

## **Fraud Detection: The Moderating Role of Fraud Risk Level**

Nahariah Jaffar, Lecturer, Multimedia University, [nahariah.jaffar@mmu.edu.my](mailto:nahariah.jaffar@mmu.edu.my)

### **Abstract**

This study aims to examine the moderating effect of the contextual fraud risk level on the relationship between the external auditors' ability to assess fraud risk and their ability to detect the likelihood of fraud. This study uses an experimental approach by sending case materials to audit partners or audit managers attached to auditing firms operating in Malaysia. The result shows that the contextual of fraud risk level has a significant effect on the relationship between the external auditors' ability to assess fraud risk and their ability to detect the likelihood of fraud.

### **Introduction**

#### **Research background**

Frauds may be divided into two types, the first is fraudulent financial reporting, or so-called management fraud, and the second is the misappropriation of assets, or so-called employee fraud (Arens, Loebbecke, Iskandar, Susela & Isa, 1999). Both types of fraud are potentially harmful to users (Arens et al., 1999) and may cause materially misleading financial statements (Elliot & Willingham, 1980). As such, this study focuses on fraud activities that lead to the issuance of false financial statements.

Fraud is not a new issue in Malaysia. Ali (1994) has reported some cases of fraud occurring in Malaysian public companies such as the cases of Bank Rakyat, Bumiputra Malaysia Finance (BMF), Pan Electric Group of Companies, Perwira Habib Bank, Deposit Taking Cooperatives (DTCs) and Cooperative Central Bank (CCB). KPMG Malaysia (2005) in their Fraud Survey 2004 Report stated that out of 130 responses from chief executives of all public listed companies in Malaysia, 83% of them had experienced fraud in their organizations. This is an increase of 33% from the results obtained by KPMG in their fraud survey in 2002 (KMPG, 2005). Meanwhile, KPMG Malaysia (2003), in their Fraud Survey 2002 Report, stated that out of 168 responses from chief executives of public listed and top private companies in Malaysia, 50% of them had experienced fraud in their organization. Forty percent of the companies claimed that they had suffered losses between RM10,001 and RM100,000 over the past years (in the period from January 2001 to December 2002) due to fraud, 33% above RM1 million, while 12% reported incurring losses of RM10,000 and below.

In other countries such as the United States (US), Wells (1997) reported that fraud cut across all industries with the greatest fraud losses apparent (by industry) in real estate financing, manufacturing, banking, oil and gas, construction and health care. In the Enron case, its financial statements reported misleading information that made Enron appear to be in better financial condition than it actually was. A report prepared by the US Senate Permanent Subcommittee on Investigations (2003) disclosed evidence of Enron's participation in accounting deceptions, price manipulation, insider abuse, and unfair dealing with employees, investors and creditors. For instance, one of its transactions involved US\$8 billion in deceptive transactions, called "prepays", in which two major US financial institutions, Citigroup and Chase, issued huge loans to Enron disguised as energy trades. The report revealed that the law enforcement agencies indicted Enron's former chief financial officer for fraud, money laundering and other misconduct. It was also reported that an Italian company, Parmalat, is facing possible bankruptcy charges after admitting to an enormous gap in its accounts (<http://news.bbc.co.uk/1/hi/business/3333431.stm>). Parmalat's bank had discovered that the company documents certifying 4 billion euros (£2.8 billion; \$5 billion) in assets were false. The company was suspected of using a related company to hide its financial losses (<http://news.bbc.co.uk/2/hi/business/3333431.stm>).

In 2002, Sarbanes-Oxley Act was established in the US to introduce major changes to the regulation of corporate governance and financial practice. Nevertheless, with the establishment of this Act, which can be considered as an action taken to reduce the possibility of committing to fraudulent activities, however, fraud incidence still occurs. For example, in 2005, nine food industry employees in the US were indicted for aiding and abetting the massive financial fraud at US Foodservice, a division of Dutch retail group Ahold (<http://www.foodproductiondaily.com/news/ng.asp?n=57354-nine-charged-in>).

In Malaysia, the accounting profession has established auditing standards to provide guidance to the auditor during the conduct of an audit. The Malaysian Approved Standards on Auditing, AI 240 on "Fraud and Error" (MIA, 1997) and AI 400 on "Risk Assessments and Internal Control" (MIA, 1997) require the auditor to assess the risk of fraud and error during the audit of financial statements. Based on the risk assessment, the auditor should design audit procedures to obtain reasonable assurance that misstatements arising from fraud and error that are material to the financial statements taken as a whole are detected.

Despite the standards and guidelines, yet the fraudulent financial reporting still occurred in this country, as reported by the KPMG Malaysia (2003; 2005). Although the issue of fraud may not be well documented in Malaysia, this issue cannot be taken for granted since what happens in other countries, for instance in the US, may happen elsewhere. Although guidance has already been provided by the Malaysian standards, however, it was reported by the KPMG Malaysia (2003) that the external auditors discovered only 4% of the fraud incidences in Malaysian companies in 2002. Meanwhile, in 2004, only 3% of fraud incidences were discovered by the external auditors (KPMG, 2005). Consequently, the public may question why auditors are not able to detect fraud in the conduct of the annual audit. It is then important to know the ability of the external auditors to detect fraud, because fraudulent financial reporting makes false representations to society.

This study is an extension of Jaffar, Salleh, Iskandar and Haron (2008), who had examined the effect of the external auditor's ability to assess fraud risk on his/her ability to detect the likelihood of fraud. The findings of Jaffar et al. (2008) show that in a high fraud risk scenario, the external auditor's ability to assess fraud risk has a positive effect on his/her ability to detect the likelihood of fraud, whereas in a low fraud risk scenario, it does not. This study extends the work of Jaffar et al. (2008) by adding a factor, that is, the fraud risk level, as another variable that may affect the ability to detect the likelihood of fraud. This attempt is essential since Jaffar et al. (2008) discovered that in a different fraud risk situation, the findings demonstrate different results concerning the effect of the ability to assess fraud risk on the ability to detect the likelihood of fraud. This study predicts that there might be other factors, that may affect the external auditor's ability to detect the likelihood of fraud.

According to the context theory of classification (Medin, 1975) judgments are assumed to be derived exclusively from stored exemplar information. This theory suggests that the judgment of an individual is influenced by his/her prior knowledge of a particular matter. Within this context, the external auditor's judgment regarding the existence of fraud in the audit client's financial statements is expected to be influenced by his/her knowledge regarding the level of fraud risk of a particular audit situation. That is, if the external auditor assessed the fraud risk as high, this would mean that the external auditor will collect more evidence and will have to perform more extensive audit procedures to ensure that any material misstatements (or frauds) are detected (Arens et al., 1999). On the other hand, if the external auditor assessed the fraud risk as low, he/she can be less extensive in his/her evidence gathering and sampling (Arens et al., 1999). This situation will lead to less rigorous tests being carried out by the auditor and thus will have an effect on his/her ability to detect the likelihood of occurrence of fraud. As he/she becomes more "relaxed" in his/her audit work, there is a lower probability that he/she would be able to detect the likelihood of occurrence of fraud then if he/she had assessed the level of fraud risk as high.

There is no existing study in the fraud detection literature on the moderating role of fraud risk level in fraud detection. With that, this study takes the first attempt to investigate the moderating effects of the fraud risk level on the relationship between the external auditors' ability to assess fraud risk and their ability to detect the likelihood of fraud.

### **Objective of study**

An external auditor is expected to be familiar with the concept of fraud risk underlying the audit risk model. The evolution of this concept from the external auditor's experience with occurrences of fraud is fundamental in influencing his/her ability to detect the likelihood of fraud. This argument suggests the possibility that the fraud risk level, by its context, may influence the external auditor's ability to detect the likelihood of fraud. Therefore, this study is a first attempt to examine the moderating effect of the fraud risk level on the relationship between the external auditor's ability to assess fraud risk and their ability to detect the likelihood of fraud.

### **Prior Research and Hypotheses Development**

#### ***Fraud detection***

Auditing researchers have raised concerns pertaining to the ability of an external auditor to detect the likelihood of fraud (e.g. Pincus, 1984; Matsumura and Tucker, 1992; Bernardi, 1994; Moyes and Hasan, 1996; etc.). Various factors affecting the ability to detect the likelihood of fraud have been tested and mixed results were presented. This study categorizes these factors into several dimensions, namely the audit task, the auditor's personality, cognitive factors, auditor's ethical status, auditor's characteristics, audit firm's characteristics, audit firm's roles, the auditor's roles and fraud risk indicators.

From the analysis of the literature, the auditor's experience has been found in many studies (e.g. Pincus, 1984; Bernardi, 1994; Moyes and Hasan, 1996; and Owusu-Ansah, Moyes, Oyelere & Hay, 2002) to be a significant factor that may affect the auditor's ability to detect fraud. However, Bernardi (1994) reported that only managers with high moral standards will outperform their seniors. The inclusion of client-type factors (integrity and competence) is the major difference between the work of Bernardi (1994) and Pincus (1990). In contrast, Moyes and Hasan (1996) and Owusu-Ansah et al. (2002) both utilized the audit procedures to examine the likelihood detection of fraud. In the study of Moyes and Hasan (1996), they required the subjects to evaluate the effectiveness of auditing techniques associated with 4 audit cycles: acquisition and payment, inventory and warehousing, payroll and personnel and sales and collection in detecting fraud. Meanwhile, Owusu-Ansah et al. (2002) assessed the fraud-detecting effectiveness of audit procedures that are applicable only to the stock and warehouse cycle. More importantly, Moyes and Hasan (1996) and Owusu-Ansah et al. (2002) both tested similar factor, which was the size of the audit firm. In their study, Moyes and Hasan (1996) demonstrated that size does not play a significant role in the likelihood of detecting management fraud, except for the inventory cycle. Interestingly, this result

confirms the findings of Owusu-Ansah et al. (2002), who also investigated the likelihood of detecting fraud in the inventory cycle.

This study is intended to investigate the factors affecting external auditors' ability to detect the likelihood of fraud. This study shows that no previous study in the fraud detection literature investigated the moderating role of the fraud risk level on the relationship between the external auditors' ability to assess fraud risk and their ability to detect the likelihood of fraud. Thus, this study makes a first attempt to investigate this factor. In light of the studies discussed so far, this study will contribute to the literature by providing evidence on the fraud detection ability of external auditors in Malaysia. Notwithstanding the importance of the eight dimensions that were investigated before, the fraud risk level is the focus of this study because the audit risk is fundamental to the external auditor in the conduct of his/her audit work. Thus, this study suggests that the fraud risk level may to some extent have a moderating effect on the external auditor's ability to detect the likelihood of fraud.

### ***Attribution Theory***

As in the work of Jaffar et al. (2008), attribution theory is adopted in this study to explain the effect of the external auditor's ability to assess the fraud risk on his/her ability to detect the likelihood of fraud. This theory suggests that the expected level of future performance in a particular task depends mainly on the particular causes to which prior success or failure in the same task are attributed. Weiner, Frieze, Kukla, Reed, Rest and Rosenbaum (1971) argue that the effect of previous success or failure on subsequent expectations varies according to whether the attribution is internal (ability, effort) or external (luck, task difficulty). Weiner et al. (1971) propose that (a) following a success experience, there is a positive relationship between attribution to stable causes (internal causes, like ability, effort) and expected future performance, and (b) following a failure experience, there is a positive relationship between attribution to unstable causes (external causes: viz., luck, task difficulty) and expected future performance.

For the first prediction, the argument is that prior successes that are perceived as due to stable causes, like ability and effort, will be viewed as having a greater chance of being repeated than successes due to unstable causes, since stable factors are seen as more likely to continue in the future than unstable ones (Weiner et al., 1971). For the second prediction, on the other hand, the argument is that prior failures perceived as being due to unstable causes, like luck and task difficulty, will be viewed as easier to overcome in the future than failures due to stable causes, and hence likely to have less of a depressive effect on anticipations of future performance.

This theory is appropriate to this study, because we seek to assess the causal attribution of the external auditors' performance, that is, their ability to detect the likelihood of fraud. Applying this theory to this study, the auditor's future ability to detect the likelihood of fraud is attributed to the external auditors' prior ability to assess the level of fraud risk. Given that the primary interest of this study is to examine the effect of the external auditors' ability to assess the level of fraud risk on their ability to detect the likelihood of fraud, it is assumed that any prior success (or failure) in assessing the level of fraud risk will have a positive impact (negative impact) on the external auditors' ability to detect the likelihood of fraud, if fraud actually exists.

The AI 400 (MIA, 1997) requires the external auditor to consider, among others things, the inherent and control risk assessment in identifying the types of potential material misstatements that could occur in financial statements. Explicitly assessing the fraud risk has been recommended as an audit planning task that will improve the auditor's ability to detect fraud (e.g. Loebbecke et al., 1989; Shibano, 1990). The inherent and control risk depends on factors such as auditee conditions, controls, and information about risk factors (Waller, 1993). For instance, an auditor who perceives weak controls would assess both the control risk and inherent risk as high because weak controls induce error-prone conditions, assuming other things being equal (Waller, 1993).

The implication of the attribution theory applied to this study is that the effect of previous success or failure in detecting the likelihood of fraud on subsequent expectations varies according to whether the attribution is internal (that is, the ability to assess fraud risk) or external (e.g., the difficulty of the fraud risk assessment task). In this study, however, the primary focus is on the internal attribution. The ability of the external auditors is considered to be a stable cause. Therefore, the prior successes (or failures) of the external auditors to assess fraud risk is viewed as having a greater chance of being repeated, in their subsequent attempts to detect the likelihood of fraud. In other words, if the external auditors are able to appropriately assess the fraud risk (AI 240, MIA, 1997) based on their professional judgments (AI 240, AI 400, MIA, 1997), this attribution will subsequently influence their ability to detect the likelihood of fraud as required by AI 240 (MIA 1997).

Under the assumption that other factors will remain constant, this study predicts that the external auditors' ability to assess fraud risk will positively influence their ability to detect the likelihood of fraud. In order to test whether the requirements of AI 240 (MIA, 1997), AI 400 (MIA, 1997), the literature and the insights of the attribution theory are valid, this study hypothesizes that the external auditors' ability to assess the fraud risk has a positive effect on their ability to detect the likelihood of fraud. The first hypothesis to be tested is thus the following:

H1: Ability to assess fraud risk is positively related to ability to detect the likelihood of fraud.

### ***Context theory of classification***

The context theory of classification (Medin, 1975) holds that judgments are derived exclusively from stored exemplar information. The general idea of the context model is that classification judgments are based on the retrieval of stored exemplar information (Medin and Schaffer, 1978). Specifically, it is assumed that a probe stimulus functions as a retrieval cue to access information stored with stimuli similar to the probe. Medin and Schaffer (1978) state that the context model attempts to represent the effects of strategies and hypotheses on the ease of storage and retrieval of information associated with the component stimulus dimensions. The idea that judgments may be based on retrieval of examples has been applied to concept learning situations. Tversky and Kahneman (1973) propose that people often evaluate the frequency or likelihood of events by the ease with which relevant instances come to mind. This strategy can be very efficient, but it can lead to systematic biases. A related implication of the context model is that classification judgments depend on contextual factors. The presence of specific context plays a role in whether the specific stimulus information is accessed.

Applying the context theory of classification to this study, it is assumed that the ability to detect the likelihood of fraud is derived from the external auditors' stored exemplar information on occurrences of fraud. It is assumed that the level of fraud risk of a client's company serves as a stimulus or cue that the external auditors will rely on to decide the likelihood of fraud in the client's company.

The context model attempts to represent the effect of strategies and hypotheses on the ease of storage and retrieval of information associated with the fraud risk level stimulus dimensions. The external auditors' ability to detect the likelihood of fraud is affected by the context of the fraud risk level.

The audit risk model also supports this view. The model explains the relationship between audit risk, inherent risk, control risk and detection risk. AI 400 (MIA, 1997) defines the audit risk as the risk that the auditor gives to an inappropriate audit opinion when the financial statements are materially misstated. AI 400 (MIA, 1997) defines the inherent risk as the susceptibility of an account balance or a class of transactions to misstatement that could be material, either individually or when aggregated with misstatements in other balances or classes, assuming that there were no related internal controls. The control risk, on the other hand, is defined by AI 400 (MIA, 1997) as the risk that a misstatement that could occur in an account balance or class of transactions that could be material individually or when aggregated with misstatements in other balances or classes, and would not be prevented or detected and corrected on a timely basis by the accounting and internal control systems. Further, AI 400 (MIA, 1997) defines the detection risk as the risk that an auditor's substantive procedures will not detect a misstatement that exists in an account balance or class of transactions that could be material, whether individually or when aggregated with misstatements in other balance or classes.

Risk assessment under AI 400 (MIA, 1997) is viewed as a task that directs the auditor's attention to factors related to inherent and control risks. The present study is concerned specifically with two components of the audit risk model, namely the inherent and control risks related directly to fraud, and indirectly to the detection risk. The principle behind the concept of the audit risk model is that if the inherent and control risks are high, the detection risk and the audit risk should be lower. Haskins and Dirsmith (1995) provide empirical evidence that control risk and inherent risk assessments are interdependent. They conclude that practitioners may not be evaluating the inherent risk per se, but may be merely assessing familiar accounting controls and labeling this practice as an inherent risk assessment. Frequently in practice, the level of acceptable audit risk is established by the audit firm, and the same risk level is used across different audit engagements in the same industry (Graham et al., 1991). Auditors will then assess the levels of inherent and control risk at the statement level and at the account balance level.

The planned detection risk has an inverse relationship with the amount of audit evidence to be gathered (Arens & Loebbecke, 1997). According to the audit risk model, assuming that an auditor has assessed the audit risk as constant, and the inherent or control risk as high (in other words, the fraud risk is high), this will lead the auditors to assess the level of detection risk as low. This would mean that the auditors are required to collect more evidence and will have to perform more extensive audit procedures to ensure that any material misstatements (or frauds) are detected (Arens et al., 1999). Applied to this study, it means that the fraud risk level may influence the external auditors' judgment. When the external auditors assess the fraud risk as high, their knowledge of the cues, that is, the fraud risk level, associated to occurrences of fraud, indicates that fraud may be occurring, and thus they are more attentive in their work to ensure that any fraud is detected.

On the other hand, assuming that an auditor has assessed the audit risk as constant, and the inherent or control risk as low (in other words, the fraud risk is low), the auditor will assess the detection risk as high, and in this instance the auditor can be less extensive in his/her evidence gathering and sampling (Arens et al., 1999). This situation will lead to the auditor carrying out less rigorous tests and thus will have an effect on his/her ability to detect the likelihood of occurrence of fraud. As he/she is more "relaxed" in his/her audit work, there is a lower probability that he/she would be able to detect the likelihood of occurrence of fraud than if he/she had assessed the level of fraud risk as high. Baglia (2000) found that audit evidence decisions are significantly affected by the auditor's assessment of the fraud risk. Applied to this study, it means that the fraud risk level, by its context may influence the external auditors' judgment. When the external auditors assess the fraud risk as low, their knowledge of the cues, in other words, the fraud risk level, associated to occurrence of fraud indicates a lower possibility of fraud occurring and thus they are less attentive in their work which can then lead to failure to detect fraud.

This study predicts that the relationship between the ability to assess fraud risk and the ability to detect the likelihood of fraud, however, may be dependent on the fraud risk level, since contextual variables (Knapp, 1985, Knapp, 1987; Gul, 1991) have been found to affect the behavior of accountants in a variety of decision-making situations. The detection of the likelihood of fraud is considered as a decision-making task in this study.

The related implication of the context model is that the ability to detect the likelihood of fraud depends on a contextual factor, that is, the fraud risk level. The fraud risk level plays a role in whether the specific stimulus information is accessed. In the accounting field, Ayers (1995) adopts contextual theory as a basis for making predictions regarding the anticipated effects of prior judgments received from a contact partner source on review partners' risk assessments.

In line with the context model, this study proposes that a high fraud risk level has a positive effect on the relationship between the external auditors' ability to assess fraud risk and their ability to detect the likelihood of fraud. The foregoing arguments lead to the following hypothesis:

H2: A high fraud risk level has a positive effect on the relationship between the ability to assess fraud risk and the ability to detect the likelihood of fraud.

## **Research Method**

### ***Research design***

This study adopts a factorial experimental design. This study has one independent variable, the ability to assess fraud risk, and one moderating variable, the fraud risk level. A 2x2-research design is used representing two levels of ability to assess fraud risk and two levels of fraud risk level. The two treatment levels for the ability to assess fraud risk are correct fraud risk assessed and incorrect fraud risk assessed. The two treatment levels for the fraud risk level are high fraud risk and low fraud risk.

### ***Research instrument***

The case material utilized in this study is adopted from that used by Zimbelman (1996), Brief, Dukerich, Brown and Brett (1996), and Moet (1997). Two versions of the case study (high fraud risk case and low fraud risk case) are developed for XYZ Manufacturing Bhd., and the subjects are required to assume that they are involved in the audit of this company.

The case materials are divided into three parts for each version, as follows:

- Part A involves the audit planning phase, for fraud risk assessment;
- in Part B, some information regarding accounts receivable and sales accounts, which was obtained during the course of the audit, is provided.
- Part C solicits demographic information.

### ***Sample***

The sample group of this study consists of practicing independent auditors registered in Malaysia, designated as audit partners or audit managers who are attached to the auditing firms operating in Malaysia. As such, the sampling frame of this study is the list of MIA members practicing in Malaysia. As of 13 October 2003, the total number of members registered with the MIA is 19,489. The unit of analysis for this study is the individual audit partner or audit manager of the auditing firm operating in Malaysia. The population is the audit partners and audit managers attached to the auditing firms operating in Malaysia. However, there is no database available regarding the numbers of audit partners and audit manager in Malaysia.

A database of auditing firms operating in Malaysia was obtained from the MIA website. As of May 2006, the MIA website indicates that there are 1370 firms registered with MIA. This study distributed the research materials to all these auditing firms. Since the actual total population of audit partners and audit managers attached to the auditing firms operating in Malaysia is unknown, this study used all auditing firms operating in Malaysia as the perceived population.

### ***Administration of the research instrument***

The research instruments were mailed directly to the auditing firms. The cover letter accompanying the research instruments stated clearly that the instruments had to be attempted by audit partners or audit managers. While the audit partner has experience in risk assessment tasks, the audit manager, as the person "in charge" of the audit work, is also expected to have experienced the risk assessment task. Thus, audit partners or audit managers are the most appropriate subjects for this study.

A pilot test was conducted with 30 audit managers drawn from the sample firms in the study. The feedback from the pilot testing required no amendment of the research materials. Hence, the instruments are validated since the results of the pilot test show that both cases are realistic and that the case with high fraud risk indicator signals a greater likelihood that intentional misstatements occur in the sales and accounts receivable balances than the low fraud risk case.

The research instruments were then sent to the actual subjects. In the cover letter, it was stated clearly that the subjects must attempt both sets of the research materials. The time to be taken to attempt the research materials was also stated in the letter, and was approximately 45-50 minutes:- Parts A and B of both set of research material within 10 minutes each, Part C within 2 minutes, and the psychological test within 5 minutes. A stamped self-address envelope was provided for the convenience of the subjects to return the questionnaire.

## **Variables of the study**

### ***Dependent variable***

The dependent variable is the external auditors' ability to detect the likelihood of fraud. It is measured on a 7-point Likert scale ranging from extremely unlikely to extremely likely, by asking the subject: "Based on your judgment, what is the likelihood that the management of XYZ Manufacturing Bhd. would fraudulently misrepresent the financial statements?"<sup>1</sup> (Question 1 in Part B). An answer "likely" and above indicates that management fraud is considered to have been detected.

### ***Independent variable***

The independent variable is the external auditors' ability to assess fraud risk. Part A of the research instrument requires the subjects to assume that they are involved in the audit of XYZ Manufacturing Bhd. for the year ending on December 31, 2004 and that their audit team is in the planning phase of the audit. Based on the information provided in the research instrument, the subjects are required to indicate their assessment of the risk of fraudulent financial reporting occurring in XYZ Manufacturing Bhd.

The external auditors' ability to assess fraud risk is operationalized through the inclusion of a question in Part A requiring the subject to indicate on a 7-point Likert scale, ranging from extremely low to extremely high, his/her assessment of the risk of material misstatement in the financial statements due to fraud.

### ***Moderating variable***

The moderating variable is the fraud risk level. The fraud risk level is operationalized by manipulating the fraud risk indicators in the case materials at two levels, high fraud risk and low fraud risk. This variable is operationalized through the inclusion of many high fraud risk indicators for the high fraud risk scenario and many low fraud risk indicators for the low fraud risk scenario.

### ***Control variables***

In order to examine the relationships between the variables, some other factors that may influence the dependent variable need to be controlled. The procedure adopted by this study to control the contaminating variable is by sending the research materials to all auditing firms as the perceived population of audit partners and audit managers. This study controls for the auditor's experience (which falls under the auditor characteristics dimension) and fraud risk (which falls under the fraud risk factors dimension).

### ***Auditor's experience level***

Prior studies have found that the auditor's experience may have a significant effect on his/her ability to detect fraud (e.g. Pincus, 1984; Bernardi, 1994 etc.). The auditor's position level will be used as the proxy for experience (Knapp, 1995; Knapp and Knapp, 2001 etc.). The external auditor's position, whether audit partner or audit manager, is used because both individuals are the persons in charge of the audit work and they are expected to have extensive experience in audits. Thus, this study controls for the auditor's experience level by selecting the audit partner or audit manager as the subjects.

### ***Fraud risk factors***

Previous studies offer mixed results regarding the effect of fraud risk indicators on the ability to detect the likelihood of fraud (Bernardi, 1994; Matsumura and Tucker, 1997 etc.). Given that AI 240 (MIA, 1997) requires the auditor to assess the risk of fraud and provides some examples of conditions that may increase the risk of fraud, it is expected that these cues alone may lead the auditor to suspect the possibility of fraud. With the fraud being embedded in the case material, it is essential that the fraud risk indicators be controlled in this study. Therefore, this study may conclude whether the ability of the external auditors to detect the likelihood of fraud is solely affected by their ability to assess fraud risk. Following Moet (1997), the fraud risk indicators are controlled by treating these variables in aggregate, as "high fraud risk" or "low fraud risk". Specifically, the fraud risk indicators are manipulated in the case materials at two levels, high fraud risk and low fraud risk. They are

---

<sup>1</sup> Moet (1997) uses a similar question to measure the certainty of the existence of fraud in her case materials. She uses a scale 0% - 100%.

operationalized through the inclusion of many high fraud risk indicators for the high fraud risk scenario and low fraud risk indicators for the low fraud risk scenario.

## Results

### Response rate

As mentioned earlier, the total population of audit partners and audit managers attached to auditing firms operating in Malaysia is unknown; therefore, this study used all auditing firms operating in Malaysia as the perceived population. In order to obtain a reasonable number of audit partners or audit managers from the Big Four firms, this study sent seven sets of research instruments to the headquarters of the Big Four firms and three sets of research instruments to each of its branches. Only one set of research instruments was sent to each non-Big Four firm. No research instruments were sent to the branches of the non-Big Four firms because it is difficult to determine whether an audit partner or audit manager is located at a specific branch. Table 1 shows the details of the number of research instruments distributed. This study expects to obtain a minimum sample size of 30 (10 observations \* 3 variables; namely the ability to assess fraud risk, fraud risk level and personality factor) in which, based on the work of Hair, Anderson, Tatham and Black (1992), a minimum of five observations per variable is considered as adequate.

**Table 1: Distribution of research instruments**

	Number of research instruments sent		Total
	Headquarter	Branch	
Big Four firms			
Deloitte and Touche	7 sets	7 branches * 3 sets = 21 sets	28 sets
KPMG Peat Marwick	7 sets	9 branches * 3 sets = 27 sets	34 sets
PriceWaterhouse	7 sets	8 branches * 3 sets = 24 sets	31 sets
Coopers	7 sets	17 branches * 3 sets = 51 sets	58 sets
Ernst and Young	7 sets		
Non-big four firms	1 set * 1366 firms (a)	-	1366 sets
			1517 sets

(a) 1370 firms minus 4 (Head quarters of the Big Four firms) = 1366

The research instruments were sent out in late June 2006. In late July 2006, 56 (5%) research instruments had been returned. A follow-up was conducted in early August 2006. The same research instruments were sent again to all subjects since the first sets of research instruments were purposely made without identification numbers in order to ensure anonymity. In early September 2006, another 37 (3%) research instruments were received from the subjects that led to a total of 93 returned research instruments. Of these, 80 were usable and are used as the sample size of this study. Thirteen research instruments were rejected because either the subjects did not attempt any of the questions (6 research instruments), or the subjects did not complete the low fraud risk case materials (4 research instruments), or different subjects attempted Set A and Set B (3 research instruments). The response rate of this study is approximately 6%. Although this rate is low and may not be representative of the population, the sample size is considered adequate for research that is experimental in nature<sup>2</sup>. Roscoe (1975) states that a sample size larger than 30 and less than 500 is appropriate for most research. The final reporting sample is shown in Table 2.

<sup>2</sup> Early-versus-late tests have been conducted and the results shows that the responses of the late response subjects are not statistically different from the responses of the early response subjects. Thus, should the response rate be greater than 6%, as per obtained by this study, the results of this study would not be significantly different, since a non-response bias does not exist.

**Table 2: Response rate**

	<b>N</b>	<b>%</b>
Research instruments distributed	1370	100
Less: Non-replied research instruments	1277	93
<b>Research instruments received</b>	<b>93</b>	<b>7</b>
Less: Research instruments rejected	13	1
<b>Usable research instruments</b>	<b>80</b>	<b>6</b>

**Allocation of subjects for the research design**

The 80 subjects were divided into two groups based on their ability to assess fraud risk, that is, those who are able to assess the fraud risk correctly and those who are unable to assess the fraud risk correctly. Since this is a within-subject experimental design, each subject was tested under both levels of fraud risk. For the high fraud risk level, out of 80 subjects, 61 subjects were able to assess the fraud risk correctly, whereas 19 subjects are unable to assess the fraud risk correctly. Meanwhile, for the low fraud risk level, out of 80 subjects, 63 subjects were able to assess the fraud risk correctly, whereas 17 subjects were unable to assess the fraud risk correctly. The number of subjects per cell in the present study is considered adequate because as a general rule, Hair et al. (1992) state that each cell should contain a minimum of five observations. Table 3 illustrates the research design and the number of subjects per cell.

**Table 3: Research design and subjects per cell**

	<b>Correct fraud risk assessed</b>	<b>Incorrect fraud risk assessed</b>
<b>High fraud risk level</b>	61	19
<b>Low fraud risk level</b>	63	17

**Analysis on the demographic profile of subjects**

Table 4 summarizes the demographic characteristics of all subjects. It shows that a majority of the subjects, 78 (97.5%) of them, are represented by the non-Big Four audit firms operating in Malaysia. Only 2 (2.5%) of the subjects were from the Big Four audit firms, who are willing to participate although a follow-up was made to encourage participation from them.

In terms of the current positions of the subjects, Table 4 shows that the subjects of this study are represented by almost equal numbers of positions, with 35 (43.7%) partners and 45 (56.3%) audit managers. Meanwhile, the subjects were also asked to indicate the length of time (in years and month) they have been in the current position. This study finds that the subject's tenure ranges from less than 1 year to more than 10 years. Table 4 reports that 25 (31.3%) subjects have been in their current positions for more than 10 years and between 1 to 3 years, respectively. Meanwhile, 16 (20%) subjects have been in their positions between 4 to 6 years, and 7 (8.8%) subjects have been in their positions between 7 to 9 years. This analysis reveals that 7 (8.8%) subjects are very new to their positions because they have been in the positions for less than 1 year. In conclusion, the majority of the subjects, 48 (60.1%), have been in their current positions for at least 4 years.

In addition, subjects were asked to state the number of manufacturing clients that they have audited before. They were required to count each annual audit of the same client as a separate audit. The number of manufacturing clients ranges from less than 5 clients to more than 21 clients. Table 4 illustrates that 25 (31.3%) of the subjects had experience auditing less than 5 manufacturing clients. On the other hand, 22 (27.5%) had experience auditing more than 21 manufacturing clients, 18 (22.5%) had audited between 6 to 10 manufacturing clients, 8 (10%) from 16 to 20 manufacturing clients and 7 (8.8%) from 11 to 15 manufacturing clients. Subsequently, the analysis reveals that the majority of the subjects, 35 (43.8%), possess ACCA for their professional qualifications. 14 (17.5) of the subjects state that they have CPA (Australia) qualifications, 9 (11.3%) have MICPA qualifications, 9 (11.3%) have CIMA qualifications while 13 (16.3%) indicate other qualifications.

The subjects were further asked whether they had ever worked on an audit client where fraudulent financial reporting of a material nature was detected. Table 4 shows that almost half, 39 (48.8%), of the subjects had experienced detecting fraud in the audit while the remaining 41 (51.3%) had not. Nieschwietz, Schultz and Zimbelman (2000) indicate that experiences with fraud in audit engagements are rare, so for any single auditor, repeated practice in detecting it is also rare. However, the subjects were also asked whether they had ever participated in a training session that specifically addressed fraud detection issues. As shown in Table 4, 40 (50.0%) of them had participated in such a training, while the remaining 40 (50.0%) had never participated.

**Table 4: Demographic profile**

Items		Subjects	
		<i>n</i>	%
1. Firm	Big four	2	2.5
	Non-big four	78	97.5
	Total	80	100.0
2. Position	Partner	35	43.7
	Audit Manager	45	56.3
	Total	80	100.0
3. Tenure	Less than 1 year	7	8.8
	1 to 3 years	25	31.3
	4 to 6 years	16	20.0
	7 to 9 years	7	8.8
	More than 10 years	25	31.3
	Total	80	100.0
3. Manufacturing clients	Less than 5	25	31.3
	6 to 10	18	22.5
	11 to 15	7	8.8
	16 to 20	8	10.0
	More than 21	22	27.5
	Total	80	100.0
4. Professional certification	MICPA	9	11.3
	CIMA	9	11.3
	CPA (Australia)	14	17.5
	ACCA	35	43.8
	Other	13	16.3
	Total	80	100.0
5. Past fraud	Yes	39	48.8
	No	41	51.3
	Total	80	100.0
6. Training	Yes	40	50.0
	No	40	50.0
	Total	80	100.0

Further analysis is made on the past experience in fraud detection and fraud training. The subject breakdown by these two variables is presented in Table 5. As demonstrated by Table 5, out of 39 subjects who had experienced detecting fraud, only 23 (59.0%) of them had participated in fraud training while the remaining 16 (41.0%) had never participated in such a training. The detection of fraud incidence may exist prior or after they had participated the fraud training. In either case, this study presumes that the fraud training attended by these subjects might have increased their awareness about the possibility of fraud occurring in the clients' accounts, or the training might have provided some guidance on how to proceed if fraud is suspected. On the other hand, out of those who had never detected fraud, 17 (41.5%) had participated in fraud training while the other 24 (58.5%) had never attended such training.

**Table 5: Experience in fraud detection versus fraud training**

		Experience in fraud detection				Total	
		Yes		No		n	%
Fraud training		n	%	n	%		
	Yes	23	59.0	17	41.5	40	50.0
	No	16	41.0	24	58.5	40	50.0
<b>Total</b>		39	100.0	41	100.0	80	100.0

**Hypothesis testing**

**Test for the effect of ability to assess fraud risk**

Hypothesis 1 examines whether the external auditors' ability to assess fraud risk affects their ability to detect the likelihood of fraud. The expectation of this study is that if the subjects are able to assess fraud risk correctly, they should be able to detect the likelihood of fraud.

The general linear model repeated measure ANOVA is used because of the factorial experimental approach adopted by this study. This analysis is appropriate to this study because each subject is exposed to all levels of qualitative variables and measured on a quantitative variable during each exposure. The qualitative variables are referred to as repeated-measures factors or within-subjects factors, which are the ability to assess fraud risk and the fraud risk level. The quantitative variable is the dependent variable, which is the ability to detect the likelihood of fraud. The number of quantitative variable equals the number of levels of one of the within-subjects factors times the number of levels of the other within-subjects factor. Thus in this study, there are four dependent variables which is equal to the number of levels of the ability to assess fraud risk (that is, 2) times the number of levels of the fraud risk level (that is, 2). The scores on any one of these quantitative variables are the scores on the dependent variable (that is, the ability to detect the likelihood of fraud) for a level of one of the within-subjects factors (that is, the ability to assess fraud risk) in combination with a level of the other within-subjects factor (that is, the fraud risk level).

The multivariate test is computed for the ability to assess fraud risk main effect in order to assess whether the population means for these difference scores are equal to zero. The multivariate tests in Table 6 indicate an insignificant main effect of the ability to assess fraud risk, with  $p = 0.598$ . This means that the mean of the ability to detect the likelihood of fraud is not significantly different between high ability to assess fraud risk and low ability to assess fraud risk. The result is verified by the Wilks  $\lambda$  value, 0.958, which is close to 1, indicating that the group means are not significantly different.

The strength of association that assesses the proportion of variance in the dependent variable that is associated with levels of an independent variable can be seen in the partial eta squared value. From Table 6, the partial eta squared values are 0.042, which is close to 0. This result indicates that the strength of association between the ability to assess fraud risk and ability to detect the likelihood of fraud is relatively weak.

**Table 6: ANOVA test**  
**Ability to assess fraud risk, fraud risk level and ability to detect the likelihood of fraud**

Effect	Wilks' $\lambda$ Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Observed Power(a)
Ability to assess fraud risk	0.958	0.304	1.000	7.000	0.598	0.042	0.077
Fraud risk level	0.678	3.330	1.000	7.000	0.111	0.322	0.351
Ability to assess fraud risk * fraud risk level	0.160	36.782	1.000	7.000	0.001*	0.840	0.999

(a) Computed using alpha = 0.05

\* 5% significance level

Meanwhile, the observed power is relatively low, 0.077, indicating that the probability of identifying a treatment effect that is, the effect of the ability to assess fraud risk on the ability to detect the likelihood of fraud when it actually exists, is very low.

These findings do not support Hypothesis 1, that the ability to assess fraud risk is positively related to the ability to detect the likelihood of fraud.

### ***Test for the effect of fraud risk level***

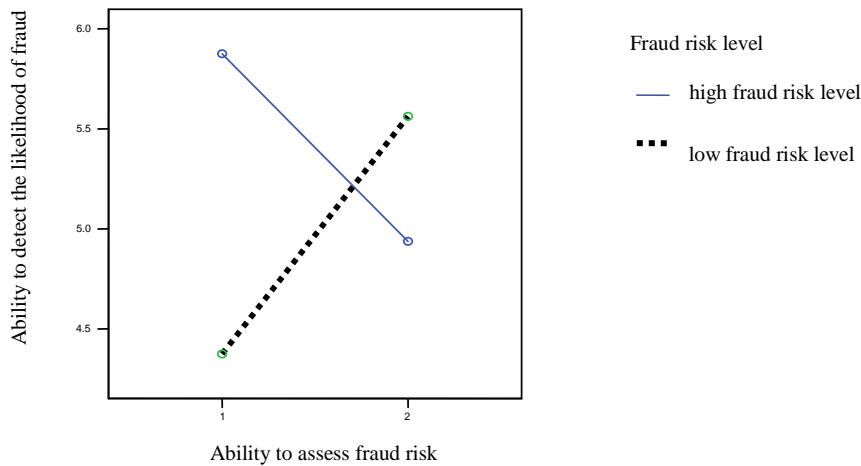
Hypothesis 2, on the other hand, examines whether the context of the fraud risk level has a moderating effect on the relationship between the external auditors' ability to assess fraud risk and their ability to detect the likelihood of fraud. The expectation of this study is that the higher the fraud risk level, the greater the positive effect it has on the relationship between the ability to assess fraud risk and the ability to detect the likelihood of fraud.

Initially, the main effect of fraud risk level on the ability to detect the likelihood of fraud is analyzed. The result of the multivariate tests for the general linear model repeated measures ANOVA are included in Table 6. The result shows that the main effect of the fraud risk level has  $p = 0.111$ . This result demonstrates that the main effects of the fraud risk level on the ability to detect the likelihood of fraud are insignificant. This indicates that a high fraud risk level and a low fraud risk level have an insignificant difference in their effect on the ability to detect the likelihood of fraud. The Wilks  $\lambda$  is 0.678, which is close to 1, indicating that the group mean is not significantly different. The partial eta-squared values are 0.322, which means that the strength of association between the fraud risk level and the ability to detect the likelihood of fraud is relatively weak. Meanwhile, the observed power is relatively low, 0.351, indicating that the probability of identifying a treatment effect; that is, the effect of the fraud risk level on the ability to detect the likelihood of fraud when it actually exists, is low. Thus, based on these results, this study concludes that the fraud risk level does not have a direct effect on the ability to detect the likelihood of fraud. These findings meet the expectation of this study, in which the fraud risk level is expected to have moderating effects only on the relationship between the ability to assess fraud risk and the ability to detect the likelihood of fraud.

Further, the result demonstrates significant interaction effects between the ability to assess fraud risk and the fraud risk level  $p = 0.001$ . This finding indicates that the interaction effect does exist between the ability to assess fraud risk, the fraud risk level and the ability to detect the likelihood of fraud. In other words, differences in the population means on the ability to detect the likelihood of fraud among different levels of ability to assess fraud risk do vary as a function of the levels of the fraud risk level. The Wilks  $\lambda$  is 0.160, indicating that the group means are significantly different. Meanwhile, the partial eta-squared is 0.840, indicating that the strength of association between the fraud risk level and the ability to detect the likelihood of fraud is relatively strong. In addition, the observed power is high, 0.999, indicating that the probability of identifying a treatment effect that is, the effect of the fraud risk level on the relationship between the ability to assess fraud risk and the ability to detect the likelihood of fraud when it actually exists, is relatively high. Hence, it can be concluded that the fraud risk level does have a moderating effect on the relationship between the ability to assess fraud risk and the ability to detect the likelihood of fraud.

Plots for the ability to assess fraud risk and fraud risk level interaction effect are shown in Figure 1. The y-axis represents the dependent variable, that is, the ability to detect the likelihood of fraud. The higher the scale on the plot, the more able the external auditors are in detecting the likelihood of fraud. On the other hand, the x-axis represents the independent variable, that is, the ability to assess fraud risk. The lines on the plot indicate the fraud risk levels. The plot shows that the effect of the external auditors' ability to assess the fraud risk on their ability to detect the likelihood of fraud depends on the fraud risk level. The plot illustrates that the higher the fraud risk level and the more able the external auditors are to assess the fraud risk correctly (scale 1 on the x-axis denotes ability to assess the fraud risk correctly under the high fraud risk scenario), the more able the external auditors are to detect the likelihood of fraud. Meanwhile, the lower the fraud risk level, and the less able the external auditors are to assess the fraud risk correctly (scale 1 on the x-axis denotes inability to assess the fraud risk correctly under the low fraud risk scenario), the less able the external auditors are to detect the likelihood of fraud. The plot confirms that the fraud risk level has a positive effect on the relationship between the ability to assess the fraud risk and the ability to detect the likelihood of fraud. Thus, Hypothesis 2 is supported.

**Figure 1: Plot for the interaction effect of ability to assess fraud risk and fraud risk level**



## Discussion

### ***Hypothesis 1 is not supported***

The results show that the external auditors' ability to assess fraud risk does not have a positive effect on their ability to detect the likelihood of fraud. This finding does not corroborate with the assumption of the attribution theory that the level of the future expected ability to detect the likelihood of fraud is attributed to the external auditor's prior ability to assess fraud risk. The findings do not support the idea of attribution theory that although the external auditors apparently have used fraud risk indicators in deciding on fraud risk assessment, their success of assessing fraud risk is not attributed to their ability to detect the likelihood of fraud. Thus, this study posits that when the external auditors suspect that fraud has occurred in the financial statement based on the fraud risk indicators, the assessed fraud risk does not serve as a guide for them to identify the high risk areas, for instance, the accounts that may be materially misstated. Moreover, the inability of the external auditor to detect the likelihood of fraud may be due to external causes such as the task difficulty (Weiner, Frieze, Kukla, Reed, Rest & Rosenbaum, 1971). In other words, the fraud risk assessment task is difficult to perform, thus leading to the inability of the external auditor to detect the likelihood of fraud.

The findings of this study indicate that the external auditors' ability to detect the likelihood of fraud, when given several fraud risk indicators, do not depend on their ability to assess the fraud risk after considering those indicators. The results are similar those of Jaffar et al. (2008) for the low fraud risk scenario. In other words, the ability to detect the likelihood of fraud is not attributed to the ability to assess fraud risk. There may be reasons why external auditors are unable to assess fraud risk correctly. Jindanuwat (1999) cites one suggestion made by Abdel-khalik and Solomon (1988) that the lack of consistency among auditors regarding their risk assessment conclusions may be due to the fact that not only do the risk analysis techniques used by individual auditors vary, but the individual risk factor to be included in the analysis are industry-and client-specific.

The finding does not support the expectations of the standards that if the external auditors are able to appropriately assess fraud risk (AI 240, MIA, 1997) based on their professional judgments (AI 240, AI 400, MIA, 1997), this attribution will subsequently influence the ability of the external auditor to detect the likelihood of fraud (AI 240, MIA 1997).

### ***Hypothesis 2 is supported***

A high fraud risk level has a positive effect on the relationship between the ability to assess fraud risk and the ability to detect the likelihood of fraud. The findings corroborate the context theory in that the level of fraud risk of a client's company serves as a stimulus or cue that the auditor will rely on to determine the likelihood of occurrences of fraud in the client's company. The findings also support the views of the audit risk model. The context of the fraud risk level affects the relationship between the ability to assess fraud risk and the ability to detect the likelihood of fraud. This study concludes that the context of the fraud risk level influences the external auditors' judgments in fraud detection. Within a high fraud risk environment, external auditors are more conscious of the possibility of fraud occurring. Within a low fraud risk environment, external auditors are more "relaxed" in their audit work, and less aware of the possibility of fraud. Thus, there is lower probability that they would be able to detect the likelihood of fraud, even though fraud may actually exist in the low risk scenario.

## Conclusion

The literature has shown that fraudulent financial reporting has occurred in many countries (e.g. Mitchell, 1997; Grant, 1999 and Spathis, 2002). Even in a country such as the US, after the establishment of the Sarbanes-Oxley Act in 2002, fraud still occurs. Similarly, in Malaysia, despite standards and guidelines, fraudulent financial reporting still occurs in this country as reported by the KPMG Malaysia (2003; 2005). Although guidance has already been provided by the Malaysian standards, KPMG Malaysia (2005) reported that the external auditors discovered only 3% of fraud incidences in Malaysian companies. Hence, the public may question why external auditors are not able to detect fraud in the conduct of their annual audits. Thus this study advocates that it is important to know the abilities of the external auditors to detect fraud.

Auditors may spot fraud, for instance, by developing cross-check procedures and identifying risky situations (Ribstein, 2002). The identification of risky situations would require the external auditors to assess the fraud risk, as required by the AI 240 (MIA, 1997). No guidelines have been offered by the MIA to the external auditors on how to properly assess the fraud risk, which is an important step for them in designing the audit procedures and ultimately in detecting the likelihood of fraud. This study posits that fraud risk assessment, if done accurately, may enhance external auditors' ability to detect the likelihood of fraud. No prior study has investigated the effect of the fraud risk level on the ability to detect the likelihood of fraud. Therefore, this study seeks to examine the moderating effect of the contextual of fraud risk level on the relationship between the ability of the external auditors to assess fraud risk and their ability to detect the likelihood of fraud.

The findings support the prediction of this study that the fraud risk level positively moderates the relationship between the ability to assess fraud risk and the ability to detect the likelihood of fraud. Hence, the insight of the context theory of classification is supported; in that the level of fraud risk of a client's company serves as a stimulus or cue that the external auditor will rely on to determine the likelihood of fraud in the client's company.

Investors rely on external auditors to detect fraud; thus it is important that the external auditors have proper guidance on how to appropriately assess fraud risk and detect the likelihood of fraud. The external auditors should be more aware of fraud risk indicators. Even though the external auditors are expected to adopt an attitude of professional skepticism, it is important that the external auditors assess any change in the client's financial position, operations, industry, etc., especially if the external auditors have been auditing the same client for long period of time.

The context of the fraud risk level is essential to consider when conducting the audit of a particular client's company. The external auditors' knowledge of the audit risk model it should enhance the external auditors' awareness of the possibility of fraud in the client's financial statements even though the fraud risk is found to be low.

In addition, practitioners may consider training to help external auditors to improve their fraud detection. Carpenter, Durtschi and Gaynor (2006) state that training improves initial sensitivity to fraud, and training that stimulates experience with fraud can possibly be a substitute for actual experience. They suggest that audit firms may want to consider incorporating this alternative training methodology in their programs to improve auditor fraud judgments. Besides, "since finding corporate fraud is rare, and in-house, on-the-job auditor training is limited, a training methodology that enables greater knowledge acquisition and retention of that knowledge seems critical for improving audit performance in detecting fraud" (Durtschi & Fullerton, 2005). One type of training that may be implemented is training that includes simulated experience in detecting and investigating fraud. Following the training methodology of Carpenter et al. (2006), in the simulation, the external auditors will be presented with a case that includes a variety of different types of fraud that they have to detect and investigate. In particular, the external auditors will be asked to detect fraud indicators, reason forward to produce tentative explanations, and seek out evidence to support or negate their tentative theories by requesting further documentation or information from employees of the firm via their instructor.

Finally, the potential consequences of underestimating the fraud risk are particularly high, since this could ultimately contribute to audit firms issuing unqualified opinions on fraudulent financial statements (Wood, 2003). As such, this study provides insights into external auditors' judgment in fraud risk assessment and detection of fraud. These insights could be beneficial to audit firms seeking to improve processes to maintain their viability in the auditing industry.

Future research in this area may be done by allowing the subjects to perform audits in a controlled environment. This arrangement could actually capture the audit plan and see whether the external auditors are able to detect fraud based on the plan that they actually performed. For instance, the experiment may require the subjects to perform analytical procedures to detect the likelihood of fraud. Analytical procedures have been found to be effective in signaling financial statements errors (Hylas & Ashton, 1982; Blocher, Esposito & Willingham, 1983). Thus, the realism of the case is reflected in the experiment.

## References

- Ali, M.A. (1994), *Accountability in the audit profession in Malaysia*, University of Malaya Press, Kuala Lumpur.
- Arens, A. & Loebbecke, K.L. (1997), *Auditing: An integrated approach*, Prentice Hall, New Jersey.
- Arens, A., Loebbecke, K.L., Iskandar, M.T., Susela, D.S. & Isa, S. (1999), "Auditing in Malaysia: An integrated approach", Prentice Hall, Singapore.
- Ayers, S. (1995), "Risk assessments of potential clients and the review process: A study of auditor judgment", Unpublished doctoral dissertation, Arizona State University, USA.
- Baglia, D.S. (2000), "The effects of auditor type, auditor experience level, and audit firm structure on audit evidence decisions: An empirical examination under cases of both high and low fraud risk", Unpublished doctoral dissertation, Cleveland State University, USA.
- Bernardi, R.A. (1994), "Fraud detection: The effect of client integrity and competence and auditor cognitive style", *Auditing: A Journal of Practice & Theory*, Vol. 13, pp. 68-84.
- Brief, A.P., Dukerich, J.M., Brown, P.R. and Brett, J.F. (1996), "What's wrong with the Treadway Commission report?", *Journal of Business Ethics*, Vol. 15 No. 2, pp. 183-198.
- Carpenter, T., Durtschi, C.Y. & Gaynor, L.M. (2006). The effects of different training methodologies in assessing both fraud risk and the relevance of fraud risk factors. Retrieved January 25, 2007 from <http://ssrn.com/abstract=346921>.
- Elliott, R.K. & Willingham, J.J. (1980). *Management fraud: Detection and deterrence*. New York: Petrocelli Books Inc..
- Fraud survey 2002 report*; KPMG Malaysia: Kuala Lumpur, Malaysia, 2003.
- Fraud survey 2004 report*; KPMG Malaysia: Kuala Lumpur, Malaysia, 2005.
- Grant, J. (1999), "Detecting management fraud", *Balance Sheet*, Vol. 7 No. 3, pp. 14-15.
- Gul, F.A. (1991), "Size of audit fees and perceptions of auditors' ability to resist management pressure in audit conflict situations", *Abacus*, Vol. 27 No. 2, pp.162-172.
- Jaffar, N., Salleh, A., Iskandar, M.T. and Haron, H. (2008), "The Effect of the External Auditors' Ability to Assess Fraud Risk on Their Ability to Detect the Likelihood of Fraud", *International Journal of Management Perspectives*, Vol. 1 No. 1, pp. 49-70.
- Jindanuwat, N. (1999). *Auditors' causal inference judgments during audit planning: A model of reasoning and judgments*. Unpublished doctoral dissertation, University of California, USA.
- Knapp, C.A. (1995), *The use of fraud schema during analytical procedures: Effects of experience, client explanations and attentional cues*, Unpublished doctoral dissertation, The University of Oklahoma, USA.
- Knapp, C.A. and Knapp, M.C. (2001), "The effects of experience and explicit fraud risk assessment in detecting fraud with analytical procedures", *Accounting, Organizations and Society*, Vol. 26 No. 1, pp. 25-37.
- Matsumura, E.M. and Tucker, R.R. (1992), "Fraud detection: A theoretical foundation", *The Accounting Review*, Vol. 67 No. 4, pp. 753-782.
- Medin, D.L. (1975), "A theory of context in discrimination learning", In Medin, D.L. & Schaffer, M.M. (1978), "Context theory of classification learning", *Psychological Review*, Vol. 85 No. 3, pp. 207-238.
- Medin, D.L. & Schaffer, M.M. (1978), "Context theory of classification learning", *Psychological Review*, Vol. 85 No. 3, pp. 207-238.
- Mitchell, H.S. (1997), "Management fraud trends", *The Secured Lender*, Vol. 53 No. 6, pp. 104-108.
- Moet, L.K. (1997), *Will SAS no. 88 aid auditors in financial statement fraud detection*, Unpublished doctoral dissertation, University of Colorado, USA.
- Moyes, G.D. and Hasan, I. (1996), "An empirical analysis of fraud detection likelihood", *Managerial Auditing Journal*, Vol. 11 No. 3, pp. 41-46.

- Nieschwietz, J.R., Schultz, J.J. and Zimbelman, M.F. (2000), "Empirical research on external auditors' detection of financial statement fraud", *Journal of Accounting Literature*, Vol. 19, pp. 190-246.
- Nine charged in Ahold fraud case*; <http://www.foodproductiondaily.com/news/ng.asp?n=57354> -nine-charged-in, 2005.
- Owusu-Ansah, S., Moyes, D.G., Oyelere, B.P. and Hay, D. (2002), "An empirical analysis of the likelihood of detecting fraud in New Zealand", *Managerial Auditing Journal*, Vol. 17 No. 4, pp. 192-204.
- Parmalat admits \$5bn black hole*. (2003). Retrieved December 15, 2003, from <http://news.bbc.co.uk/1/hi/business/3333431.stm>.
- Pincus, V.K. (1984), *Fraud detection ability: Individual differences and their relationship to cognitive style difference*, Unpublished doctoral dissertation, The University of Maryland, USA.
- Pincus, V.K. (1990). Auditor individual differences and fairness of presentation judgments. *Auditing: A Journal of Practice & Theory*, 9, (3), 150-166.
- Sarbanes-Oxley Act of 2002*; United States of America, 2002.
- Spathis, T.C. (2002), "Detecting false financial statements using published data: Some evidence from Greece", *Managerial Auditing Journal*, Vol. 17 No. 4, pp. 179-191.
- US senate permanent subcommittee on investigations report on fishtail, bacchus, sundance, and slapshot: Four Enron transactions funded and facilitated*; U.S. Financial Institutions: United States, 2003.
- Weiner, B., Frieze, I., Kukla, A., Reed, L., Rest, S. & Rosenbaum, R.M. (1971). Perceiving the cause of success and failure. In Orpen, C. (1980). The relationship between expected job performance and causal attributions of past success or failure. *The Journal of Social Psychology*, 112, 151-152.
- Wells, J.T. (1997). Occupational fraud and abuse. In Spathis, T.C. (2002). Detecting false financial statements using published data: Some evidence from Greece. *Managerial Auditing Journal*, 17, (4), 179-191.
- Zimbelman, M.F. (1996), *Assessing the risk of fraud in audit planning*, Unpublished doctoral dissertation, The University of Arizona, USA.