2007) who identify firms that were accused of financial fraud, were from the incidence of a shareholder class action lawsuit alleging violation of rule 10(b)-5 of the SEC Act of

1934. The rule proscribes, among other things, “the intent to deceive, manipulate, or defraud with misstatements of material fact in connection of financial condition, solvency and profitability”, and excludes complaints of alleged insider trading.

Section 32B of the Securities Commission Act (SCA) provides for the imposition of a statutory obligation on those making submissions to the Commission including the company, its directors and professional advisors to ensure that proposals submitted to the SC⁷ do not contain any false or misleading information, or omitted material information. While, Section 86 of Securities Industry Act (SIA) is related to preparing or disseminating false or misleading statements likely to induce securities transactions or affect the market of securities. The Capital Markets and Services Act 2007 (CMSA 2007)⁸ on the other hand, is to regulate and provide for matters relating to the activities, markets and intermediaries in the capital markets.

Consistent with Beasley (1996) fraudulent financial reporting includes occurrences where management intentionally issues misleading financial statement information to outside users, misappropriation of assets by management and restatements. Restatement is considered as one of the indicators of fraudulent financial reporting as it represents a unique setting for examining the legal consequences if any non GAAP reporting presents. It also reflects an acknowledgement that the financial statement, as originally reported to the public and filed with the SEC, was not in accordance with GAAP (Palmrose and Scholz, 2004). Restatements may also imply an ineffective internal control system and, or external auditor, where examining restatements allows for insights into the audit committee’s ability to influence internal and external audit effectiveness (Abbott *et al.*, 2004).

⁷General jurisdiction of the SC relates to, in the primary market, fundraising exercises and takeovers and mergers and, in the secondary market, the regulation of offences such as market manipulation, insider trading, false and misleading disclosures, and compliance with accounting standards as prescribed by the Malaysian Accounting Standards Board (MASB).

⁸ CMSA 2007 consolidates the Securities Industry Act 1983 [Act 280] and Futures Industry Act 1993 [Act 499].

Table 4.6 Summary of Offences as Fraudulent Financial Reporting

List of offences	Sections	Acts
Making a statement that is misleading in material particulars.	Section 176	Capital Market Securities Act 2007
Issued a prospectus contained misleading information.		
Submission of false information to Securities Commission.		
Making false statements in documents, which is used in the preparation of financial statements contained in annual report.		
False or misleading documents or information.	32B (Deleted) 33E	Securities Commission Act 1993
Disclosure of information to SC that is false or misleading, material omission; or misleading or deceptive.	152(2)	
False reports to Commission, stock exchange or recognized clearing house.	122B	Securities Industry Acts 1983
Criminal Breach of Trust		Penal Code

Sources : Compiled by the author.

FFR is also defined as a deliberate attempt by a corporation to deceive or mislead users of published financial statements, especially investors and creditors by preparing and disseminating a materially misstated financial statement (Rezaee, 2005). Thus, fraudulent financial reporting for the current research falls under incidences that are included in the list of offences as shown in Table 4.6, and also includes incidences where the Securities Commission required the companies that fall under administrative actions to reissue and restate their financial statements.

4.4.2 Sample

The sample for FFR, consists of publicly listed firms because these listed firms have to abide by the listing requirements that requires the formation of the audit committee board. The FFR is limited to publicly traded firms because the study only examines audit committees background that exist in listed companies due to the listing requirement, consistent with prior studies (see Beasley, 1996; Collier and Gregory, 1999; Beasley and Salterio, 2001). Subsequently, it is documented that 63.6 percent of management fraud exists in publicly held companies (Loebbecke *et al.*, 1989), even though larger companies are more likely to exhibit better corporate governance structures (Mangena and Taurangana, 2008) and larger companies are more likely to use a better quality audit firm (Chen *et al.*, 2005). Carcello *et al.* (2006) use a sample of 400 companies in examining financial expert disclosure, taking from the 100 largest companies of Public Fortune 500 and 300 random companies from NYSE and NASDAQ.

In addition, firm size is positively related to financial reporting quality, where Felo *et al.* (2003) perceived that disclosures made by larger firms were of higher quality. However, it shows that lawsuits against auditors are more likely to come from larger bankrupt clients (Palmrose, 1987), and that an agency problem exists in large firms. This is consistent with Craswell *et al.* (1995) who argue that larger sized companies in general have greater agency problems that are more likely to benefit from the additional audit quality of the big audit industry specialist firms.

In Beasley *et al.* (2000), the sample was based on SEC allegations of financial reporting problems similar to Beasley (1996), Dechow *et al.* (1996), McMullen (1996), Bonner *et al.* (1998) and Owens-Jackson *et al.* (2009). A total of 200 companies were randomly

selected from 300 companies that were found during the 11 year period using three key industry concentrations; 25 companies from technology industry, 19 from health industry, and 22 from financial services sector. While Aier *et al.* (2005) use a sample of 228 restatement companies and 228 matching companies from 1997 to 2002.

The study has 28 fraud firms to be matched with 84 non-fraud firms consistent with Lee *et al.* (2003). Previous studies that use similar matched pairs method are, Beasley (1996), Carcello and Nagy (2004b), Farber (2005), Gul (2006), Owens-Jackson *et al.* (2009), Zhao and Chen (2009), and Mustafa and Youssef (2010). Haat *et al.* (2006a; 2006b) has 21 PN4⁹ companies, to compare with 21 firms with negative economic profit and 21 with positive economic profit in year 2002. While Gul, compares 38 firms with corporate political connections to 206 firms without political connections. The number of firms of interest are not usually large, consistent with prior studies such as Beasley (1996) at 75, Carcello and Nagy (2004b) at 65 firms, Haat *et al.* (2006a) at 21, Gul (2006) at 38, Owens-Jackson *et al.* (2009) had 50 firms in their sample, and Mustafa and Youssef (2010) includes 28 companies experiencing misappropriation of assets as a proxy of financial reporting quality.

4.4.3 Fraud firms selection

To identify firms accused of fraud, the study searched the SC enforcement actions based on the offences as shown in Table 4.6. Consistent with Beasley (1996), Erickson *et al.* (2006), Zhao and Chen (2008) and Owens-Jackson *et al.*, (2009), the study compiles a matched sample of firms not accused of fraud. Lee *et al.* (2003) noted that the existing literature usually employs 1:1 or 1:2 matching sample. Where, for every financially distressed firm, one or two healthy firms are chosen as matching samples. However, in

⁹ PN4, under this regulation, if a company's shareholder equity is negative, if it receives a going concern qualification, or if a receiver is appointed, then KLSE could classify it as a PN4 company. Consequently, regularise its financial condition (Haat *et al.*, 2006b).

the real world financially distressed firms are far less than one half or one third. Thus, matching techniques may induce over sampling of financially distressed firms (Lee *et al.*, 2003).

Table 4.7 Selection Procedure for Fraud Firms

Number of Enforcement Actions by Securities Commission 1999-2008	
-Administrative actions	464
-Civil actions	20
-Compounds imposed	57
-Criminal prosecutions	68
	610
Less:	
-Actions against individual, brokers and private companies	(550)
Actions related to public companies	60
Less:	
-Actions not related to misleading information	(21)
Less:	
Fraud occurred prior to MCCG 2001	(9)
Company without any financial information	(3)
Company with no matching pair	(1)
Final Sample	28

Each of the fraud firms is matched with three non-fraud firms, consistent with Zhao and Chen (2008) and Erickson *et al.* (2006), creating a *choice based sample* of 28 fraud, and 84 no fraud firms. They are first matched by the industry or sectors to which they belong, and then by the closeness to the size that was measured by total assets, which is consistent with Zhao and Chen (2009), Haat *et al.* (2006a), and Beasley (1996). The number of firms in the sampling is consistent with Peyrefitte *et al.* (2002) with a final sample of 87 for investigating the relationship between top management experience and level of internationalisation and Mustafa and Youssef (2010) that examine 28 cases of misappropriation of assets with 28 control companies. Four companies were excluded from the sample as shown in Table 4.7, because three had no financial information and

one had no matching firm as the total assets used as the benchmark to find match firms was too low to find a similar company that matched the criteria.

To create a comparison group, non-fraud firms were identified that are similar to the fraud firms in size, industry, national stock exchange and time period (Beasley, 1996). Each fraud firm was matched with a non-fraud firm based on the following requirements, similar Beasley (1996) and Haat *et al*, (2006a) and to Zhao and Chen (2009):

1. Stock Exchange. The common stocks of a fraud firm and their matched non-fraud firms, trade on the same national stock exchange. For instance in Beasley (1996), the NASDAQ, AMEX and NYSE. For Malaysian capital markets there is only Bursa Malaysia. Bursa Malaysia offers three (3) boards, Main Board¹⁰, Second Board and MESDAQ¹¹ Market. Generally, the Main Board is for more established companies; the Second Board for relatively smaller companies and the MESDAQ Market is for high growth and technology companies. Both the Second Board and MESDAQ Market provide an avenue for relatively smaller companies to access the capital market early to fuel their expansion plans. Once established, they can transfer their listing status to the Main Board (Bursa Malaysia, 2008).
2. Firms size. Non-fraud firms are selected with similar size to their fraud firms. Beasley (1996) found no difference in total assets, net sales and current market value of common stock. Therefore, the study will use total assets as a measure for firm size in identifying the non-fraud firms to match the fraud firms.

¹⁰ Main Board and Second Board, are now known as Main Market with the requirement to enter into market, at minimum PAT of RM 6million in the latest financial year.

¹¹ MESDAQ market is to provide an avenue for the high-growth companies to raise capital (Bursa Malaysia, 2009).

3. Industry¹². The matching non-fraud firms, were also chosen from similar industry traits or sectors as listed and categorised by Bursa Malaysia.
4. Time period. A non-fraud firm, identified using steps 1 to 3 above, was included in the sample if the proxy and financial statement data were available for the time period used to collect data.

4.4.4 Cross Sectional Data and Content Analysis

Consistent with prior research on fraud, sample firms represent firms with misleading information in their financial reporting as reported in SC Enforcement Actions for the period 1999 to 2008, consistent with Beasley (1996), Fich and Shivdasani (2005), Farber (2005), and Owens-Jackson *et al.* (2009). Information of SC enforcement actions was to be made available in 1999, however, fraud firms selection started after MCCG was introduced in 2000.

Data was collected via content analysis, whereby data was achieved from reading and finding information from annual reports. Data was hand collected from annual reports available online and hard copies available at the resource centres of Bursa Malaysia and the SC. Similar to Defond *et al.* (2005) and Carcello *et al.* (2006) that identified audit committee financial experts based on the biographical data included in proxy statements and 10K reports. The study's focuses on corporate annual reports is consistent with Iskandar and Abdullah (2004) and Li *et al.* (2008). The information relating to the composition of external director members of audit committees, frequency of audit committee meetings, size, total sales of the company and total assets, were collected from the annual reports.

¹² There are 15 classification of sectors classified by Bursa Malaysia.

The collection of data from corporate annual reports is consistent with Felo *et al.* (2003), as annual reports are the major medium by which most companies communicate with their shareholders, stock market and society at large (Firth, 1978). They are the primary source of information for the shareholders, since it enables them to make informal investment related decisions (Abdullah, 2007). The supply of information disclosed in a corporation's annual report is determined by the regulatory authorities who specify the minimum levels of disclosure, by auditors who decide whether the report shows a fair presentation, and by the company itself in determining the appropriate level of voluntary disclosure (Cooke, 1993). Thus, the annual report is generally considered to be the most important source of corporate information (Botosan, 1997).

4.4.5 Model for FFR

$$\text{FRAUD} = \alpha + \beta_1\text{ACSIZE} + \beta_2\text{BODSIZE} + \beta_3\text{ACINDP} + \beta_4\text{AGELIST} + \beta_5\text{LEV} + \beta_6\text{FIRMSIZE} + \beta_7\text{MGTTOWN} + \gamma_1\text{ACC} + \gamma_2\text{EXP} + \gamma_3\text{PG} + \varepsilon_i$$

Where;

FRAUD	A dummy variable with a value of one when a firm is alleged to have experienced fraud, and a value of zero otherwise
ACSIZE	Number of audit committee members
BODSIZE	Number of board members
ACINDP	Number of independent non executive directors in audit committee
AGELIST	Length of time the company has been publicly listed
MGTTOWN	Percentage of shares owned by directors
LEVERAGE	Firms ratio of total liability to total assets
SIZE	Firms' total assets in natural log
ACC	Proportion of AC members with professional accounting affiliations
EXP	Proportion of AC members with senior managerial experience
PG	Proportion of AC members postgraduate qualifications

4.4.6 Logistic Regression

Consistent with prior studies the study applies logistic regression to test the hypothesis, see Beasley (1996), Abbott *et al.* (2004), Carcello and Nagy (2004), Ariff *et al.* (2007), Mangena and Tauringana (2008), and Hasnan (2009), as logistic regression is a multiple regression for an outcome variable that is a categorical dichotomy and a predictor variable that is continuous or categorical. Logistic analysis is suitable because the dependent variable, financial statement fraud, is dichotomous, with a value of 1 for fraud companies and a value of 0 for non-fraud companies. Thus, for an outcome variable that is dichotomous, linear regression cannot be applied directly since they violate the assumption of a linear regression.

There are a few types of regression such as log-linear, logit, and probit models, which are special cases of general linear models (e.g. GLM and ANOVA models). In principle, we use logit if we assume the categorical dependent reflects an underlying qualitative variable (hence, logit uses the binomial distribution), and use probit if one assumes the dependent reflects an underlying quantitative variable (hence, probit uses the cumulative normal distribution). Hence, when the dependent is binary, the distribution of residual error is heteroscedastic, which violates one of the assumptions of regression analysis. Therefore, if the dependent variable is binary, it is not normally distributed. Thus, the OLS estimates of the sum of squares will be misleading. Subsequently, significance tests and the standard error of regression will be wrong. Also, for a dependent variable that assumes the values of 0 and 1, the regression model will allow estimates below 0 and above 1, and the linear regression does not handle non-linear relationships, whereas log-linear methods do. Hence, the appropriate statistical analysis is to use logit regression.

4.5 Dependent Variable 2 - Earnings Management

Consistent with prior literature in earnings management, the study uses earnings quality as a proxy to financial reporting quality (Balsam *et al.*, 2003). Earnings management is measured by accruals, consistent with prior studies such as Davidson *et al.* (2005) and Baxter and Cotter (2009). Even though Kwon *et al.* (2007) document that earnings management is difficult to measure and that operationalisation of discretionary accruals is controversial. However, researchers have considered using discretionary accruals as one testable measure for earnings management because management may use accrual accounting to distort the true financial performance of the company (Cohen *et al.*, 2007). Earnings management is used to answer research question 2 that relates to audit committee experts and financial reporting quality, when financial reporting quality is proxied by earnings management.

4.5.1 Estimation of Accruals Model

Prior literature has developed several tests of earnings management, among them are the discretionary accruals by Jones (1991), known as the 'earnings management' model, and Dechow and Dichev's accrual estimation error model. In this study, discretionary accruals is used as the primary measure of earnings management. This model partitions accruals into non-discretionary and discretionary components on the assumption that a high level of discretionary accruals suggests that a firm is engaging in earnings management.

The most frequently used method to decompose accruals is the modified Jones model (Dechow *et al.*, 1995), and has proved to be the most powerful test of earnings management. Further, supported by Bartov *et al.* (2001), the Cross-Sectional Jones Model and Cross-Sectional Modified Jones Model, perform better in detecting earnings

management. The modified Jones model works to eliminate the conjectured tendency of the Jones (1991) model to measure discretionary accruals with error when discretion is exercised over revenue (Dechow *et al.*, 1995) and is the most frequently used method to decompose accruals (Davidson *et al.*, 2005). The modified Jones model assumes that the non-discretionary component of total accruals is a function of the change in revenue adjusted for the change in receivables and the level of property, plant and equipment, which drives working capital requirements and depreciation charges, respectively (Gul *et al.*, 2003; Davidson *et al.*, 2005; Baxter and Cotter, 2008).

Prior studies adopt the use of discretionary accruals as a proxy to earnings management because managers are found to have a strong incentive to manage earnings when firms report slightly negative earnings (Gul *et al.*, 2003; Peasnell *et al.*, 2005; Davidson *et al.*, 2005; Ching *et al.*, 2006). In addition, Dechow and Dichev (2002) suggest a new approach to assess accrual and earnings quality, based on the intuition that accruals are temporary adjustments that resolve timing problems in the underlying cash flows at the cost of making assumptions and estimates. Dechow and Dichev's 'accrual estimation error' model includes accrual estimation errors arising from management lapses or environmental uncertainties (Baxter and Cotter, 2009).

Prior literature has considered using discretionary accruals as one testable measure of earnings management as management may use accrual accounting to distort the true financial performance of a firm (Cohen *et al.*, 2007). The abnormal accruals are considered in signed value as a proxy for earnings' conservatism, and in absolute value as a proxy for the overall extent of earnings management, as documented by Piot and Janin (2007).

As noted by Dechow *et al.* (1995) for working capital accruals, the cross-sectional modified Jones model is the most powerful in detecting earnings manipulation in the event of managers exercising their discretion over revenue recognition (Rahman and Ali, 2006). Peasnell *et al.* (2005) adopts abnormal working capital accruals. While Chia *et al.* (2007) adopts the more conservative discretionary accruals, and Rahman and Ali (2006) use working capital accruals as a measure of earnings management, where managing earnings through accruals manipulation is more subtle and difficult to detect by users of financial statements. In addition Gul *et al.* (2003) suggest that DAC may reflect opportunistic earnings management or communication of value relevant information. However, earnings management has also been proxied by earnings restatements in Lin *et al.* (2006).

Consistent with prior research, the current study uses the cross-sectional of the modified Jones model (Bartov *et al.*, 2001; Gul, *et al.*, 2003; Davidson *et al.*, 2005). Under this model, the level of discretionary accruals for a particular firm is calculated as the difference between the firm's total accruals (TACC) and non-discretionary accruals, as shown in equation 1.

$$NDAC_{it} = [\alpha (1/TA_{it-1}) + \beta_1(\Delta REV_{it} - \Delta REC_{it})/TA_{it-1} + \beta_2 (PPE_{it})/ TA_{it-1}] \quad (1)$$

Where α , β_1 , and β_2 are industry-specific coefficients estimated from the following cross-sectional regression:

$$TACC_{it}/ TA_{it-1} = \alpha_{it} (1/TA_{it-1}) + \beta_{1it} (\Delta REV_{it} - \Delta REC_{it})/TA_{it-1} + \beta_{2it} (PPE_{it})/ TA_{it-1} + \varepsilon_{it} \quad (2)$$

Total accruals (TACC) are measured as the difference of income before tax and extraordinary items, with the operating cash flow, which utilises the model from Jones

(1991) model to predict NDAC that explicitly controls for firms' performance (Dechow *et al.*, 1995). This is consistent with Davidson *et al.*, (2005) and Saleh *et al.* (2005, 2007). The approach of deducting the cash flow from operations obtained from the statement of cash flows, from the amount of net income (before extraordinary items) from the income statement, is consistent with Davidson *et al.* (2005).

The above equation (2) is estimated cross-sectional for each industry portfolio utilising companies listed on Bursa Malaysia. Where the industry specific parameters (α_{it} , β_{1it} , β_{2it}) from equation (2) are used to estimate firm specific non-discretionary accruals, deflated by lagged total assets, as shown in equation (2), consistent with Davidson *et al.* (2005), Saleh *et al.* (2005), Saleh *et al.* (2007), Johl *et al.*, (2007), Cheng (2008) and Zhao and Chen (2009). The current study uses net property, plant and equipment as found in Datastream, which is consistent with Jaggi *et al.* (2009).

The β_1 coefficient (changes in revenues) is predicted to be positive, as changes in revenues are expected to be positively related to changes in working capital. The expected sign on β_2 (property, plant and equipment) is negative, as the level of fixed assets is expected to drive depreciation expenses and deferred taxes. Then, the non-discretionary accruals represents the combined effect of income-increasing and income-decreasing earnings management, this is used as the current study's proxy for earnings management, which is consistent with prior studies. In a nut shell, DAC is estimated as the residual from equation (2).

$$\text{DAC}_i = \text{TACC}_i - \text{NDAC}_i \quad (3)$$

Where;

TACC_t = Total Accruals

NDAC_t = Non Discretionary Accruals

EARN_i = Income before tax and extraordinary item for firm i

OCF_i = Operating cash flow for firm i

ΔREV_{it} = Change in revenue for firm i in year t

ΔREC_{jt} = Change in net receivables for firm i in year t-1

TA_{it-1} = Total assets at the end of year t

PPE_{jt} = Net property, plant, and equipment for firm i at the end of year t

α_{it} , β_{1it} , β_{2it} = Firm's specific parameters for firm i in year t

4.5.2 Data Selection and Content Analysis

Year 2008 is chosen as the sample period to collect the financial data of companies. The reason is that the Malaysian Code on Corporate Governance (MCCG) was revised, 1st October 2007. The revision was aimed at strengthening the board of directors and audit committees in discharging their roles and responsibilities effectively. Thus, this study chose the latest sample period of 2008, which would have absorbed the changes within the organisation. The revisions include:

- (a) The revised Code strives to strengthen the role of audit committees by requiring the committees to be fully comprised of non-executive directors. In addition, all its members should be able to read, analyse and interpret financial statements so that they will be able to effectively discharge their functions.

(b) The revised Code increases the frequency of meetings between the audit committee and the external auditor without the executive board members present. This encourages a greater exchange of free and honest views and opinion between both parties.

(Securities Commission, 2007a).

Consistent with prior studies, the study focuses on large companies listed on the Main Board, where Rahman and Ali (2006) examine 100 top listed companies, ranked by market capitalisation for the period January 2002 – December 2003, 561 companies for 2001 after the MCCG was mandated in Saleh *et al.* (2007), and 102 non-financial companies on the French Stock Market from Piot and Janin (2007). Thus, 322 top listed companies in 2008 ranked by market capitalisation at year end 2007, are picked in the sampling process to test the hypothesis. However, after excluding financial related companies and missing data on the companies (some company's annual reports were not available for the years 2007 and 2008), the current study arrived at a sample size of 267 listed companies, ranked by the previously mentioned market capitalisation. After winsorising extreme observations by setting the values in the bottom and top one percent to the values of 1st and 99th percentiles, consistent with Kothari *et al.* (2005), data was then analysed using SPSS version 12.

Data required for DAC estimation is collected from Datastream, while corporate governance data was hand collected from annual reports available from the Bursa Malaysia website. Data collection is via content analysis, where the directors' information was hand collected from annual reports, consistent with prior literature (Felo *et al.*, 2003; Iskandar and Abdullah, 2004; Rahman and Ali, 2006). Saleh *et al.*

(2007) uses one-year data to control for economic instability during the period after the financial crisis. Consistent with Kothari *et al.* (2005), the study excludes firm year observations that do not have sufficient data to compute total accruals or the variables needed to estimate the Jones (1991) model.

Companies related to finance and banking are excluded, consistent with Adhikari *et al.* (2005), Rahman and Ali (2006), Saleh *et al.* (2007) and Zhao and Chen (2009), because they are subject to specific government regulations and controls imposed on them such as the Banking and Financial Institution Act (BAFIA) 1989, Islamic Banking Act 1983, Takaful Act 1984, and Insurance Act 1996. Both the Second Board and MESDAQ Market provide an avenue for relatively smaller companies to access the capital market early to fuel their expansion plans. Once established, they can transfer their listing status to the Main Board (Bursa Malaysia, 2008).

4.5.3 Model for Earnings Management

$$\text{DAC} = \alpha + \gamma_1 A + \gamma_2 B + \gamma_3 C + \gamma_4 D + \beta_1 \text{ACSIZE} + \beta_2 \text{BODSIZE} + \beta_3 \text{ACINDP} + \beta_4 \text{BLOCK} + \beta_5 \text{AGELIST} + \beta_6 \text{LEVERAGE} + \beta_7 \text{SIZE} + \beta_8 \text{SECTOR} + \varepsilon_i$$

Where:

DAC	Discretionary accruals measured by the cross-sectional modified Jones model
A	Proportion of audit committee members with accounting professional qualifications, postgraduate qualification, and senior managerial experience, to audit committee size
B	Proportion of audit committee members with accounting professional qualification, and senior managerial experience, to audit committee size
C	Proportion of audit committee members with any professional qualification, postgraduate qualification, and senior managerial experience, to audit committee size
D	Proportion of audit committee members with postgraduate qualification, and senior managerial experience, to audit committee size
ACSIZE	Number of audit committee members
BODSIZE	Number of board members
ACINDP	Number of independent non-executive directors on committee
AGELIST	Length of time the company has been publicly listed
MGTOWN	Percentage number of shares owned by directors
LEVERAGE	Firms ratio of total liability to total assets at the beginning of the year
SIZE	Firms' total assets in natural log
SECTOR	Industry or sector where firms have been categorised by Bursa Malaysia

4.5.4 Multivariate Regression

Regression analyses are a set of statistical techniques that allow one to assess the relationship between one dependent variable and several independent variables. The objective of the regression is to arrive at the regression coefficients, for the independent variables, DAC. Where, the independent variables that bring the DAC values predicted from the equation are as close as possible to the DAC values obtained by measurement. Thus, the coefficients that are computed will give two intuitively appealing and highly desirable goals: they minimise the sum of squared deviations between predicted and obtained DAC values and they optimise the correlation between the predicted and obtained DAC values for the data set (Tabachnick and Fidell, 2007). Furthermore, regression analysis is a powerful and flexible procedure for analysing associative

relationships between the metric dependent variable and one or more independent variables (Malhotra, 2007). Consistent with prior studies such as Davidson *et al.* (2005), and Rahman and Ali (2006), Piot and Janin (2007) and Zhao and Chen (2009) among others, the current study will also adopt the use of multiple regression analysis.

4.6 Control Variables

Consistent with prior studies, the study's control variables are audit committee size, board size, independence of the board, leverage, firm size, ROA and age listed. (see Beasley, 1996; Dechow *et al.*, 1996; Beasley *et al.*, 1999; Abbott *et al.*, 2004, Carcello and Nagy, 2004a). According to Beasley (1996) control variables will control for differences in motivational and conditional factors that will affect the composition of the board of directors.

4.6.1 Audit Committee Size

The current study measures the size of audit committee through the proxy of the number of directors on the board that are on the audit committee, consistent with Beasley and Salterio (2001), Li *et al.*, (2008) and, Baxter and Cotter (2009). Thus, size of audit committee is measured as reported in the audit committee report.

4.6.2 Board Size

Board size is measured as the number of directors on the board. This is consistent with Abbott *et al.* (2004), Rahman and Ali (2006), Sharma *et al.* (2009), Goh (2009), Cheng (2008) and Baxter and Cotter (2009),

4.6.3 Audit Committee Independence

In this study, independence of the board and audit committee is proxied as the proportion of independent directors that occupy positions on the audit committee, similar to Bliss *et al.* (2007). Thus, consistent with Baxter and Cotter (2009), the study measures audit committee independence as the proportion of independent directors on the audit committee.

4.6.4 Board's Independence

Board's independence is measured as the proportion of independent directors to the total number of directors on the board, consistent with the Cadbury Report and Defond *et al.* (2005) who define independent as an outside director with no current or recent business affiliation with the company. Furthermore, Beasley (1996) defines independent directors as outside directors who have no affiliation with the firms other than the affiliation from being on the board of directors.

4.6.5 Management Ownership

Management ownership acts as one of the ownership characteristics of a firm, which is a part of its governance mechanism (Mitra *et al.*, 2007). It is the cumulative ownership percentage of the firm held by the management that serves on the board (Abbott *et al.*, 2004; Beasley, 1996). This is consistent with prior studies (see Gul and Tsui, 2001; Carcello and Neal, 2003; Gul *et al.*, 2003; Krishnan and Lee, 2009; Baxter and Cotter, 2009) the study measures management ownership as the percentage of shares owned by directors.

4.6.6 Agelisted

Agelisted, measures the length of time a firm's common stock has been publicly traded, consistent with Abbott *et al.* (2004), Carcello and Nagy (2004a; 2004b). It controls for differences in the length of time that the firm's common stock has been traded in public markets. It is measured from the time the company was listed until 2008 as mentioned in section 4.4.3.

4.6.7 Leverage

The study measures leverage as the total liabilities to total assets, consistent with Bliss *et al.* (2007), Baxter and Cotter (2009) and Krishnan and Visvanathan (2009). Leverage is used as a measure of risk, is calculated from ratio of total liabilities to assets. This is consistent with prior studies, Davidson *et al.* (2005), Bliss *et al.* (2007) Rahman and Ali (2006), Jaggi *et al.* (2009) and Zhao and Chen (2008, 2009),

4.6.8 Firm Size

Firm size acts as a control variable because the existence of any financial reporting costs may result in lower costs as a fraction of firm size (Felo *et al.*, 2003). Ariff *et al.*, (2007) found size to be slightly associated with corporate governance ratings. Size is measured from the natural log of total assets (Carcello and Nagy, 2004a; 2004b; Gul, 2006; Ariff *et al.*, 2007; Abdullah, 2007; Mangena and Tauringana, 2008).

4.6.9 Performance

Performance, or return on assets is measured by the ratio of earnings before interest and taxes to total assets. This is consistent with Gul *et al.* (2003), Yatim *et al.* (2006), Abdullah (2006), Gul *et al.*, (2009), and Goh (2009).

4.6.10 Industry or Sectors

The industry or sector is similar to the Bursa Malaysia Listing. These are measured by dummy variables, consistent with Gul *et al.* (2009).

4.7 Conclusion

The chapter explains the research design for both the proxies applied in the study; fraudulent financial reporting and earnings management. The chapter starts with a pilot study to identify benchmarks for the variables of interests, such as determining the basic requirement for postgraduate and academic qualifications. Strict definitions of fraudulent financial reporting are used to determine the fraud samples. Whereas, discretionary accruals are used to measure earnings management, as many prior studies had suggested and applied. This is followed by the measurements for the control variables as suggested by prior research. These predetermined set of procedures that are used to collect data, which will be analysed by statistical techniques, i.e. logistic and multiple regressions, and validate the hypotheses, are considered positivist as it is grounded in empirical data.