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**INDIVIDUAL AUDITOR'S RISK  
PROPENSITY AND ASSESSMENT  
OF INTERNAL CONTROL RISK**

By

Charlotte Taylor

A thesis submitted in fulfillment of the  
requirements for the degree of  
Master of Commerce

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School of Accounting and Finance  
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August, 2013

## **DECLARATION OF ORIGINALITY**

### **Statement by Author**

I, Charlotte Taylor, hereby declare that this thesis is my own work and that, to the best of my knowledge, it contains no materials previously published, or substantially overlapping with material submitted for the award of any other degree at any institution, except where due acknowledge is made in the text.

.....

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### **Statement by Supervisor**

The research in this thesis was performed under my supervision and to my knowledge is the sole work of Ms. Charlotte Anne Taylor.

.....

Date: 1<sup>st</sup> day of August 2013

Professor Arvind Patel

Principle Supervisor

## **DEDICATION**

This thesis is dedicated to my parents, Archibald Taylor and Caroline Bennett-Taylor; for their devotion and drives to see to it that their five daughters had the education which led to the opportunities that they themselves were never able to have. All that I am and all that I have yet to become I owe to my beloved parents.

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## **ABSTRACT**

The disparities of results between Ashton (1974) study and Joyce (1976) study in internal control assessment have led to a plethora of studies in an attempt to reconcile or investigate the reasons. Auditors are faced with expectations from the client, client's management, and regulatory bodies as well as from any third parties who relies on the auditing financial annual report. In addition, they also face pressure from audit partners to maintain a cost-effective audit. All these factors can cause an auditor to engage in dysfunctional behaviour. One aspect of dysfunctional behaviour is risk propensity. Risk propensity refers to a person's attitude towards risk. This study investigates whether an individual auditor's risk propensity has an effect on the assessment of internal control risk. Thus, the research question is:

Whether an individual auditor's risk propensity has an impact on audit risk judgment?

A pilot study was conducted on final year audit students after which an experimental study was conducted on thirty five auditor seniors from the "Big Three" firms. A regression analyses was carried out on the data collected from the research instruments; Choice Dilemma Questionnaire (Kogan and Wallach 1964) and Internal Control Assessment (Joyce 1976).

The findings indicated that an individual auditor's risk propensity does have an effect on the assessment of internal control risk. This study improves the understanding of auditor's cognitive abilities and may explain why there is a disparity in the assessment of internal control risk among auditors. This study is important because it highlights the need for audit firms to be aware of the risk profiles of audit seniors. As risk seeking auditors would be profit minded and limit audit procedures thus exposing audit firms to legal and liability commitments. In addition, regulators need to be mindful that calling for professional judgment in a profession that has a number of external and internal party expectations would place auditors under intense pressure, and if no stringent measures are put in place, dysfunctional behaviour may not be mitigated.

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## LIST OF ABBREVIATIONS

AAR	Acceptable Audit Risk
ARM	Audit Risk Model
AICPA	American Institute of Certified Public Accountants
CR	Control Risk
CDQ	Choice Dilemma Questionnaire
DR	Detection Risk
FAIR	An Introduction to Factor Analysis of Information Risk
FIA	Fiji Institute of Accountants
EU	Expected Utility
ICFR	International Control over Financial Reporting
IFAC	International Federation of Accountants
IFRS	International Financial Reporting Standards
IR	Inherent Risk
ISA	International Standards on Auditing
IASB	International Accounting Standards Board
IAASB	International Auditing and Assurance Standards Board
ISO	International Organization for Standardization
JDM	Judgment Decision Making
PCAOB	Public Company Accounting Oversight Board
RMM	Risk of Material Misstatement
SAS	Statement on Auditing Standards
SPSE	South Pacific Stock exchange
SOX	Sarbanes Oxley Act
OHSAS	Occupational Health & Safety Advisory Services

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# CHAPTER 1

## 1.1 Introduction

In planning an audit, the auditor must ensure that the audit is carried out in an economic, efficient and effective way so as to achieve a high quality audit. It is at the planning stage that the timing, scope and overall strategy of audit procedures are established.<sup>1</sup> As per International Standards on Auditing (ISA) 300 the audit planning consist of three phases; describing the timing and extent of planned risk assessment procedures as prescribed under ISA 315,<sup>2</sup> the nature, timing and extent of planned further audit procedures at the assertion level as prescribed under ISA 330.<sup>3</sup> Lastly, other planned audit procedures that are required to be carried out so that the engagement complies with ISAs. The procedures required in these phases are not objective and routine but requires the professional judgment of the auditor. Individual professional judgment is dependent on a number of factors, audit experience, education, seniority as well as individual cognitive abilities. Thus, the application of professional judgment in the planning phase may vary depending on the degree of social and economic factors each individual has. The disparities of results in the pioneering works of Ashton (1974) and Joyce (1976) led to empirical studies into the individual characteristics of auditors.

The motivation of this study was a result of the findings highlighted in Ashton (1974) study and Joyce (1976) study. Ashton (1974) investigated internal control assessment with regards to the payroll system. The study provided insights as to whether there is consensus between auditors with regards to the assessment of internal control system. It was found that the extent of consensus between auditor judgments on the strength of the internal control systems to be relatively high ( $r = .70$ ). Joyce's (1976) study investigated the extent and nature of differences in judgments on audit program planning with regards to accounts receivable system. The study found a lower level

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<sup>1</sup> ISA 300, "Planning an Audit of Financial Statements."

<sup>2</sup> ISA 315, "Identifying and Assessing the Risks of Material Misstatement through Understanding the Entity and Its Environment."

<sup>3</sup> ISA 330, "The Auditor's Responses to Assessed Risks."

of consensus ( $r = 0.37$ ) than Ashton's (1974) study. Thus, the study concluded that while different auditors may agree on the quality of the internal control system, there might be disagreements with regards to the extent of audit work that should be committed to that system. Subsequent studies have investigated consensus in auditor's professional judgments. Earlier literature reviews in this area concluded that there was a high level of consensus on evaluation of internal control (Ashton and Brown 1980; Hamilton and Wright 1982; Gaumnitz et al. 1982; Kaplan 1985; O'Leary et al. 2004) while other studies concluded that there was a low level of consensus (Mock and Turner 1981; Libby et al. 1985; Cohen and Kida 1989).

## **1.2 Objectives and Research Question**

In an attempt to explain the disparities in auditors' professional judgment studies have investigated a number of auditing contexts and auditors' characteristics. Earlier studies have considered the moderating effects of more complex cases (Reckers and Taylor 1979), used student as surrogates (Ashton and Kramer 1980) and have manipulated experimental design by factoring time pressure (Choo and Firth 1998), increased the number of cues (Ashton and Brown 1980), interacting and composite groups (Trotman et al. 1983). In addition, studies have tried to increase or improve consensus by providing more realistic cases to reflect the review process (Trotman and Yetton 1985) and including multiple systems into the experimental procedures (Choo and Firth 1998). Apart from experimental designs, earlier studies investigated auditor's characteristics by considering audit experience (Hamilton and Wright 1982) and personality variables (Hall et al. 1982). There has been extensive research carried out on judgment and decision-making due to the differences in empirical findings (Trotman 2005).

To provide further insights into the disparity of internal control assessments, this study will investigate one aspect in the auditing environment, auditor's cognitive abilities. Studies have illustrated that certain individual differences among auditors such as the personality characteristics and level of experience are likely to affect the assessment of audit risk (McGhee et al. 1978; Gul 1986; Abdolmohammadi and Wright 1999; Trotman 2005). However, despite these empirical findings on individual auditor's attributes and its effect on professional judgment, the

International Financial Reporting Standards (IFRS) have continuously required auditors to exercise professional judgment with no objective criteria being developed to assist auditors in the audit planning assessments.

This research will be investigating in particular auditor's risk behaviour and its effect on economic decision making. The importance of risk to decision-making is demonstrated by its position in managerial ideology (March and Shapira 1987); its standing in decision theory (Arrow 1965) and by the growing interest in risk assessment and management (Crouch and Wilson 1982). However, there has been limited research of behavioral risk in the auditing domain. Hence, whether individual auditor's risk behaviour affects the assessment of audit risk is an important issue to investigate.

Thus, the research question is:

*Whether an individual auditor's risk propensity has an impact on audit risk judgment?*

### **1.3 Motivations for the current study.**

Auditors when making decisions are required to apply professional judgment<sup>4</sup> and professional skepticism<sup>5</sup> from audit planning right through to audit completion. The ISAs require professional judgment on the part of the auditor in assessing audit risk at the planning phase. Professional judgment as stated in ISA 200 13(k) refers to "... the application of relevant training, knowledge and experience within the context of auditing, accounting and ethical standards, in making informed decisions about the courses of actions that are appropriate in circumstances of the audit engagement." One could also question whether an auditor's risk behaviour has an effect on judgment decision making. The following paragraphs provide three reasons for undertaking this study.

First, as stated in Section 1.1 and 1.2, there have been inconsistent empirical findings when assessing internal control risk among auditors. These disparities in empirical

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<sup>4</sup> ISA 200 13 (k)

<sup>5</sup> ISA 200 12(l)

results have led to the investigation of factors that generate differences in internal control judgments. There has been extensive research carried out throughout the decades on auditor attributes. Each auditor has their own individual and cognitive limitations, thus leading to judgmental biases when performing audit tasks. Researchers eventually began to investigate person variables such as the acquisition and processing of knowledge on economic decision making (Weber 1980; Libby 1985; Tubbs 1992; Anderson and Mueller 2005) and measures of experience (Frederick and Libby 1986; Bonner and Lewis 1990; Owhoso et al. 2002; Low 2004). Recently there have been calls to investigate the effect of risk behaviour on internal control judgments. Bonner (2008) has stated that there has been minimum research on the effect of risk attitude in the auditing process. Sitkin and Pablo (1992) defined risk as “a characteristic of decisions that is defined as the extent to which there is uncertainty about whether potentially significant and/or disappointing outcomes of decisions will be realized” and termed risk behavior as the “degree of risk associated with the decisions made.” This research will contribute to the field of study of cognitive processes by studying the effect of an auditor’s risk attitude on audit judgment decision-making in the planning phase.

Secondly, research in psychology has indicated that individuals have varying risk propensity. Kahneman and Tversky (1982) stated, “...individuals differ in their attitudes towards risk and towards money.” Therefore, given the same audit engagements, two different auditors may plan out audits differently, depending on how they handle the dilemma of maximizing returns and ensuring an efficient audit is being conducted. In this study the individual auditor’s risk behaviour is predicted through the application of Kahneman and Tversky (1979) prospect theory. Prospect theory assumes an individual frames outcomes in terms of gains and losses and not final states of wealth as predicted by expected utility theory (Von Neumann and Morgenstern 1947).

Studies to date have shown that individuals when making risky decisions in a gain or loss situation do manifest different types of risky behavior. Hunton (2001) and Tan et al. (2002(a)) studied analysts’ reaction to firm’s forecast and found that analysts in a gaining situation tend to be risk averse with regards to future earnings forecast than those in a negative frame. With regards to the tax professionals, Schisler (1994)

found that tax professional in a loss situation are more than willing to support an ambiguous deduction for a client. This stance of engaging in a risk-seeking behaviour of taking a non-allowed deduction when in a loss situation was also found in other empirical studies (Schepanski and Kelsey 1990; Robben et al. 1990; Masselli and Ricketts 2004). Moreover, in managerial accounting setting, research showed that corporate managers tend to be more risk averse (taking) when considering investment alternatives that are above (below) both target and current returns on investment levels (Sullivan and Kida 1995). By citing studies carried across the different professions this study tries to investigate whether similiar type of risky behaviour does manifest itself in the planning phase of an audit.

Last, audit firms operate in an environment with increasing and changing auditing and financial reporting regulatory requirements. In addition to the increasing regulatory requirements, auditing firms are faced with continuous fee pressure from clients and fierce competition within the audit market. This exposes the auditing profession to high levels of business, financial and litigation risk. Due to the presence of competition, firms enter into fixed fee contract (DeAngelo 1981; Bowman 1985) in an attempt to maintain and/or increase its client base. Therefore, the only way to maximise profit on audit engagements is to control audit costs through managing audit procedures.<sup>6</sup>

The only controllable elements auditors have in order to generate profit are the audit costs that are incurred. The main cost driver for audit costs is auditor's (billable) hours. Houston (1999) provides disturbing findings indicating that fee pressure leads to fewer budgeted hours and less effort for particular tests despite an increase in client's business risk. This reduction in extent may negatively impact audit effectiveness. Houston suggests that audit seniors, who initially plan the audit program, tend to focus on minimising the current costs of conducting the audit and are less concerned about future costs (that is, litigation costs and loss of reputation) that may occur if an efficient audit is not performed.

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<sup>6</sup> International Standards on Auditing (ISA) 200 par A28-A52 provides guidance on the process of gathering appropriate audit evidence through assessing audit risk and its components.

Thus, a dilemma exists. On one hand auditors are required to abide by the ISA, financial regulations and code of ethics, making sure that the audit work is able to hold a strong defense against any litigation claims made. On the other hand, auditors are advised to maximise returns on every engagement to finance the auditing firm's business operations. The only way to do so would be to incur low audit costs by limiting the audit procedures. This dilemma could lead to certain auditors engaging in dysfunctional behaviour. One characteristic of dysfunctional behaviour is risk propensity. Therefore, it is imperative that one investigates the effect that risk propensity has on judgment decision making in the risk assessment phase. For that reason, whether auditor's risk propensity has an impact on auditor's risk evaluation is an important research question.

## **1.4 Contributions of the Study**

### ***1.4.1 Theoretical contribution***

This study investigates auditor risk propensity to explain the conflicting results with regards to internal control assessments. There has been extensive research carried out in different auditing context to explain these discrepancies; task variables (Ashton and Ashton 1988), environmental variables (Waller and Felix 1984) decision aids (Libby and Libby 1989; Emby and Finley 1997) and group processing (Trotman and Yetton 1985). However, there has been limited research carried out in relating internal control judgments with risk propensity. Bonner (2008) has called for more research in the domain of risk propensity. There have been studies carried out in other professional context: tax (Robben et al. 1990) and managerial accounting (Sullivan and Kida 1995). This research will contribute to the field of audit by investigating auditor's cognitive abilities and its effect on audit judgment decision-making. By assessing whether individual auditor's risk propensity has an effect on the professional judgment of risk assessment, we may be able to better explain some element of prior conflicting results.

### ***1.4.2 Practical contribution***

The study has potentially important implications for audit planning and engagements. Through investigating the inconsistent results of internal control judgments, one might be able to improve the predictive model, the audit risk model. Moreover, the study of individual auditor's risk propensity and its effect on internal control risk assessment has potential benefits for the education and training of auditors. This study of understanding risk and its impact on audit judgment decision making can assist audit firms in managing its risk management process; ensuring that the objectives of the individual auditors are in line with the firm's objectives.

Until research provides a normative model of audit judgment that is widely used for planning engagements in audit practice, audit judgment will remain a human-decision process (Caster and Pincus 1996). With the presence of fee pressure and audit market competition and regulatory obligation, the outcome of this research is likely to increase awareness among auditors and regulators of the characteristics of market forces that are likely to lead to possible dysfunctional audit behaviour that is not in the best interest of society.

## **1.5 Summary and Organization of Thesis**

The remainder of the thesis is organized as follows. Chapter Two provides a detailed explanation and description of the audit risk model and audit market in Fiji. Chapter Three provides a detailed explanation and description of the literature related to the cognitive abilities of auditors and the psychology literature relating to cognitive abilities. The chapter includes a detailed explanation of risk behaviour, in particular risk propensity and its application to the auditing framework. Chapter Four relates to the development of the hypothesis between the related domains of audit risk model and risk propensity. Chapter Five outlines the research design. It specifies the independent and dependent variables and provides a description of the measurement method. It describes the experimental procedures and participants in the experiment. Chapter Six discusses the results of the statistical tests. Chapter Seven summarises the results of the research, discusses the limitations of the research and suggests some possible directions for future research.

## **CHAPTER 2**

### **Audit market and audit risk model**

#### **2.1 Introduction**

Audit firms operate in a highly competitive market where in most instances audit fees are fixed by tender arrangements. DeAngelo (1981) and Chan (1999) studies found that fee cuts are a competitive response by audit firms. Therefore, if a fee cut is a response to competitive pressures, firms in order to generate as much profit as possible from an audit engagement would have to capitalise on the one thing within its control, audit cost. Theoretically, it is at the planning stage of every audit engagement that the efficiency and effectiveness of an audit is determined (Libby et al. 1985; Mock and Wright 1993; Arens et al. 2000). As such, it is imperative for audit firms to assign senior auditors who are able to plan out an efficient and effective audit simultaneously controlling for audit costs.

This chapter is structured in the following manner. The next section provides a discussion on the Audit Risk Model. This is followed by an in-depth analysis of the effect that assessments of audit risk have on achieving a cost effective audit. These discussions will be supported by a review of the literature on the audit market. A discussion on the current audit market in Fiji will then be presented. Finally, a summary of the chapter is provided.

#### **2.2 Background on Audit Risk Model**

Professional auditing standards require the application of the Audit Risk Model (ARM) to address client risks at the initial stage of an audit, (Cushing et al. 1995; AICPA 2004). The ARM provides a conceptual framework for the risk assessment standards (Statement on Auditing Standards (SAS) 107). The ARM assists auditors in assessing audit risk. ISA 200 describes audit risk as a function of the risks of material misstatement and detection risk. At the planning stage auditors are permitted

to use various approaches to express the combined elements of the audit risk function.<sup>7</sup>

The conceptualized multiplicative model often used as is stated as: -

<sup>8</sup>Acceptable Audit Risk (AAR) = Risk of material misstatement (RMM)<sup>9</sup> times  
Detection Risk (DR)

Materiality is central in the auditing planning with regards to “sampling”, “tolerable error” and “reasonable assurance”, in the assessment of risk in the ARM. Establishing what is material / immaterial is central to determining the extent that misstatements may be tolerated.

Audit risk<sup>10</sup> (either desired or achieved) is “the risk that the auditor expresses an inappropriate audit opinion when the financial statements are materially misstated. Audit risk is a function of the risks of material misstatement and detection risk” (ISA 200, 13(c)). The assessment of audit risk is “a matter of professional judgment than a matter of capable precise measurement” (ISA 200A32). In other words, the assessment of audit risk depends on the knowledge, training and education level of the respective auditor in charge. The application of professional judgment also applies to all components in the ARM; internal control risk, inherent risk and detection risk.

RMM is “the risk that the financial statements are materially misstated prior to audit” (ISA 200, 13(n)). It consists of two independent components; IR and CR. IR is the “susceptibility of an assertion about a class of transaction, account balance or disclosure to a misstatement that could be material, either individually or when aggregated with other misstatements, before consideration of any related controls” (ISA 200, 13(n)(i)). The auditor in setting the level of inherent risk assesses the client’s industry and the economy it is operating in; there is no assessment of the

---

<sup>7</sup> ISA200 par. 36.

<sup>8</sup> Statement on Auditing Standards (SAS) 107 par. 26.

<sup>9</sup> RMM= Inherent risk (IR) times Control risk (CR) (ISA 200, A36).

<sup>10</sup> “...audit risk is a technical term related to the process of auditing; it does not refer to the auditor’s business risks such as loss from litigation, adverse publicity, or other events arising in connection with the audit of financial statements” (ISA 200, A33).

client's internal control system. The assessment of the effectiveness of the internal control system is carried out when determining the control risk.

CR is the “risk that a misstatement that could occur in an assertion about a class of transaction, account balance or disclosure and that could be material, either individually or when aggregated with other misstatements, will not be prevented, or detected and corrected, on a timely basis by the entity's internal control” (ISA 200 13(n)(ii)). According to the Sarbanes Oxley Act (SOX) Section 404,<sup>11</sup> it is imperative that auditors clearly document the procedures laid out in assessing the internal control system of firms and if deficiencies exist. For publically listed companies the external auditor is to make this known in the financial statement. DR is “the risk that the procedures performed by the auditor to reduce audit risk to an acceptably low level will not detect a misstatement that exists and that could be material, either individually or when aggregated with other misstatements” (ISA 200 13(e)). Exhaustive substantive tests and analysis are carried out to reduce the level of DR. IR and CR is determined by events affecting the company while the detection risk relates to the nature, timing and extent of the audit procedures.

With regards to the assessment of the elements of audit risk, ISA200 paragraph A40 states that the evaluation can be quantified as percentages if the multiplicative model is being used. The other option is to express the risks in verbal form (high, moderate, or low). Due to the absence of an objective criterion, assessments may vary between senior auditors given the same audit engagement.

In explaining the relationship<sup>12</sup> between the components in the ARM; if the internal control risk and inherent risk (product of RMM) is assessed as low, detection risk and audit risk are assessed as high. This implies that auditors are willing to accept a high level of risk of material misstatements existing after the audit is completed and an unqualified audit opinion is issued. The reason auditors would opt for a high level of tolerable risk is because they have confidence in the firm's internal control system and as such are willing to do limited substantive procedures. However, if auditors

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<sup>11</sup> [www.sarbanes-oxley.com](http://www.sarbanes-oxley.com) and <http://www.sec.gov> for the final rules and interpretations. Section 404 became effective for fiscal years ending after November 15, 2004 for accelerated filers.

<sup>12</sup> Refer to ISA200 Par. A42.

decide that the internal control system cannot be relied upon and there may be internal control deficiencies existing, the RMM is assessed as high and thus a low level of DR and AR is set. This would result in an increased investment in substantive testing, thus an increase in the quantity and quality of audit evidence (Arens et al. 2000). The relationship between client's RMM and the nature and extent of audit evidence gathered is inversely related.

### ***2.2.1 Empirical findings of the adequacy or the appropriateness of the Audit Risk Model***

There has been extensive research on the appropriateness of the audit risk model in audit engagements, results of which have been inconclusive (Allen et al. 2006). Libby et al. (1985), Houston (1999) and Dusenbury et al. (2000) show results which supports the underlying notion of the ARM. Libby et al. (1985) found that ARM is consistent with auditor's decisions. Dusenbury et al. (2000) found that the ARM does not understate the risk of material misstatement. As for describing auditor's behaviour, Houston (1999) concluded that in the presence of unintentional financial statement errors, the ARM works well in describing auditor behaviour. Moreover, a recent study conducted in Hong Kong; concluded that there is no need to revise the ARM but a need to ensure that external auditors and audit committee strictly abide by the professional accounting standards (Law 2008).

On the other hand, there are numerous studies which find the ARM to be inadequate. The main criticism is the assessment of the RMM. The standard allows for RMM to be a function of internal control risk and inherent risk even though internal control risk and inherent risk are independently assessed from each other (AICPA 2004). There have been instances where IR and CR have been used interchangeable (Haskins and Dirsmith 1995; Messier 2000). Messier (2000) study concluded that the inherent risk factors were used in the auditor's assessment of control and likewise for inherent risk assessment. Therefore, there is a level of knowledge-based dependence between the assessment of IR and CR. These studies provide evidence that IR and CR are not independent as proposed by the ARM. Moreover, Daniel (1988) and Strawser (1990) concluded that the ARM is actually inconsistent with auditor's

judgments. ARM provides information as to the quantity of audit evidence that ideally should be gathered, however, it falls short in terms of quality of audit evidence (Dusenbury and Reimers 1996). These limitations of the ARM have led some audit firms questioning the validity of the ARM and whether the model needs to be revised (Blokdijk 2004; Fearnley et al. 2005).

Following through from risk assessment is the literature on audit planning and audit resource allocation decisions. There have been discordant empirical results in establishing a link between risk assessment and audit planning. Mock and Wright (1993, 1999) findings concluded that there is no significant association between client risks and audit plans. However, earlier studies have found evidence linking risk assessments with audit planning decisions (Libby et al. 1985; Kaplan 1985; O'Keefe et al. 1994; Johnstone and Bedard 2001; Kizirian et al. 2005). Kizirian et al. (2005) provided evidence that the strength of the internal controls within organisations had a strong bearing on the audit planning judgments. The link between auditor's initial risk assessment and planned audit hours depended on the clarity of the organisation's internal control policies as well as auditor's perception of management's commitment to the internal control policies.

The findings of Mock and Turner (2005) concluded that audit resources such as audit staffing and nature of audit tests were associated with the assessment of fraud risk and overall client risk assessment. On the other hand, studies have highlighted that the need to retain clients does affect audit planning decisions which determine whether a misstatement is detected in the first place. Gramling (1999) provides empirical evidence that audit managers operating on narrow financial margins rely more on internal auditor's work as compared to audit managers whose clients emphasis a concern for audit quality.

While the audit risk model provides guidance on the relationship between AR, RMM and DR with audit investment, in actual fact, there are other factors that contribute to the decision on achieving a certain level of audit investment. In determining the quantity and quality of audit evidence one's decision making process would be influenced by the factors that make up the audit market.

## **2.3 Audit Market**

### ***2.3.1 Introduction***

Auditors having the professional auditing standards and procedures to serve as a guide in acquiring audit evidence in order to arrive at an audit opinion. However, such standards can only address the general case. Some engagements have unique elements. A number of factors affect the acquisition of audit evidence; the audit fee, accountability within the auditing firm, the client's control system, its events and transactions, cooperation of the client as well as the time frame set by the client. These factors will be discussed in this section.

### ***2.3.2 Audit Fee***

At the client acceptance phase, there are two types of contract that an auditing firm may enter into, a fixed fee contract or a cost reimbursement contract. A fixed fee contract is where client and auditors agree on a fee prior to the audit. In a cost reimbursement contract, the clients pay an ongoing fee as the audit progresses. The risks and audit procedures are greatly affected by the type of contract that an audit firm engages in. It has been ascertained that greater risk and incentives are associated with fixed fee contract as opposed to cost-reimbursement contract (Palmrose 1989; Hackenbrack et al. 2000; Sweeney and Pierce 2006). This is because at audit contract negotiations, clients and auditors do not have identical information regarding possible audit evidence acquisition. Clients have limited knowledge of auditor's procedures of evidence acquisition and auditors have limited information of the client's organisation practices. This creates a great risk in fixed fee contracts. With a fixed fee the cost of any unplanned procedures will be borne by the auditing firm. This may encourage dysfunctional behaviour in which auditors try at best to minimise audit costs by having tight time budgets in order to maximise profits (Alderman and Deitrick 1982; Lightner et al. 1983; Kelley and Margheim 2002). Audit fee studies assume that the audit fee changes freely with audit fee determinants (Simunic 1980; Francis 1984; Bell et al. 2001).

There have been a number of studies carried out on audit fees in the different audit markets. Table 2.1 provides a concise background on audit fee studies done in the different global markets.

**Table 2.1 Summary of existing literature on audit fees in the different audit markets globally.**

<b>Audit Market</b>	<b>Research</b>
United States	Palmrose 1986; Francis and Simon 1987; Simon and Francis 1988; Turpen 1990.
Canada	Chung and Lindsay 1988; Anderson and Zeghal 1994.
United Kingdom	Chan et al. 1993; Goddard and Masters 2000.
Australia	Francis 1984; Francis and Stokes 1986; Craswell et al. 1995.
New Zealand	Firth 1985.
Japan	Taylor 1997.
India	Simon et al. 1986.
Pakistan	Simon and Taylor 1997.
Bangladesh	Karim and Moizer 1996.
South Korea	Taylor et al. 1999.
Hong Kong, Malaysia and Singapore	Simon et al. 1992; Law 2008.

After the enactment of SOX 2002<sup>13</sup> all publicly listed companies were required to provide additional disclosures on audit fees for the two most recent fiscal years (Sarbanes-Oxley Act, 2002). This regulatory requirement brought about changes to the determinants of audit fees. SOX emphasise the importance of Internal Control over Financial Reporting (ICFR). With this additional responsibility placed on auditors, audit fees increased significantly for public listed companies (Ghosh and Pawlewicz 2009). Moreover, prior research also concluded that internal control weaknesses represent risk that is meaningful to financial statement users and audit

<sup>13</sup> This was enacted after a number of high profile corporate collapses in the US Audit Market, namely the Enron failure and its auditors, Arthur Andersen demise.

fees are higher for these firms in the first year following the implementation of SOX (Raghunandan and Rama 2006; Hoitash et al. 2008).

### ***2.3.3 Accountability***

Accountability is another contributing factor in audit planning. Increased competition has led to significant pressures to improve audit efficiency (McDaniel 1990; McNair 1991; Mock and Wright 1993). In the auditing firm being accountable to immediate supervisors for the decisions made in audit is vital. Senior auditors are accountable to the assistant managers and assistant managers are accountable to the managers and the managers to the partners. This hierarchical structure is important because of the business risk and litigation risk in which the audit firms are exposed to. Senior auditors at the initial planning stage are accountable to their superiors, to the partners and to clients and their performance and promotions are approved or recommended on how they are best able to handle these competing pressures (Abdolmohammadi and Wright 1987; Gibbins and Newton 1994; Abdolmohammadi 1999). There has been an extensive literature developed on accountability in auditing. Gibbins and Newton (1994) and Hun-Tong et al. (2002) stated that because of professional training, knowledge and task assigned as well as the level of expected accountability affects auditors' performance. Hun Tong et al. (2002) study found that the level of knowledge an auditor has and the level of accountability within a firm has an impact the auditor's performance. A low knowledge level with a high level accountability leads to conservative and over auditing, however high level of knowledge with high level of accountability does not lead to significant dysfunctional behavior. Furthermore, past accounting research shows that accountability generally leads to more complex cognitive processing, potentially resulting in enhanced accuracy and consensus (Ashton 1990; Johnson and Kaplan 1991; Messier and Quilliam 1992; Kennedy 1993; Tan 1995; Kida et al. 1998). In terms of performance assessment, individuals will conform to the views of those they are accountable to, in order to receive promising reviews even though this may result in dysfunctional behaviour (Peecher 1996; Rich et al. 1997; Lerner and Tetlock 1999).

In the planning stage of an audit, senior auditors after holding an audit meeting with the partner, managers and subordinates of the team, prepare time budgets and audit

programs. Research has shown that despite having professional and firm policies in place, the audit firm's organisational context may not be conducive in strengthening these policies; the superior's informal communication with subordinates may not be consistent with the formal communication of the firm (Dirsmith and Covaleski 1985; Aranya et al. 1981; Jamal 1997). This is not to say that superiors are not working in the best interest of the firm, competition pressures may entice partners to enhance efficiency (Maher et al. 1992) and this is informally communicated to the seniors by managers (Bierstaker and Wright 2001). Partner preference for efficiency or effectiveness may vary depending on a variety of factors including: the profitability of the client, percentage of partner and firm revenues represented by the client, the partner's risk preferences, and the partner's concerns about litigation (Farmer et al. 1987; Marxen 1990).

#### *2.3.4 The effect of competition in the market*

There has been extensive research on competition existing in the audit market and how this has resulted in reduced audit fees and increased dysfunctional behaviour in audit engagements. MacErlean (1993) study found that audit fees in the UK reduced as much as thirty three percent from previous year's fee. Moreover, studies have shown that client fee pressure have resulted in audit seniors reducing total budgeted chargeable hours even though there has been an increase in client business risk. Audit seniors are more concerned in minimising total audit costs, without considering the possible litigation costs that may occur if an ineffective audit is carried out (Margheim and Kelly 1992; Mock and Wright 1993; Bedard and Wright 1994; Houston 1999; Bierstaker and Wright 2001). This increased competition has resulted in cost-quality dilemmas for auditors (McNair 1991).

As noted earlier senior auditors and managers promotions are strongly performance based and an important criterion is meeting time budgets (Otley and Pierce 1996; Kelley and Margheim 2002). There is an incentive for senior auditors to maintain time budgets. By doing so audit partners will be convinced that the senior auditor can conduct an audit efficiently hence being assigned to higher financially valued clients (Bierstaker and Wright 2001). This continued pressure to minimise audit costs has been a contributing factor to auditors engaging in dysfunctional behaviour. Rhode

(1978) raised the issue initially with the conclusion that it was difficult for auditors to achieve a standard quality audit while under time pressure. The study cited premature sign offs. This led to numerous studies confirming this association between time budget pressure and dysfunctional behaviour (Alderman and Deitrick 1982; Lightner et al. 1983; Cook and Kelley 1988; Kelley and Margheim 1990, 2002).

### **2.3. Budget Pressure and Performance**

Dysfunctional behaviour threatens audit quality and this would have severe repercussion on a firm's reputation (as in the case of Enron and Worldcom). Studies have been undertaken to identify this behaviour, Alderman and Deitrick (1982) and Otley and Pierce (1996) findings noted the high occurrence of auditors signing off an audit step as having been complete when in actual fact it wasn't; that is, premature sign off. Moreover, Kelley and Margheim (1990) identified other behaviours such as failure to research an accounting principle, limited audit work performed on an audit step below an acceptable level, and lack of in-depth reviews of documents and acceptance of superficial client explanations. Another form of dysfunctional behaviour is auditors completing chargeable hours on personal time, thus under-reporting actual time spent on audit engagements. This is motivated by a desire to minimise budget over-runs (Lightner et al. 1983).

There is also the issue of allocation of senior and junior staff to various audit procedures. The chargeable audit hours are different for each ranked audit personnel; therefore, at the planning phase audit seniors may assign audit staff not based on expertise but rather on chargeable hours. Bierstaker and Wright (2001) study concluded that partners in an attempt to increase audit efficiency may reduce budgeted hours of more experience staff and assign these tasks to junior staff because of junior staff low chargeable rates tasks such as audit planning or tasks which has low-to-medium inherent or control risk. By maintaining the same level of hours but assigning a junior staff member, costs are minimised (Prawitt 1995). Thus, these empirical findings illustrate that budget pressures affect audit efficiency.

The preceding paragraphs have explained reasons as to why auditors engage in dysfunctional behaviour and examples of such behaviour. To further understand

auditor's rationale on audit planning decision making research has also been carried out on audit judgment heuristics and biases (Cohen and Kida 1989; Biggs et al. 1988; Smith and Kida 1991; Nelson and Tan 2005). These studies report conservative behavior, whereby, auditors tend to give more attention to, and are more influenced by negative information. Smith and Kida (1991) suggest that this phenomenon probably stems from auditors' loss functions and the wish to minimise economic losses. O'Keefe et al. (1994) indicates that high exposure to litigation risk motivates the auditor to produce a more "defensible" audit involving better documentation and tests. Furthermore, Johnstone and Bedard (2001) found little effect of risk on planned personnel hours, but showed that the audit firm responds to fraud and error risk factors by applying engagement planning strategies such as assigning more high risk specialist personnel, assigning more industry expert personnel, applying more intensive testing, and/or performing additional review. The next section will discuss the current audit market in Fiji.

## **2.4 Audit Market in Fiji**

In Fiji the professional accountant body is the Fiji Institute of Accountants (FIA). The membership of the body includes Fiji nationals as well as expatriates. Majority of the Fiji nationals receive their academic qualifications in Fiji, whereas the expatriate accountants receive their tertiary qualification from Commonwealth countries mainly Australia, New Zealand and UK. The promulgation of accounting standards in Fiji is carried out through the powers vested in the FIA Council on the advice of the Accounting and Auditing Standards Committee. There is minimal government interference and the institute is mainly driven by private interest of the "Big Four"<sup>14</sup> multinational accounting firms (Chand and White 2007). Being an associate member of the International Accounting Standards Board (IASB), the institute agreed on principle to fully adopt the International Financial Reporting Standards for time periods on and after 1 January 2007.

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<sup>14</sup> In Fiji, the "Big Four" accounting firms comprise DeloitteToucheTohmatsu (Deloitte), KPMG, PriceWaterhouse/Coopers (PwC), and Ernst and Young (EY).

There were four multinational accounting firms operating in Fiji prior to 2007. G. Lal & Company used to operate as DeloitteToucheTohmatsu until 2007. G. Lal & Company is now the largest locally operating accounting firm in Fiji. There are also a number of smaller locally owned accounting firms. As of 2013 there were seventeen listed companies on the South Pacific Stock Exchange (SPSE). Apart from the listed companies, other large entities in the Fiji market require the services of the auditing firms for the assurance of their stakeholders; in the financial sector, the public sector and entities that report overseas and pacific regional organisations headquartered in Fiji.

The entities are audited by the “Big Three” multinational accounting firms and G. Lal and company or the Office of the Auditor General. This is consistent with studies that have found that entities in emerging economies are likely to engage in the services of the multinational accounting firms (Francis et al. 2003; Choi and Wong 2007).The “Big Three” multinational accounting firms have a number of competitive advantages over the locally owned firms. The firms have reputational effects, access to audit training materials developed by the partner firms operating in international markets, use of specialised and skilled personnel and are able to limit costs through economies of scale, especially with the adoption of IFRS (Chand and White 2007; Francis and Wang 2008; Carson 2009).

## **2.5 Summary and Conclusion**

In this chapter, the theoretical concept of audit risk model and its elements were discussed. In a world, where audit fees, budget costs and information availability are held constant; the audit risk model could be applied without any qualification or reservation. As noted earlier, extensive research has shown that competitive pressure leads to audit hours or tests being strategically reduced and sufficient audit evidence may not be gathered. This may lead to impairment in audit effectiveness thus exposing audit firms to potential litigation and loss of reputation (Margheim and Kelly 1992; Mock and Wright 1993; Bedard and Wright 1994; Houston 1999; Bierstaker and Wright 2001). As discussed in Table 2.2, competitive pressures seem to exist in the Fiji audit market, with no significant real growth in audit fees in

previous years. Therefore, research findings found elsewhere could be expected to apply in Fiji.

Empirical research has highlighted the types of dysfunctional behaviour and motives for engaging in this behaviour. It is likely that auditors will engage in dysfunctional behaviour when exposed to competitive pressures. There are demands (Bonner 2008) for research that investigates factors that may impact on auditor's dysfunctional behaviour. One such factor that associates humans with dysfunctional behaviour is risk propensity. Many studies in psychology indicate that humans display differing propensity to engage in risky outcomes (Kogan and Wallach 1964; Rowe 1977; Fischhoff et al. 1981; Baird and Thomas 1985). The next chapter provides a discussion on dysfunctional behaviour providing supporting empirical evidence that dysfunctional behaviour in particular risk attitude is an important factor to consider in the auditing environment.

## CHAPTER 3

### Risk propensity

#### 3.1 Introduction

Risk and uncertainty play a role in almost every important economic decision. As a consequence, understanding individual attitudes towards risk is intimately linked to the goal of understanding and predicting economic behavior. Rode et al. (1999) draws a distinction between risk and uncertainty; with risk the probability of outcomes can be quantified, however, with uncertainty probability of information is lacking. For an organisation, better understanding and prediction of employee's economic behaviour would be beneficial as organisations will be able to assign individuals to roles best suited for the individual and the organisation as a whole. This is more so for organisation's operating in an environment with high exposure to business risk. The auditing firm is an example of such an organisation.

The audit profession is one where there is always a need for the use of professional judgment in assessing audit risk. This is due to the fact that in auditing, there is no set of objective guidelines in the Auditing Standards on which the auditors could base audit decisions. The auditing standard, ISA 200A32 specifically states auditors are to use professional judgment in the planning phase of an audit. For that reason, reiterating the points highlighted in the preceding paragraph, it is important for auditing firms to understand individual attitudes towards risk. Through this understanding, the right personnel can be assigned to the different cycles of audit and to clients, thus ensuring that audit assessments are ethical and in conjunction with the firm's mission, values and statement and the public's interest. Therefore, there is a need to understand auditor's decision-making processes in the planning stage.

There have been numerous studies carried out on individual and firm's attitudes towards risk (Kogan and Wallach 1964; Kahneman and Tversky 1979; MacCrimmon and Wehrung 1990; Sitkin and Pablo 1992; Forlani and Mullins 2000; Van der Pol

and Ruggeri 2008). However, there has been limited empirical research focusing on the effect of individual auditor's risk behaviour on the assessment of audit risk.

This chapter will provide a review of the literature on risk and behaviour towards risk. First, the definition of risk will be discussed. Followed by a discussion on the theoretical concepts of decision making and a detailed explanation is provided for individual characteristics of risk.

### **3.2 Definition of Risk**

Risk is ubiquitous in all areas of life and business. Before one can define risk, it is essential to understand that dissimilarity between risk and uncertainty. In 1921, Frank Knight (as cited in LeRoy and Singell 1987) summarized the difference between risk and uncertainty thus:

"... Uncertainty must be taken in a sense radically distinct from the familiar notion of Risk, from which it has never been properly separated. ... The essential fact is that "risk" means in some cases a quantity susceptible of measurement, while at other times it is something distinctly not of this character; and there are far-reaching and crucial differences in the bearings of the phenomena depending on which of the two is really present and operating. ... It will appear that a measurable uncertainty, or "risk" proper, as we shall use the term, is so far different from an un-measurable one that it is not in effect an uncertainty at all."

In simple terms Knight (1921) refers to risk as quantifiable uncertainty, a situation in which one fathoms the probability of outcomes with the given information. Uncertainty represents a random unknown, which cannot be controlled or predicted.

Risk is incorporated into many different disciplines from sciences to psychology to finance. Each discipline has its own definition of risk and as such there is no universal definition of risk. The International Organization for Standardization (ISO) published ISO 31000 in 2009 in which it defines risk as the effect of uncertainty on objectives. The term 'uncertainty' in ISO31000 includes both positive and negative

events that may or may not happen and uncertainties caused by ambiguity or lack of information. The various statutory bodies have its own framework of what constitutes risk. The Open Group, a statutory body in the computer sciences defines risk as the “probable frequency and probable magnitude of future loss” (An Introduction to Factor Analysis of Information Risk (FAIR) 2006; p8). The OHSAS (Occupational Health & Safety Advisory Services) promulgated OHSAS1800 an international occupational health and safety management system specification. It defines risk as “the product of the probability of a hazard resulting in an adverse event, times the severity of the event” (OHSAS 18001:2007).

When describing risk it is important to take into account that risk practitioners operate within their own specific practice areas and these practice areas have its perception of what constitutes risk. The empirical studies in the financial markets have well defined the concept of risk and developed models to explain the relationship of risk and expected returns (Fishburn 1977; Levy and Markowitz 1979; Gibbons 1982; Estrada 2002; Fama 2012 Markowitz 2012). The importance of understanding the relations of risk and expected return in the financial markets have led to the development of the Capital Asset Pricing Model (Sharpe 1964, 1977). It categorized financial risk into systematic risk, unsystematic risk and residual risk. These have contributed substantially to the understanding of financial markets. In the field of science and medicine, risk is defined as an objective reality that can be measured, controlled and managed (Hauptmanns and Werner 1991). Moreover, the medical and science domain views risk as any natural or health disaster that is waiting to happen, for example, the impending epidemic or looming natural disaster. To minimise these risks, a collective effort by all parties by means of applying knowledge, uncovering facts and suggesting remedial action must take place. In the domain of legal law risk as explained by Ewald (1999) is conceptualized as an event “... potential or actual—that creates disorder, of a detrimental and often serious kind, and where there is an identifiable victim and perpetrator.”

In the field of behavioural and organisational psychology there are arrays of definition of risk focusing on the subjective nature of risk. Reber (1995) defines risk as anything that threatens something of value. Furthermore, Brynes et al. (1999) provides the definition of risk taking as, “... the implementation of (goal directed)

options that could lead to negative consequences.” Holton (2004) paper in defining risk, states that there needs to be two main elements for risk to exist. The first is uncertainty about the potential outcomes from an experiment and the other is that the outcomes have to matter in terms of providing utility. To conclude all risk concepts have one element in common: the distinction between reality and possibility.

A number of theories have been developed to explain the decision making process one would undertake in a risky situation. In explaining differences of risk attitudes among individuals the following two landmark theories will be discussed in the Section 3.4; Expected Utility Theory (Von Nueman and Morgenstern 1947) and Prospect theory (Kahneman and Tversky 1979).

### **3.3 Variables that affect judgment and decision-making**

Bonner (1999) has provided three main determinants that affect the judgment and decision making (JDM); task, environment and person. These are fundamental to the quality of one’s decision making process. In the auditing context, the outcome of an audit affects a number of parties, the client, auditing firm, the accounting profession, financial institutions and the public. Therefore, it is important that there is continuous discussion on the three main determinants and its relation to the auditing profession. This research, however, is focusing on one of the three main determinants; that is, the ‘person’ variable.

#### ***3.3.1 Scope on task variables***

Bonner (1999) defines task as a piece of work assigned to or demanded of someone. There are a number of variables within or across a task that can affect an auditor’s decision making process such as task complexity, the framing of tasks, and information relevance.<sup>15</sup>

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<sup>15</sup> These are not the only important task variables for accounting JDM. For further discussion refer to Bonner (2008).

### *3.3.1.1 Task complexity*

There are two branches that fall under task complexity, task difficulty or task structure. Task difficulty refers to the amount of cognitive processing abilities the task requires (Kahneman 1973). Task structure refers to the level of specification (for example, information order and program structure) and what is to be done in the task (Simon 1973).

Research on task difficulty have shown that the amount of cognitive processing can differ with the amount of information cues available and its relation to outcomes for decisions and the number of alternatives to consider (Kahneman 1973; Campbell 1988; Payne et al. 1993; Simnett 1996; Trotman and Wood 1991; Tan et al. 2002). With regards to task structure, Prawitt (1995) and Abdolmhoammadi (1999) found that auditor's judgments differ depending on whether the tasks are structured or unstructured and that audit firms assign more experienced staff to more complex and unstructured tasks.

### *3.3.1.2 Framing of tasks*

Framing of tasks refers to the way individuals try to influence the outcome of a decision by constructing and wording tasks either in positive or negative terms. There has been extensive research in this area indicating that framing of tasks does have an effect on JDM (Tversky and Kahneman 1981; White et al. 1993; Dusenbury 1994; Schepanski and Kelsey 1990; Druckman 2001). On the other hand there have been studies in auditing stating that framing effect does not affect decision processes (Kida 1984; Trotman and Sng 1989; Asare 1992; Chung and Monroe 2000).

### *3.3.1.3 Information Relevance*

Information relevance refers to the sequence in which an individual receives information cues. This domain uses the predominant "belief-adjustment model" (Hogarth and Einhorn 1992). The model predicts that order effects occur because people process sequential information using an anchoring-and-adjustment strategy. For example, Libby and Tan (1999) reported that analysts who receive warning analyses on the earnings report prior to the actual earnings report for the year; tend to

make negative decisions as compared to analysts who receive both reports simultaneously proving the existence of recency effects. There have been studies carried out in the tax field (Pei et al. 1990; Cuccia and McGill 2000) and in the audit field (Asare 1992; Ahlawat 1999; Michael 2006 ) supporting the recency effect.

### ***3.3.2 Scope on environment variables***

Environmental variables are factors that surround individuals while they perform JDM tasks. It does not relate to any specific person or task but are general to all people and all tasks in a particular environment (Bonner 1999). The environmental variables discussed in this section are monetary incentives, accountability, time pressure, feedback and standards and regulations.<sup>16</sup>

#### *3.3.2.1 Monetary incentives*

There has been extensive research carried out on the link between monetary incentives and employee's performance. Monetary incentives are provided for by firms with the goal that this would entice employees to improve productivity (Lawler 1990; McAdams and Hawk 1992; Conrad 1994). Tan and Libby (1997) found that auditor's compensation may be tied to the extent that their JDM conforms to the professional standards. Moreover, Houston (1999) study on the effect of litigation risk and planned audit hours found that in the absence of cost-cutting incentives auditors are willing to increase budgeted audit hours for clients with higher litigation risk. Research has also shown that auditors are willing to accept client's preference if it will result in client retention or reduce audit costs (Cohen and Trompeter 1998; Gramling 1999; Libby and Kinney 2000). These studies show how auditors JDM are affected by monetary incentives. They are able to amend the extent of their work so as to achieve the desired outcome.

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<sup>16</sup> These are not the only environmental variables for accounting JDM. For further discussion refer to Bonner (2008).

### *3.3.2.2 Accountability*

Accountability is the “implicit or explicit expectation that one may be called on to justify one’s beliefs, feelings and action to others” (Lerner and Tetlock 1999). It is an important element of the environment for accounting professionals, as auditors are answerable not only to immediate supervisors but to the public and respective institutions.<sup>17</sup>

Research has proven that auditors who are answerable to immediate superiors are more cautious in the audit approach as compared to non-accountable auditors. Auditors need to prove self-worthiness and strive to satisfy superior’s expectation lead them to improve audit efficiency even though there are no monetary incentives in place (Johnson and Kaplan 1991; Lord 1992; Kennedy 1993; Libby and Luft 1993). Furthermore, Peccher (1996), Brown et al. (1999) and Tan and Libby (1997) reiterated the point of satisfying expectation; results showed that when superior’s or client’s expectations are known, auditor’s judgments tend to be closer to the known views.

### *3.3.2.3 Time Pressure*

Time pressure is one of the most challenging environmental factors that every auditor is faced with. Time pressure is present in two forms, the first is meeting client deadlines and the second is keeping within time budgets. Auditors are required to complete an audit at a specific point in time simultaneously keeping within the projected time budget for each audit program phase (Solomon and Brown 1992). Auditors are required to prepare time budgets because of fee pressure and the need to minimise costs. Concurrently, complying with professional standards and being mindful of other external factors such as litigation liability. This could in adversely affect JDM; audit effectiveness (Lightner et al. 1983; McDaniel 1990; Dezoort and Lord 1994) and underreporting of time (Kelley and Margheim 1990).

### *3.3.2.4 Feedback*

Feedback is information that is received to the decision maker after the JDM task has been performed (Reber 1995). There are two types of feedback, outcome feedback

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<sup>17</sup> AICPA 2004 requires subordinate auditor’s work to be reviewed by the immediate supervisor.

and cognitive feedback. Outcome feedback is information received on the quality of the outcome whereas cognitive feedback is explanatory information provided on the task, JDM processes and the functional validity of information. Accounting studies in management have shown that cognitive feedback has a positive effect on JDM, as opposed to when decision makers receive only outcome feedback (Gupta and King 1997; Ghosh and Whitecotton 1997; Briers et al. 1999). On the other hand, Ashton (1990) found that auditors with decision aids and with outcome feedback produce more accurate results on bond ratings than auditors who received no outcome feedback or decision aids.

#### *3.3.2.5 Group vs. Individual Information Processing*

The term group refers to a collection of two or more individuals who work interactively and concurrently to perform some JDM task (Solomon 1987). There are conflicting results as to whether group JDM are of higher quality to that of individual JDM. Trotman and Yetton (1985), Stocks and Harrell (1995) and Kerr and Tindale (2004) found that interacting group JDM quality exceeds the average of individuals and that the groups responded more positive to increases in information levels. On the other hand, Sutton and Hayne (1997), Guzzo and Dickson (1997) and Armstrong (2001(a)), found that characteristics of group members were imperative to the quality of JDM. The less diverse are the group members' skills and cognitive processes, the lower the JDM quality in comparison to that of the most outstanding individual's JDM. These findings indicate that even though JDM of a firm can be improved by grouping, it is very important that the individuals in the group are able to complement each other in terms of skills and cognitive processes.

#### *3.3.2.6 Standards and Regulations*

The last important environmental variable to be discussed is the effect of standards and regulations on the quality of JDM. The auditing profession is governed by auditing standards promulgated by the International Auditing and Assurance Board (IAASB). In addition, auditors as independent examiners of financial statements must also be knowledgeable of accounting standards. Trompeter (1994) found that the restrictiveness of accounting standards limits audit partner's accounting treatment

choices to that of client's preference. However, Kadous et al. (2003) found that the suggested regulation standards requiring auditors to make a separate assessment of the appropriateness of accounting treatment led auditors to respond to client-related incentives. Hronsky and Houghton (2001) found that the wording of standards in relation to extraordinary item accounting were subjective. Auditors attach different meanings to the standard depending on the wording and also make different decisions in relation to the classification of extraordinary items. There have been mixed results due to the nature of the professional standards, that is, it being "principle-based" as opposed to "rule based" (Nelson 2003).

### ***3.3.3 Scope on person variables***

Person variable relates to "characteristics the decision maker brings to the task or the cognitive processes he or she uses while making a judgment or decision" (Bonner, 2008). The person variables discussed in this section are intrinsic motivation, confidence, gender, and cultural background and risk attitudes.<sup>18</sup>

#### ***3.3.3.1 Intrinsic motivation***

A person is said to be intrinsically motivated to perform a task if there are no rewards provided to him or her except the satisfaction of successfully completed the task itself (Deci 1972). Intrinsic motivation may take the following three forms: motives relating to a certain level of satisfaction (Humphreys and Revelle 1984), motives relating to achievement or avoidance of failure (Bandura 1997) and motives relating to power or control (Kanfer 1990). Kanfer (1990) study indicated that the need to increase ones knowledge base so as to master the task in the future motivates one to carry out the task efficiently. On the other hand, studies have proven that being highly motivated is not sufficient in order to carry out activities well. It is just as important that the individual is equipped with the required knowledge and abilities. Lacking the correct skills or abilities may fail or limit one to perform well in a task (Lawler 1994; Bonner et al. 2000; Bonner and Sprinkle 2002).

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<sup>18</sup> It should be noted that there are other variables such as morale, affect and abilities. Due to space constraint, the variables with extensive research are discussed in this section. For further reading refer to Bonner (2008).

### *3.3.3.2 Confidence*

Reber (1995) defines confidence as the “assuredness” either in one’s JDM or in one’s knowledge. Research to date has focused on the effect of overconfidence on the quality of JDM. A number of behavioural studies concluded that market inefficiencies as being principally the result of investor over confidence (Daniel et al. 1998; Gervais and Odean 2001; Nelson et al. 2001). Koehler (1991) proposes that over confidence is positively associated with the level of knowledge acquired. With regards to reliance on decision aids, Whitecotton (1996) concluded that as auditor’s confidence level increases, reliance on decision aids reduces.

### *3.3.3.3 Gender and Cultural background*

There has been extensive literature on whether gender and culture could explain the disjointed results of JDM tasks. Studies have been carried out to investigate gender differences in relation to the following; confidence, motivation and risk attitudes. There is evidence to suggest that women and men differ in confidences level, with men having higher confidence levels (Halpern 2000). In terms of motivation, men tend to be motivated by power and control in job situations (Feingold 1994; Ahuja and Thatcher 2005). In terms of risk attitudes, women tend to be more risk averse than their male counterparts (Byrnes et al. 1999; Slovic 2000).

With regards to cultural aspects, Hofstede’s (1980) study provided five dimension schemes to classify and explain cultural differences. Shiraev and Levy (2001) concluded that there are differences in terms of the level of intelligence, reasoning and verbal communication among people of different cultural background. There have been differences noted across cultural groups with regards to motives relating to achievement and concern for social standing (Bond and Smith 1996; Shiraev and Levy 2001; Slovic 2000). Thus, it can be concluded that culture and gender does affect a number of factors that influences the quality of JDM.

### *3.3.3.4 Risk attitudes*

Risk attitude can be defined as a person’s standing on the continuum from risk aversion to risk seeking. It is commonly considered to be a personality trait, and

greater risk taking is sometimes found to be associated with greater personal and corporate success (MacCrimmon and Wehrung 1990). Risk attitude can be classified as risk averse, risk neutral or risk seeking (Hogarth 1987). There have been a number of theories explaining differences of risk attitudes among individuals. Expected utility theory (Von Neuman and Morgenstern 1947) assumes that individuals have stable and rational preferences and that preference for a particular option does not depend on the context. On the other hand, Prospect theory (Kahneman and Tversky 1979) assumes that a preference for a particular choice is dependent on how the choice is being described or “framed”. Moreover, certain accounting studies refer to affective reactions, stating that individual’s risk attitude is affected by their experience to immediate affective reactions (Loewenstein et al. 2001; Smith et al. 2002). Lewis (1980) found differences in loss functions across auditors relying on the expected utility framework. Sitkin and Weingart (1995) study found that situational characteristics as well as a person’s preference for risk greatly affected their JDM in risky situations.

Bonner (2008) reveals that there is limited research on risk attitude and its effect on quality of JDM. This thesis carries out an empirical research on risk attitude, in particular risk propensity and its effect on audit risk. Section 3.5 will provide a detailed discussion on risk attitude and the three categories that fall under risk attitudes. The next section discusses the theoretical concepts that predict economic behaviour.

### **3.4 Decision theoretical concepts of risk**

Before discussing the theoretical underpinnings to explain the decision making processes under risky situations, the different risk preferences will first be addressed. Early studies have shown that the mind-sets towards risk are a core factor in decisions and choice. An individual’s view and approach to risk can take the following three forms; risk-averse, risk-neutral or risk-seeking (Kahneman and Tversky 1979; Hogarth 1987). Risk-averse individuals are extremely cautious in decision making and will not participate in a fair game. The risk-averse individual will choose a certain outcome as opposed to the uncertain outcome even though the expected returns are lower. The risk-neutral individual is indifferent to participating

in a fair game. Lastly, risk-seeking individuals will chose the riskier option as opposed to the certain outcome, even though its expected return may be lower. Why is there different risk behaviour among individuals? One would have to study and understand the process mechanism through which risk attitudes operate.

The existence of the different aspects of the actual processes has led to the development of a number of decision theories. In the classical decision theory, risk is commonly referred to as the resonate change in the distribution of possible outcome, the likelihoods of these outcomes eventuating and the subjective values assigned to it. The measurement of risk may either be by nonlinearities in the revealed utility of money or by the various changes in the probability of likely outcomes in relation to a particular alternative (Pratt 1964; Arrow 1965). In fact all theories of choice assume, *ceteris paribus*, that risk is negatively associated and expected gain is positively associated, with the attractiveness of an alternative. For example, Lindley (1971) noted that decision makers preferred larger expected returns to smaller ones provided all other factors, such as risk, are held constant. Arrow (1965) noted that decision makers preferred smaller risk to larger ones provided all other factors, such as expected returns, are held constant.

On the other hand, there have been studies concluding that individuals address risk by looking at the probability of the events eventuating disregarding the weight of the loss. Kunreuther (1976) empirical findings suggested that individuals tend to overlook possible events that are very unlikely despite it having a high loss outcome and these same individuals would consider events that are highly probable despite it having a relatively low loss outcome. Moreover, studies have concluded that in addressing decision making, individuals tend to look at a few possible outcomes rather than the whole distribution and measure variances in relation to these few points (Alderfer and Bierman 1970). Furthermore, with regards to communicating risk, Karelitz and Budescu (2004) found that individuals are more comfortable with verbal descriptions of risk than with numerical descriptions, even though the translation of verbal risk expressions into numerical form shows high inconsistencies and context dependence.

In normative theory, a rational decision maker would choose the alternative with the highest expected value or expected utility. Expected utility theory calculates highest expected utility as the product of probability of outcomes eventuating and their values (Von Neumann/Morgenstern 1953). However, evidence by Slovic et al. (1977) suggests that likelihoods of outcomes and the values enter into calculations of risk independently, rather than as products. Prospect theory explains that given the same risk situations, different individuals will assess risk differently (Kahneman and Tversky 1982). This could be attributed to the fact that individuals have unique cognitive biases and heuristics that affect risk perception by influencing the way decision-makers gather and interpret. It is evident that how individuals define or address risk may be different from the definitions provided for in the theoretical literature. In the following section, the two dominant theories in decision making process will be discussed.

#### *3.4.1 Expected Utility Theory*

The work of John von Neumann and Morgenstern in their ground breaking book *Theory of Games and Economic Behavior* founded the Theory of Expected Utility (EU) (Von Neumann and Morgenstern 1947). In expected utility theory, a decision is determined by the sum of utilities of each outcome in the prospect weighted by the probability of the outcome. For illustrative purposes, consider a gamble that gives  $p_i$  chance at  $x_i$ , which expected utility of this gamble is  $\sum p_i u(x_i)$ , where  $u(x_i)$  measures the “utility” of receiving outcome  $x_i$  (as cited in Wu et al. 2004). Von Neuman and Morgenstern (1947) stated that the shape of the utility function will be able to determine the risk attitude of an individual. For risk-averse behaviour in the case of insurance purchases, the shape of the utility function will be concave and the utility function will be convex for risk-seeking behaviour as in the case of purchasing lottery tickets (Markowitz 1952). The theory assumes that all individuals are risk averse and only under unusual circumstances would this differ (Von Neumann and Morgan 1953). In choosing alternative outcomes, the theory predicts that a rational decision maker will chose the outcome which has the highest expected utility.

Early findings supported the assumption laid out by expected utility theory. In the gambling context, Pratt (1964) and Arrow (1965) posited that individuals when given

one alternative, where the given outcome is certain, and another which is a gamble; both having the same expected value, individuals tend to take on a cautious attitude and choose the certain outcome. Individuals are generally risk averse and would have to be compensated for differences in possible outcomes. Therefore, the greater the return in a situation, one would expect greater risk involved.

However, many studies have questioned the general assumption of individuals being risk averse and found the theory of EU to be descriptively inadequate. Mueller (1969) and Kunreuther (1976) found no evidence of a positive relationship between risk and return. In addition, extensive studies conducted revealed that most individuals demonstrate a mixture of risk averse and risk seeking behavior. When making a risky decision, the decision maker relates its returns to a reference point. For returns above the target, majority of individuals appear to be risk averse and for returns below the target level, individuals tend to be risk seeking (Fishburn 1977; Fishburn and Kochenberger 1979; Kahneman and Tversky 1979; Laughhunn et al. 1980). These findings violated the two EU principles. The two being that utility is necessarily linear and that utility is dependent on final wealth. In addition, EU could not comprehend a situation whereby an individual could engage in two distinct risk attitudes, for example purchase insurance and simultaneously purchase lottery tickets. Rabin (2003) study further highlighted the pitfalls of EU theory in predicting human behaviour in a lottery with high and low stakes at hand. These observations have led to the development of prospect theory (Kahneman and Tversky 1979).

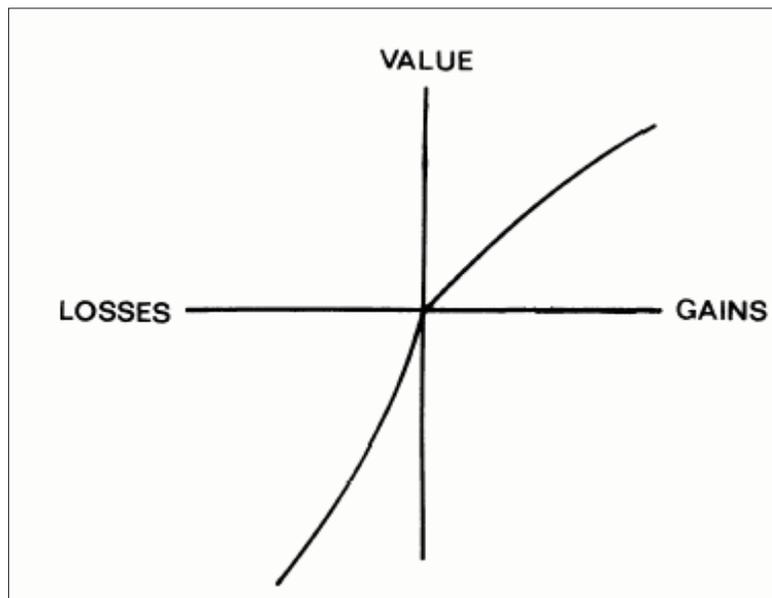
### 3.4.2 *Prospect Theory*

In 1979 Kahneman and Tversky developed an alternative model for decision making under risk to counter the theory of expected utility. In their renowned article *Prospect theory: An analysis of decision-making under risk*, they critiqued the existing descriptive model and provided their own premises of decision making process through the establishment of prospect theory. Expected utility theory assumes that individuals are generally risk averse. However, Kahneman and Tversky (1979) stated that individuals may be risk-averse and risk-seeking. It is not one or the other. They demonstrated this by presenting a gambling case study to the subjects. They found that 84% of subjects preferred \$500 for sure to a .50 chance at \$1000, but 72%

preferred a .001 chance at \$5000 to \$5 for sure. The first choice demonstrates risk aversion for moderate probabilities, the second risk-seeking for small probabilities. When choices involve losses, the pattern reversed: 69% chose a .50 chance at losing \$1000 to losing \$500 for sure, and 83% chose losing \$5 for sure over a .001 chance at losing \$5000. For losses, subjects were risk-seeking for moderate probabilities and risk-averse for small probabilities. In prospect theory, the value of each outcome is multiplied by a decision weight. Thus, the two essential features were a *value function* and a *probability weighting function*. In expected utility theory, the utility function is defined over final wealth states, an assumption that is known as asset integration. In contrast, the value function in prospect theory,  $v(\cdot)$ , is defined over changes in wealth rather than absolute wealth levels. The function is concave for gains ( $v''(x) < 0$  for  $x > 0$ ), convex for losses ( $v''(x) > 0$  for  $x < 0$ ), and exhibits “loss aversion”, *i.e.*, the function is steeper for losses than gains ( $-v(-x) > v(x)$  for  $x > 0$ ) (Kahneman and Tversky 1979).

Figure 3.1 provides a graphic representation of the function defined in terms of gains and losses. The curve is concave for gains and convex for losses, and more steeply sloped for losses than gains.

**FIGURE 3.1:**  
**A stylised prospect theory value function (Kahneman and Tversky 1979).**



In addition, Tversky and Kahneman (1992) provide further explanation as to explain the change in risk attitudes within individuals. The pattern has become known as the four-fold pattern of risk attitudes and can be summarized in the following table (Tversky and Kahneman 1992).

**Table 3.1 Four-fold pattern of risk attitudes (Tversky and Kahneman 1992)**

	Small Probabilities	Medium to large Probabilities
Gains	Risk-seeking	Risk-averse
Losses	Risk-averse	Risk-seeking

Therefore, prospect theory assumes people overweight the value associated with low variance (that is, more certain) outcomes and underweight the value of high variance (that is, less certain) outcomes. This effect yields the general prediction that when reasoning about gains, individuals should prefer those associated with the greater degree of certainty, even when the riskier option is more valuable. Conversely, when reasoning about losses, individuals should favor riskier options, even when the more certain outcome is smaller in magnitude.

Since the inception of prospect theory there have been extensive studies in support of its predictions across a number of decision-making theory contexts (Bowman 1980; Laughhunn et al. 1980; Fiegenbaum and Thomas 1988; Biswas and Blair 1991; Barberis et al. 2001; Betts and Taran 2003). Bowman (1980) and Fiegenbaum and Thomas (1988) study concluded that firm’s relationship of risk and return were that of negative in nature. Risk was measured by variance of return of equity. It found that individual’s attitude towards risk and return was incorporated into the corporate organisational behaviour. Their findings countered the expected utility theory of positive association between risk and rewards. Furthermore, studies found that risk-seeking individuals do not see a feasible alternative thus taking the risk, confident of a successful outcome. West and Berthon (1997) stated that that “successful risk

taking individuals are likely to believe that they can beat the odds, that nature is good to them, and that they have special abilities.” There has been literature in various other fields with regards to risk; in relation to income-tax research. Schepanski and Kelsey (1990) provide evidence consistent with prospect theory's claim. They suggest that the current asset position may be an appropriate reference point, and that individuals are risk averse for gains above that point and risk-seeking for losses that would drop them below that point. Similar behaviors were found in managerial-accounting and financial-management studies (Mowen and Mowen 1986; Lipe 1993; Sullivan and Kida 1995; Keith and Chen 2005). Coleman (2007) also found that individuals with low incomes and less wealth tend to be having a higher risk propensity. Implying that person below their preferred target level of income tend to be risk seeking.

In conclusion, expected utility theory predicts that individuals are generally risk averse unless faced with unusual circumstances. However, prospect theory assumption clearly illustrates that individuals have a mixture of risk seeking and risk-averse attitude and that framing of situations have an effect on the risk behaviour. As Kahneman and Tversky (1972) stated that individuals differ in their attitudes towards risky situations and towards money. Applying the notion of prospect theory to auditing, one can infer from the requirements of professional judgment that given the same audit planning task to two different auditors each auditor can assess internal control risk differently depending on how they view the situation in terms of what they have to gain and what they have to lose by choosing a course of action. The next section will discuss the determinants of risk behaviour and a detailed discussion on risk propensity will be provided as it is the basis of this thesis.

### **3.5 Determinants of Risk Behaviour**

#### ***3.5.1 Introduction***

Douglas and Wildavsky (1982) noted that one's attitude toward risk is an unwavering property and is related to aspects of the personality development and/or culture. As noted in Sitkin and Pablo (1992), past studies have identified three individual

characteristics that are determinants of risk behaviour: risk preferences, risk perceptions, and risk propensity.

### ***3.5.2 Risk Preference***

Sitkin and Pablo (1992) defined risk preference as an individual trait whereby individuals chose certain options because of the high-risk associated with it. These individuals prefer the riskier option because of the challenges or zeal for higher achievement (Brockhaus 1980).

### ***3.5.3 Risk Perceptions***

Risk perception is defined as “a decision maker’s assessment of the risk inherent in a situation” (Sitkin and Pablo 1992). In the assessment of the level of risk in a situation, an individual takes into account problem framing; top-management team homogeneity; social influences; problem domain familiarity; and organizational control systems. To some degree, an individual’s risk propensity has an effect of how one perceives risk in a situation. Individuals with risk-seeking propensity will perceive risks to be lower than individuals with risk-averse propensity. Risk perception is an important explanatory factor, which can account for variations in individual risk behaviour within the boundaries defined by risk propensity (Sitkin and Weingart 1995; Pablo 1997; Keil et al. 2000; Cho and Lee 2006).

### ***3.5.4 Risk propensity***

Risk propensity is the third individual characteristics that influences risk behaviour. Risk propensity has been conceptualised most frequently as an individual's risk-taking tendencies to avoid or take on risks. Risk propensity has two underlying themes. The first relates to prospect theory (Kahneman and Tversky 1979) and the second considers the individual difference factors such as personality, which could influence risk taking. For example, MacCrimmon and Wehrung's (1990) study on executive manager’s risk behavior theorises risk propensity in terms of “measures of willingness to take risks.” Empirical studies have found consistent patterns of risk taking or risk aversion that influence how risks are evaluated and what risks are

deemed to be acceptable (Kogan and Wallach 1964; Rowe 1977; Fischhoff et al. 1981; Baird and Thomas 1985; Ghosh and Ray 1992; Sitkin and Weingart 1995).

This thesis, will be investigating the effect of risk propensity on individual auditor's decision making. As such the next section will discuss in detail the literature of risk propensity existing in across the different organisational context.

### **3.6 Risk Propensity of Auditors**

Audit planning is the initial step in conducting an audit. Auditors who are in charge of audit planning are required to assess audit risk. The assessment of audit risk will determine the overall efficiency and effectiveness of an audit. Kogan and Wallach (1964) study concluded that individuals reacted differently when presented with the same scenario, some have a tendency for taking risks while others avoided specific risks. Therefore, it is important to understand risk propensity of individual auditors, and its effect on economic decision making. Leigh (1999) defined risk propensity as the willingness to take on risk that could involve some potential harm but at the same time provide opportunities to obtain some benefits.

Risk propensity and its effect on individual decision making have been studied extensively in various professional areas. In the managerial settings there has been a plethora of empirical studies carried out on managers' and entrepreneurs' risk propensity. Studies found that in domains of losses managers and entrepreneurs whose wealth was below the preferred target level would exhibit risk seeking behaviour (Brockhaus 1980; Pratt 1964; Arrow 1965; MacCrimmon and Wehrung 1986, 1990). In addition, studies have also assessed the differences in the level of risk propensity between entrepreneurs and managers and the reasons for these differences (Stewart and Roth 2001, 2004; Miner and Nambury 2004). Stewart and Roth (2001) meta-analysis found that entrepreneurs have a higher propensity of risk as opposed to managers and that risk propensity was a vital component for business growth. However, the meta-analysis findings of Miner and Nambury (2004) stated that entrepreneurs were more risk avoidant than managers. These conflicting studies indicate that risk propensity is consolidated issue in the managerial settings.

In the taxation profession, prospect theory is seen to apply where the tax payers may take on tax avoidance as to tax evasion. Studies found that tax payers who had a lot to lose in terms of high probability of paying a huge amount of tax penalties if found by the taxation authority were less likely to take on an aggressive tax position (Collins et al. 1990; Fischer et al. 1992; Jackson and Hatfield 2005). Tax preparers concerned with retaining clients were less likely to recommend an aggressive tax position for the individual clients if there is a high probability of tax audit by the regulatory body then when it is low (Collins et al. 1990). Furthermore, there have been studies investigating risk attitude and market behaviour (Ang and Schwarz 1985; Guth et al. 1997; Pennings and Smidts 2002; Fellner and Maciejovsky 2007). Ang and Schwarz (1985) and Guth et al. (1997) empirical studies concluded that risk attitudes had little to do with final portfolio holdings. There exists a weak correlation between individuals risk attitude and portfolio holding decisions. However, other studies have concluded that there is an inverse relationship between risk attitude and the observed market activity. Using binary lottery choices as a measurement of risk attitude, the studies demonstrated that the higher the degree of risk aversion the lower the observed market activity (Pennings and Smidts 2002; Fellner and Maciejovsky 2007).

In the health sector, the current healthcare environment is demanding innovation. Studies were carried out with respect to the nursing profession. Crier and Schnitzler (1979) and Smith and Friedland (1998) studies found that nurse manager's risk propensity depended on the situation presented on the level of education attained. Nurse managers are in a position to decide on the patient care delivery process. It was found that managers who had low probability to lose and high level of education were more than willing to take on innovative ways of delivering patient care as opposed to nurses who were more conservative and stayed with the true and tried method.

Risk propensity is a developing field of study and its importance in behavioural research has grown. Although prospect theory has been clearly established as cited in the literature of managerial accounting, taxation and health, there are empirical studies showing contrasting results. Hershey et al. (1982) and Fagley and Miller (1990) studies did not find any framing effects, and negative pattern of risk

propensity and perceived level of risk have been observed. These contradictory findings have led Sitkin and Pablo (1992) to re-conceptualise the determinants of risk behaviour, suggesting that the two key inputs to risk taking are risk perception and risk propensity, with risk propensity conceptualized as a confluence of dispositional tendencies, cognitive inputs and past experience.

However, while these differences are acknowledged, in this thesis prospect theory provides empirical grounds to explain the differences in the risk propensity of auditors. As witnessed there have been extensive research carried out on risk propensity across the different professions, however, there has been minimum research done in auditing. It is hope that by highlighting the existence of risk propensity literature in other professions, the relevance of studying risk propensity in the auditing profession will be seen.

### **3.6 Summary and Conclusion**

This chapter provided the literature showing the main theoretical and empirical studies of judgment and decision making. It has been highlighted by Bonner (1999) that there are three main determinants that affect JDM; Task, Environment and Person. After which it specifically address the person variable risk behaviour, providing decision theoretical concepts of risk and attitudes towards risk.

This chapter has also provided an overview of risk propensity and various theories have been developed to explain why given similar situations, different individuals would assess risk differently. In the next chapter, the link between audit and risk propensity will be developed, thus generating the hypothesis.

## CHAPTER 4

### Modelling audit judgement

#### 4.1 Introduction

In the planning phase of an audit, auditors as per ISA 200 are required to achieve an acceptable level of audit risk to obtain sufficient and appropriate audit evidence. To achieve an acceptable audit risk, auditors are to apply professional judgment (ISA 200; k). The regulatory requirement for the application of subjective assessment have opened gateways of inconclusive empirical results in the assessment of audit risk components and audit program planning (Ashton 1974; Joyce 1976; Ashton and Brown 1980; Libby et al. 1985; Cohen and Kida 1989). The failure to achieve uniformity in the decision making results among auditors have attracted vast interest in studying auditor's judgment and decision making processes (Biggs et al. 1988; Cohen and Kida 1989; Smith and Kida 1991; Solomon and Trotman 2003; Trotman 2005).

#### 4.2 Empirical and theoretical evidence to the development of the hypothesis

##### 4.2.1 *Internal control risk*

Chapter Two discussed in detail the application of the conceptualised model used in the planning stage, the audit risk model. In this thesis, audit risk is operationalised through the assessment of internal control risk, thus internal control risk will be discussed from here and on.

Internal control risk was chosen for the main reason that it has gain prominence in the Sarbanes Oxley Act (SOX). After the collapse of a number of corporate organizations, there have been new mandates in the SOX for additional disclosures on the assessment and effectiveness of internal control. Section 302 and 404 of the

SOX<sup>19</sup> relates to internal control over financial reporting. SOX require top management to regularly set up and maintain an effective internal control. In addition, management is to conduct annual assessments on its internal control procedures and report of any changes that have taken place. The firm's auditors are also required to provide opinion on the validity of the firm's assessment. In addition, ISA 400 par 2 dictates that auditors "...should obtain an understanding of the accounting and internal control systems,<sup>20</sup> sufficient to plan the audit and develop an effective audit approach. The auditor should use professional judgment to assess audit risk and to design audit procedures to ensure it is reduced to an acceptably low level." Due to this regulatory requirement auditors would have to ensure that internal control risk assessment is carried out extensively and with due care. This assessment will ensure that sufficient audit evidence is collected to reflect the client's internal control system. The subsequent section, will discuss the second component of this thesis, auditor's dysfunctional behavior.

#### ***4.2.1 Risk Propensity***

ISA is of the opinion that relevant audit training, knowledge and expertise should mitigate any different individual dysfunctional behaviour that may impinge on professional judgment. However, due to the disagreement in consensus amongst empirical studies there have been extensive studies carried out on auditor's dysfunctional behaviour. Several studies have tried to explain why some audits involve a higher proportion of planning hours by investigating the effect of audit judgment heuristics and biases (Biggs et al. 1988; Cohen and Kida 1989; Smith and Kida 1991). Chapter Three has addressed the various aspects of an individual auditor's dysfunctional behavior and its effect on decision-making. Bonner (2008) made a call that more research should be done on investigating the effect that risk

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<sup>19</sup>The focus of SOX 302 is on disclosure of controls and procedures, while SOX 404 focuses on internal control over financial reporting. Detailed rules can also be found in Items 307 and 308 of Regulation S-K. Under Section 404, auditors issue three opinions in an annual financial report: one on the financial statements, one on management's assessment of internal control effectiveness, and a third on the effectiveness of internal control over financial reporting (PCAOB 2004).

<sup>20</sup> ISA 400 par. 8 'Internal control system' means all the policies and procedures (internal controls) adopted by the management of an entity to assist in achieving management's objective of ensuring, as far as practicable, the orderly and efficient conduct of its business, including adherence to management policies, the safeguarding of assets, the prevention and detection of fraud and error, the accuracy and completeness of the accounting records, and the timely preparation of reliable financial information.

propensity has in the auditing environment. Harrison et al. (2005) explained that not only is it sufficient to identify the level of risk propensity in persons of authority, but its effect on decision making must also be investigated. For that reason, it is important to understand risk propensity of individual auditors and its effect on audit decision making. In this thesis dysfunctional behaviour is operationalised through risk propensity. The next section builds a correlation between the two elements internal control risk and risk propensity, thus developing a hypothesis.

### ***4.2.3 Hypothesis Development***

Before one can discuss the decision making process of an auditor at the planning stage, the environment in which auditors operate in needs to be considered. Audit firms operate in a competitive environment faced with expectations from a number of third parties; clients, regulators, banks and other parties who rely on the audited financial annual reports. First, audit firms compete amongst themselves for new audit clients and at the same time try to maintain its current clients. To attract new clients and increase its client portfolio, empirical studies have shown that audit firms engage in the practice of low balling. That is setting audit fees below the market level so as to exert a pull on the clients with large asset base who are with its competitors (Chan 1999; Ghosh and Lustgarten 2006). Moreover, unlike other service industries, audit fees are set before any assessments are carried out of the client's financial operations and practices. As a result of having audit fees predetermined, auditors will try at best to control audit cost. Fee pressure and the practice of setting fees prior to preparing time budgets create incentives for auditors to emphasise cost control and potentially impair effectiveness by reducing audit investment (Cook and Kelley 1988; McNair 1991; Margheim and Kelley 1992; Kelley et al. 2011). Audit firms are self-generating, meaning that they must remain profitable in order to remain in business. Therefore audit firms will try at best to generate as much returns<sup>21</sup> possible from every audit engagement. Consequently, auditors are exposed to two types of time pressure, time deadline pressure and time budget pressure. Margheim and Kelley (1992) and Kelley et al. (2011) investigated the effect of time deadline pressure and time budget pressure on the quality of audit. The study concluded that audit seniors

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<sup>21</sup> In this scenario, we are treating audit fees as the sole revenue of the auditing firm, not taking into account the various additional non-audit services that they do provide to audit clients.

found time budget pressure increased the level of work stress resulting in a reduction in audit quality and lower job satisfaction. This is because time deadline pressure although demanding was a deadline imposed on the whole audit team and client, thus a shared responsibility between audit firm and audit client. However, time budget pressure is within the control of the individual auditors, each having the own time budget to maintain, thus leading to stress for the individual auditors and reducing audit quality.

Faced with financial pressure and scarce resources, which is time and auditor expertise, auditors are faced with a dilemma on whether to achieve an effective or efficient audit. Efficiency in the audit environment is typically defined and measured as the time taken to perform a particular audit task (Salterio 1994). Effectiveness has been operationalised a number of different ways in the audit literature (Davis and Solomon 1989; Tan 1995; Low 2004). Low (2004) categorises audit effectiveness as the enhancement of auditor's judgment quality through repeated exposure to the same task. In addition, to fee pressure, auditors are to bear in mind that they are accountable to third parties that relies on the audited financial statement. If one of the third parties is of the view that the audit wasn't carried out with due care audit firms will find themselves in a number of lawsuits. Lawsuits tarnish an audit firm's reputation as well as impose a significant amount of liability. Further to the legal incentive to conduct an efficient audit, individual auditors and auditing firms may also face professional sanctions by regulatory bodies. Helliar et al. (1996) argued that the allocation of scarce audit resources is largely dependent on the levels of IR and CR for a particular audit engagement. If the auditor overestimates these levels, more audit work than necessary will be undertaken and the audit resources will be wastefully consumed. Alternatively, if the auditor underestimates the levels of these risks, this can lead to ineffective audits with repercussions, which may be particularly serious in today's litigious environment.

Auditors make decisions in a high-risk environment. High-risk environment in terms of: professional standards requirement set by the IASB; client and partner's expectation as well as exposure to legal liability as highlighted in the previous paragraphs. With the call for professional judgment by ISA 400 to conduct extensive

documentation of client's internal control, it is interesting to investigate individual auditor's attitude towards decision making in the assessment of internal control risk.

In explaining the rationale of auditor's decision making process; a study carried out by Lewis (1980) investigated whether expected utility theory could explain the significant differences in individual differences in professional judgments among auditors. He conducted an experiment presenting one decision making case study on the then "FASB Statement No. 5, Accounting for Contingencies" to auditors in the "Big 8" firms. To satisfy the expected utility theory two conditions needed to be achieved, first, different auditors would have to "arrive at the same probability distribution over a particular set of states" and second, auditors would have to "...possess homogeneous utilities for the outcomes or consequences for their decision" (Lewis 1980). The study concluded that auditors within and among firms have different loss functions and cannot or do not possess homogenous utilities for outcomes or consequences for their decision. The differences could be attributed the auditing environment in which auditors operate in. Thus, expected utility theory fails to explain the disparity in professional judgment among individual auditors among empirical studies. Following from this study, this research takes on the position of prospect theory in predicting the decision making process of individual auditors.

Kogan and Wallach (1964) study concluded that individuals reacted differently when presented with the same scenario, some have a tendency for taking risks while others avoided specific risks. This could explain the results in Lewis (1980) study. Research on these types of risky decisions indicates that decision makers will exhibit different types of risky behavior depending on whether the alternatives are in a gain or loss context (Kahneman and Tversky 1979). Prospect theory (Kahneman and Tversky 1979) as discussed in Chapter Three proposes that risk taking, is asymmetric about a reference point, and that people will be risk averse when they perceive themselves to be in the domain of gain, and risk seeking in the domain of loss. Therefore, presented with a similar situation different individual auditors may assess the situation differently depending on their expectations. There have been empirical results showing this behavior and linking it to auditor's expectations.

Davidson and Gist (1996) reported risk-averse behaviour to explain why some audits involved higher than expected proportion of audit costs through increase planning hours. Auditors depicting risk-averse behaviour are more concerned in achieving audit effectiveness as opposed to audit efficiency. As a result, auditors are willing to increase both audit planning and audit verification hours in order to avoid missing out material misstatements. Furthermore, increase in competition increases the likelihood of client loss, making it potentially more costly for auditors to remain objective (Farmer et al. 1987). Linking audit procedures with engagement profitability, Davidson and Gist (1996) found that profit margin was significantly lower for audits with a higher proportion of planning compared to other audits. Accordingly, different auditors placed in a similar situation in a particular point in time may assess a firm's internal control,<sup>22</sup> for financial reporting purposes differently.

Mock and Turner (2005) found evidence that extent, staffing, and nature of audit tests are associated with overall client risk assessments. There have also been studies that examine the relationships between client risks/characteristics and audit resource allocation decisions that consistently provide evidence that client attributes such as client size, complexity of the business, financial risk and client status (public/private) influence the mix of audit resources (O'Keefe et al. 1994; Stein et al. 1994; Hackenbrack and Knechel 1997). These studies report conservative behavior, whereby auditors tend to give more attention to, and to be more influenced by, negative information. Smith and Kida (1991) suggest more weighting placed on negative information is a result of auditors' loss functions and the wish to minimize economic losses. O'Keefe et al. (1994) studied motivation and concluded that exposure to high litigation risk motivated auditors to carry out extensive audit work. In order to limit exposure to litigations auditors produce a defensible audit through extensive audit tests and detailed documentation.

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<sup>22</sup> Internal control over financial reporting is defined as “a process designed by, or under the supervision of, the company's principal executive and principal financial officers, or persons performing similar functions, and effected by the company's board of directors, management, and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles” (PCAOB 2004, para. 7).

Through the application of prospect theory to explain individual auditor's attitude towards risk, it is evident that how a situation or problem is framed to the individual auditor is the determining factor. There have been extensive empirical data illustrating that problems are framed as gains or losses with reference to target point. Individuals tend to be risk seeking under loss framed situations and risk averse in the domain of gains (Kahneman and Tversky 1979, 1982; Tversky and Kahneman 1981; McNeil et al. 1982; Neale and Bazerman 1985; Roszkowski and Snelbecker 1990). By extension this implies that individuals with a propensity to avoid risk tend to weigh more heavily negative outcomes or information cues than positive outcomes or information cues (Schneider and Lopes 1986), as a result overestimating the probability of loss relative to the probability of gain. On the other hand, individuals with a propensity to take on risk tend to weigh more heavily positive outcomes thus underestimating the probability of loss (March and Shapira 1987). This implies that when different individuals are presented with the same situation, they will assess risk differently. It also means that individuals will take risk in some situations and avoid risk in other situations.

Kahneman and Tversky (1982) mention that "individuals differ in their attitudes towards risk and towards money", thus, this in itself may justify why auditors using professional judgment may assess internal control risk differently. The reason for this difference in assessments may be due to different expectation auditors have on the engagement considering the number of factors that are present in the auditing environment.

In order to generate high profit margin for the firm and receive excellent performance reviews auditors with high propensity to take risk are willing to assess internal control risk as low even though the client may have an inefficient and ineffective internal control system. This behaviour is because of the level of competitiveness in the audit market and within the audit firm. In addition, this may be in line with client's expectation of having an audit completed within a short time frame and auditors meeting time budgets. However, despite generating significant returns for the firm, a risk seeking auditor exposes the firm to high risk of litigation and possible professional sanctions if material misstatements go undetected. This is

because of the limited audit evidence gathered and analysed to justify the audit opinion.

On the other hand, auditors who are risk averse will be willing to assess internal control risk as high. Conservative auditors are more concerned in achieving an efficient audit, ensuring that proper audit procedures are being carried out in line with auditing regulations. Even if limited profit returns are generated for the auditing firm, risk-averse auditors are more concerned about the legal and reputation effects. They are willing to incur high audit cost and extensive audit and client time so as to ensure that the auditing firm and their own reputation are not being brought into question, by third parties and regulators. Therefore, it is predicted that there is a negative relationship between an auditor's risk propensity and their assessment of internal control risk.

**H1:** The higher the auditor's propensity to take risk, the lower the assessment of internal control risk.

### **4.3 Summary and Conclusion**

Chapter Two details the concepts on the audit risk model and audit environment and the components that lead one to assess the level of internal control risk with support from empirical studies. Chapter Three provides a theoretical review of dysfunctional behaviour and empirical studies supporting the theory. This chapter combines the two chapters, with theoretical reasoning to develop the hypothesis. The next chapter includes a description of the experimental tasks, experimental procedures and the participants in the experiment. A description of independent and dependent variables is also included.

## CHAPTER 5

### Methodology

#### 5.1 Introduction

The previous chapter developed the hypothesis relating to the effects of individual auditor's risk propensity on the assessment of internal control risk. This chapter outlines the research method employed to test the hypothesis. The research was conducted using an experiment. Experiments have extensively been used in most audit judgment studies (Joyce and Biddle 1981; Ashton and Ashton 1988; Hirst 1994; Michael 2006). Pilot study was first conducted on final year undergraduate auditing students after which the final experiment was conducted by the senior auditors of the "Big Three" auditing firms.

The present chapter is organised as follows. Section 5.2 presents the selection of the experimental participants. Section 5.3 describes the research instruments. Section 5.4 outlines the experimental procedure. Section 5.5 describes the independent and dependent variables. Section 5.6 describes the control variables. Section 5.7 outlines the statistical model used to test the research hypotheses. The chapter concludes with a summary.

#### 5.2 Participants

Participants in the pilot study were final year auditing students. Participation in the pilot testing is purely voluntary. No incentives were offered for those participating and no penalties were imposed on students for non-participation. All responses were treated as confidential and anonymous.

For the main experiment thirty-five audit seniors from the "Big Three" multinational accounting firms<sup>23</sup> completed the experiment. Participants comprised of twenty one

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<sup>23</sup>"Big Three" firms being: KPMG, PriceWaterhouse/Coopers (PWC), and Ernst and Young.

inexperienced auditors with an average of 2.90 years of experience and fourteen experienced auditors with an average of 7.14 years of experience. However, all auditors reported having experience in carrying out assessment of internal control risk at audit engagement. All responses were treated as confidential and anonymous.

### **5.3 Research Instruments**

The following research instruments were used in both the pilot study involving final year students and the main experiment involving audit practitioners. First, every participant received a cover letter explaining the purpose of the study, its importance, and general instructions about participating in the experiment.

After which, they received the first of two research instruments, a case study measuring the assessment of internal control risk. The introduction and background information of the internal control risk instrument was taken from Joyce (1976) and updated to reflect the current dates and industry trends. The twelve audit cases were taken from Hamilton et al. (1977) who adopted it from Joyce (1976) making two variable modifications.<sup>24</sup> Participants were presented with hypothetical scenarios of a manufacturing firm in which they were to take on the role of senior auditor in charge of accounts receivable control system. To observe actual choice behaviour under auditing conditions, participants were provided background information about the hypothetical manufacturing audit client. The client has been with the audit firm for the past ten years. The background information also included details on the audit engagement, the results of the prior year's audit, the industry it operates in, and the control environment. The participants were then informed that they were working on the audit of accounts receivable and were specifically instructed by the managing partner to minimise audit cost and complete the audit within the set budget. The participants were then presented with twelve different cases relating to internal controls in the accounts receivable context. Each case appeared on a separate sheet. For each case, the participants were asked to make an assessment of the internal control risk on seven-point scale ranging from very weak \_1\_ to very strong \_7\_. The

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<sup>24</sup> After reviewing CPA audit working papers, Hamilton et al. [1977] concluded that two of Joyce's variables, "bad debt expense divided by sales" and "sales divided by average accounts receivable," were not of primary importance in evaluating internal control. These variables were replaced in the cases by "receiving report support" and "receivable confirmation by client."

subject was able to refer back to the company background information at any time. This assessment served as the dependent variable.

The second research instrument presented was the Choice Dilemmas Questionnaire (CDQ) developed by Kogan and Wallach (1964). This measured the risk propensity of the individual auditors. The participants were presented with twelve everyday life situations in which they are to take on the central role of the person facing the dilemma. In each scenario, the participant is asked whether he or she would undertake a described action under conditions of probability. The participant must choose between a risky and a safe course of action and indicate the probability of success needed for selecting the risky alternative. A participant can indicate that he or she would never take the risk, would take the risk if the chances of success were 1 out of 10, 3 out of 10, 5 out of 10, 7 out of 10, or 9 out of 10. Higher scores indicate less of a risk taker. This assessment served as the independent variable.

#### **5.4 Experimental Procedure**

The experimental materials were pilot-tested on final year undergraduate auditing students from The University of South Pacific. A teaching assistant, who had no involvement in the research, supervised the participants who completed the experiment. The case materials were distributed and collected by the teaching assistant. The experiment was conducted at the end of an audit lecture towards the end of the audit course. Before the study, participants were informed that participation in the study was voluntary and confidential, and withdrawal from the experimental procedures was permitted at any time before, during, or after the experiment without any penalty. The participants were presented with the following case materials; (1) an introductory cover letter; (2) internal control risk assessment task; (3) the risk propensity task and (4) a debriefing information questionnaire. There was no time limit placed for completion of either test. Time to completion were noted when the participants finished each test. After the two research instruments were completed, participants were required to complete a debriefing information questionnaire to allow for control of certain variables. The debriefing questionnaire requested demographic and background information about the

participants such as age, gender, years of education, and cumulative graduate point assessment. At the end of the experiment, students had to provide feedback on the research instruments and whether they understood the cases well. The pilot-test participants assessed the case as clear and unambiguous.

The main experiment, which is the study of auditors, was conducted at the respective offices of the participants at the “Big-Three” multinational accounting firms. The case materials were distributed and collected by a liaison person of the participating audit firms. The liaison person also supervised the participants who completed the case materials at the training rooms of the respective accounting firms.<sup>25</sup> Before the study, participants were informed that participation in the study was voluntary and confidential, and withdrawal from the experimental procedures at any time before, during, or after the experiment was permitted without any penalty. The participants were presented with the following case materials; (1) an introductory cover letter; (2) internal control risk assessment task; (3) the risk propensity task and (4) a debriefing information questionnaire. There was no time limit placed for completion of either test. Time to completion were noted when the participants finished each test. The same procedure and process was conducted at each of the three accounting firms. After the two research instruments were completed, participants were required to complete a debriefing information questionnaire to allow for control of certain variables. The debriefing questionnaire requested demographic and background information about the participants such as age, gender, years of education, and years of professional experience, and professional membership.

## **5.5 Independent and Dependent Variable**

### ***5.5.1 Independent Variable: Individual Auditor’s Risk Propensity***

As discussed in Section 5.3, the independent variable was measured using the research instrument CDQ. We measured the risk propensity of individual participants by summing up the values of each of the twelve scenarios. A maximum score of one hundred and twenty is possible and twelve is the minimum score. Higher scores are associated with greater conservatism in risk taking situations (Brockhaus 1980). The

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<sup>25</sup> The liaison person had no involvement in, or relation to, this research.

CDQ has been used frequently and successfully as a measure of an individual's risk propensity (Brockhaus 1980; Schwer and Yucelt 1984; Sexton and Bowman 1985; Masters 1989; Fagley and Miller 1990; Ghosh and Ray 1992; Carland et al. 1999; Keil et al. 2000; Masters and Deines 2011). The analysis is discussed in the next chapter.

### ***5.5.2 Dependent Variable: Internal Control Risk***

As discussed in the Section 5.3, the dependent variable was measured using the modified research instrument adopted from Hamilton et al. (1977). The dependent variable is the participant's perceived level of internal control risk at each of the twelve independent situations. The participants' measured internal control risk on a seven point scale ranging from 1 through to 7; 1 implying a weak internal control system and 7 implying an effective internal control system in place. The case study has been used frequently as measure of internal control risk assessment (Gaumintz et al. 1982; Chan 1999; Ghosh and Lustgarten 2006; Vandervelde et al. 2009). The analysis is discussed in the next chapter.

## **5.6 Control Variables**

**There are several control variables;**

### ***5.6.1 Gender***

An important control variable was gender of senior auditors. Prior studies in the domain of economic and business research have proven that there are differences in the risk propensity and behaviour of women and men, both in the general population as well as in the specialized populations such as managers, entrepreneurs and business owners (Johnson and Powell 1994; Powell and Ansic 1997; Sunden and Surette 1998; Jianakoplos and Bernasek 1998; Williams and Narendran 1999; Verheul and Thurik 2001; Holt and Laury 2005; Fellner and Maciejovsky 2007; Eckel and Grossman 2008; Brooks et al. 2009; Yordanova and Alexandrova-Boshnakova 2011).

Moreover, in the domain of business and finance where there is high confidence level of outcomes women would take on these options as opposed to men (Mitchell and Vassos 1997; Olsen and Cox 2001; Weber et al. 2002; Garbarino and Strahilevitz 2004; Harris et al. 2006) and in situations under moderate and low confidence of outcomes men would elicit higher risk levels than their female counterpart (Wallach and Kogan 1959; Wallach and Caron 1959). Gustafson (1998) qualitative research tried to draw more light as to why these differences eventuated and concluded that women are willing to take on more risk in more certain outcomes because their concerns were more oriented towards risks related to their home and family, whereas men concerns were more directed towards their working ambition. Finally, Gustafson (1998) and Schubert (2006) found that women and men have different interpretation of what they regard risk to be. For these empirical reasons we have controlled for gender in the risk model.

### ***5.6.2 Experience***

Experience was measured by the number of years an auditor has been with the auditing firm. In concurrence with other studies, “experienced auditors” relate to auditors with four or more years’ experience as compared to three years or less with most of the studies (Abdolmohammadi and Wright 1987; Bonner and Lewis 1990; Trotman et al. 2009). Auditors with more experience in performing particular audit procedure such as audit risk evaluation are likely to exhibit more risky behaviour thus less likely to perceive risk related to that procedure. Anderson and Maletta (1994) found that less experienced auditors rated internal control risk higher than experienced auditors, and also paid more attention to negative information. However, the study did find experience to have an impact on positive information. Thus, experience level of auditors is controlled in the risk model.

### ***5.6.3 Level of Education (CPA/ CA/ Attended Audit workshops)***

IFAC is of the view that higher education and training should mitigate any individual characteristics that may affect professional judgments. In addition, empirical studies have shown that through receiving increased professional education and admission into internationally recognised accounting institutions one becomes conversant with

auditing standards and audit procedures thus, leading to familiarity with audit planning and mitigating the problem of risk behaviour (Haliassos and Bertaut 1995; Sung and Hanna 1996).

## 5.7 Statistical Model

Regression analysis will be employed to test the relation between internal control risk and auditor's risk propensity.

### Model A: Pilot Study- Final year Audit Students

The following model was used to test the hypotheses presented:

$$\text{INTERNAL\_CONTROL} = \alpha + \beta_1 \text{R\_PROPEN} + \beta_2 \text{GENDER} + \beta_4 \text{CGPA} + e_0 \quad (1)$$

Where:

INTERNAL\_CONTROL = Internal Control Risk assessment  
R\_PROPEN = Auditor's risk propensity  
GENDER = Auditor's gender, 0= "female"; 1= "male"  
CGPA = Cumulative Grade Point Average, 0= "CGPA below 3";  
1= "CGPA above 3".

### Model B: Auditors in the Big Three auditing Firms

The following model was used to test the hypotheses presented:

$$\text{INTERNAL\_CONTROL} = \alpha + \beta_1 \text{R\_PROPEN} + \beta_2 \text{GENDER} + \beta_4 \text{EXP} + \beta_6 \text{EDU} + e_0$$

Where:

INTERNAL\_CONTROL = Internal Control Risk assessment  
R\_PROPEN = Auditor's risk propensity  
GENDER = Auditor's gender, 0= "female"; 1= "male"  
EXP = Professional years as an auditor, 0= "<=4 years"; 1= ">4years"  
EDU= Years pursuing academic qualifications, 0= "<= 16 years"; 1 "> 17 years"

## **5.8 Summary and Conclusion**

This chapter outlined the methodology adopted. An experimental research was conducted in a controlled environment. A pilot study was conducted on final year auditing students and the main experiment was conducted on external auditors. Identical research instruments and procedures were followed with the two groups, auditors and final year auditing students. The two research instruments used were; an internal control case study of a manufacturing firm and CDQ. The internal control case study was a modified version of Joyce (1976) study. The modified version was first used by Hamilton et al. (1977) study and has been used since. The CDQ was used to measure risk propensity. This was adopted from Kogan and Wallach (1964) study without any modifications. The dependent variable is the assessment of internal control risk and the independent variable being the auditor's cognitive ability; risk propensity. The following variables were controlled; years of auditing experience, years of education and gender. A regression analysis was carried out to test the directional hypothesis and the results are presented in the next chapter.

## CHAPTER 6

### Results

#### 6.1 Introduction

The previous chapter presented the experimental methodology employed to test the hypothesis developed in Chapter 4. This chapter presents the results of the statistical analysis of the data collected to test the hypothesis for both final year audit students as well as external auditors. The chapter is organised as follows Section 6.2 provides a descriptive analysis of the study with Section 6.3 presenting the regression results and finally concluding with a summary of the chapter.

#### 6.2 Descriptive Statistics

Panel A of Table 6.1 presents the descriptive statistics for the internal control risk, risk propensity, gender and cumulative graduate point average of final year auditing students. From Table 6.1 panel A, it is observed that the mean held by the dependent variable (INTERNAL CONTROL) is 3.47 and the standard deviation is 0.84. It is also noted that the mean held by the independent variable (R\_PROPEN) is 0.57 and the standard deviation is 0.14.

Panel B of Table 6.1 presents the descriptive statistics for internal control risk, risk propensity, years of education, years of professional audit experience and gender of audit practitioners. It is observed that the mean held by the dependent variable (INTERNAL CONTROL) is 3.64 and the standard deviation is 1.20. With the independent variable (R\_PROPEN) it is observed that the mean held by is 0.56 and the standard deviation is 0.16.

**TABLE 6.1**  
**Descriptive Statistics for Variables relating to Final- Year Auditing Students**  
**(Pilot-test) and External Auditors**

**Panel A: Descriptive Statistics for Final Year-Audit Students<sup>1</sup>(Pilot-test)**

	<u>INTERNAL CONTROL</u> <sup>a</sup>	<u>R PROPEN</u> <sup>b</sup>	<u>GENDER</u> <sup>c</sup>	<u>CGPA</u> <sup>e</sup>
Mean	3.47	0.57	0.55	0.24
SD	0.84+	0.14	0.43	0.50
Max	7.00	1.00	1	1
Min	1.00	0.10	0	0

**Panel B: Descriptive Statistics for External Auditors<sup>2</sup>**

	<u>INTERNAL CONTROL</u> <sup>a</sup>	<u>R PROPEN</u> <sup>b</sup>	<u>GENDER</u> <sup>c</sup>	<u>EX</u> <sup>d</sup>	<u>EDU</u> <sup>d</sup>
Mean	3.64	0.56	0.63	0.40	0.46
SD	1.20	0.16	0.49	0.50	0.51
Max	7.00	1.00	1.00	1.00	1.00
Min	1.00	0.28	0	0	0

<sup>1</sup> Number of observations: 152

<sup>2</sup> Number of observations: 35

<sup>a</sup> INTERNAL\_CONTROL is measured on a seven point Likert-type scale of the twelve scenarios assessing the internal control risk of the Accounts Receivable System; 1= “Very Weak” and 7= “Very Strong”.

<sup>b</sup> R\_PROPEN is measured on a probability scale of Kogan-Wallach Choice Dilemma Questionnaire (CDQ) assessing the cognitive ability; risk propensity. Higher scores are associated with greater conservatism.

<sup>c</sup>GENDER, a control variable. Gender where 1= “Female”; 0= “Male”.

<sup>d</sup>EX and EDU are the control variables.

EX- referred to years of auditing experience; 0= “=<4 years”; 1= “>4years”

EDU- referred to years of academic education, 0= “=<16 years”; 1= “> 16 years”.

<sup>e</sup>CGPA a control variable for final year audit students. GPA related to their cumulative grade point average where 0= “CGPA below 3”; 1= “CGPA above 3”.

### 6.3 Regression Results

In order to test H1 a regression analysis was performed to see whether the auditor's risk propensity has a negative correlation with the assessment of internal control risk. Table 6.2 presents the results of the regression analyses of the final year audit students and the external auditors. In Panel A of Table 6.2 illustrates that the final year auditing students' risk propensity (R\_PROPEN) is negatively correlated with their assessment of internal control risk (INTERNAL\_CONTROL). The coefficient for PROPEN is negative and highly significant with a  $t = -2.52$  and  $p = 0.02$ , thus H1 is supported.

The results of the regression, presented in Panel B of Table 6.2, shows that auditors' risk propensity (R\_PROPEN) has a negative correlation with internal control risk (INTERNAL\_CONTROL). The coefficient for PROPEN is negative and highly significant with a  $t = -3.12$  and  $p = 0.02$ , thus H1 is supported. The results indicate that auditors with high risk taking propensity on average evaluate internal control risk as low compared to auditors with low risk propensity. This result is consistent with the results of the final year auditing students.

This finding of risk propensity having an impact on decision-making is consistent with those reported from similar risk propensity studies carried out in the domain of managers entrepreneurs, nursing and tax professions (Kogan and Wallach 1964; Rowe 1977; Fischhoff et al. 1981; Staw et al. 1981; Baird and Thomas 1985; MacCrimmon and Wehrung 1986, 1990; March and Shapira 1987; Stikin and Pablo 1992; Jackson and Hatfield 2005; Fellner and Maciejovsky 2007). The current study indicates that auditors display similar behaviour.

However, with the final year auditing students "Gender" has a significant effect while the main study did not find "Gender" to be significant. The other control variables "Professional Experience" and "Academic Level" were found not to be significant for both final year students and external auditors as illustrated in Panel A and B of Table 6.2 respectively.

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**TABLE 6.2****Regression Analyses of the Relationship between Internal  
Control Risk Assessment and Risk Propensity****Panel A: Final Year Audit Students: Test of INTERNAL\_CONTROL complete  
Model <sup>a</sup> (Pilot-test)**

$$\text{INTERNAL\_CONTROL} = \alpha + \beta_1 \text{R\_PROPEN} + \beta_2 \text{GENDER} + \beta_4 \text{CGPA} + e_0 \quad (1)$$

<u>Variable</u>	<u>Estimated Coefficient</u>	<u>t-statistic</u>	<u>p-value<sup>d</sup></u>
Constant	4.44	15.09	<0.001
R_PROPEN <sup>b</sup>	-1.16	-2.52	0.02
GENDER <sup>c</sup>	-0.41	-3.13	0.002
CGPA <sup>c</sup>	0.065	0.42	0.677

**Panel B: External Auditors: Test of INTERNAL\_CONTROL complete Model <sup>a</sup>**

$$\text{INTERNAL\_CONTROL} = \alpha + \beta_1 \text{R\_PROPEN} + \beta_2 \text{GENDER} + \beta_4 \text{EX} + \beta_6 \text{EDU} + e_0 \quad (1)$$

<u>Variable</u>	<u>Estimated Coefficient</u>	<u>t-statistic</u>	<u>p-value<sup>d</sup></u>
Constant	5.10	6.655	<.001
R_PROPEN <sup>b</sup>	-3.12	-2.52	0.02
GENDER <sup>c</sup>	0.16	0.40	0.70
EX <sup>c</sup>	0.69	1.57	0.13
EDU <sup>c</sup>	-0.21	-0.48	0.64

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<sup>a</sup> INTERNAL\_CONTROL is measured on a seven point Likert-type scale of the twelve scenarios assessing the internal control risk of the Accounts Receivable System; 1= “Very Weak” and 7= “Very Strong”.

<sup>b</sup>R\_PROPEN as reported in Table 6.1

<sup>c</sup>Control variables as reported in Table 6.1

<sup>d</sup> p-values for R\_PROPEN are one-tailed (H1 prediction). Model (1) is significant at 0.05 and has a R<sup>2</sup> of 0.12 for external auditors and R<sup>2</sup> of 0.77 for final year auditing students.

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## **6.4 Summary and Conclusion**

This chapter provided details on the regression results. The results provide further evidence that an individual auditor's risk propensity does have an effect on auditor's internal control risk assessment decision. In the competitive audit environment, one's risk behaviour ultimately brings out the professional judgment an auditor will take. With a pre-determined fee and competitive environment for audit, auditors can only generate profits through controlling audit work done. Auditors who are profit and ambitious driven will be more than willing to increase audit risk by assessing ICR as low in order to achieve a low cost audit and complete the audit within the given time frame. The result of this study is consistent with results found in the managerial, taxation and health care professions. Moreover in this study "gender" was a significant effect in the pilot study however, in the main study it was not significant.

The next chapter provides a summary of the research findings, discusses the limitations of the research, and outlines some possible implications for research and practice.

## **CHAPTER 7**

### **Conclusion**

#### **7.1 Introduction**

The previous chapter presented the data analysis and results. This chapter provides a summary of the research findings discusses the limitations of the research and outlines some possible implications for research and practice. The chapter is organised as follows. Section 7.2 summarizes the research objective, method, and analysis. Section 7.3 summarizes the results obtained from the study. Section 7.4 discusses the limitations of the study. Section 7.5 presents some possible implications of the study. Section 7.6 presents future research directions. Finally, Section 7.7 presents conclusion.

#### **7.2 Summary of the research**

There have been a plethora of studies investigating the level of consensus on internal control assessments among auditors. These disparities have led to a number of studies understanding auditors in terms of audit task, scope and cognitive abilities. This research adds to the behavioural audit studies by understanding auditor's attitude towards risk and decision making. Auditors operate in a competitive environment where they face internal and external expectations. Auditors are accountable to the immediate audit supervisors, the client, and regulatory bodies as well as to any third parties who rely on the audited financial reports for decision making purposes. Each of these parties have its own expectations of an audit, third parties would want an effective and efficient audit carried out with due care; client's management would want an audit with less hassle on management's part and completed within a short time frame. In addition, audit partners would want an efficient and economical audit. In order for audit firms to remain profitable, audits must be completed with no unnecessary audit costs being incurred. To guarantee that this is being done, audit budgets are prepared before an audit commences. To

encourage auditors to complete audits within the desired time frame and with minimum audit costs, performance reviews are carried out based on these assessments. Auditors begin audit planning with the following established framework; a pre-determined fee, expectations from all parties and limited prior knowledge of the client's financial and business system. With the absence of an objective criterion to assist auditors in decision making, all these factors can encourage dysfunctional behaviour among individual auditors. This research looked at one aspect of dysfunctional behaviour, risk propensity. This study posits that given the same audit scenarios two auditors can arrive at two different planning assessments with regards to audit risk. This research predicts a negative correlation between an individual auditor's risk propensity and its effect on the assessment of internal control risk.

### **7.3 Summary of research findings**

In conducting an audit, auditors may find themselves in a dilemma. On one hand there are cost pressure from audit partners and on the other hand exposure to litigation costs and public perception. At the end of the day, it may be the auditor's inherent traits; risk propensity that will have a bearing on audit decision making. The results as discussed in Chapter Six indicate that there is a negative relationship between an individual auditor's propensity to take risk and its effect on the assessment of internal control risk; thus, supporting the hypothesis. The findings in this research contribute to the field of behavioral accounting and it clearly illustrates the need to better understand risk behaviour and its effect on audit decision-making. Auditors who are risk averse assess internal control risk as high and therefore, willing to carry out more audit work. By carrying out more audit work higher audit costs are incurred and in turn lesser profits generated for the audit firm. However, the chances of exposure to litigation claims are limited. On the other hand, auditors who are risk takers assess internal control risk as low. Thus, faced with cost pressures they are willing to gamble and carry out less audit work in order to save costs and generate more profits for the firm. By generating more profit for the firm, auditors are in line to receive good performance reviews and in turn promotion. Auditor may choose to accept/reject risky alternative because of their innate personal characteristics, learned decision-making style, and expectations of a successful

outcome (taking risk to maximise gains). With regards to professional experience, general academic ability and gender, there were no significant results.

As discussed in Section 5.3 a pilot study was carried out with final year auditing students and the main experiment conducted with audit practitioners. The research instruments, experimental methodology, and procedures carried out were identical between the two groups. In Section 6.3 it was interesting to note that similar results were found between the final year auditing students and audit practitioners. Final year auditing students and audit seniors who exhibit risk seeking behaviours assessed internal control risk as low and those exhibiting risk averse behaviours assessed internal control risk as high. However, with the final year auditing students “Gender” has a significant effect while the main study did not find “Gender” to be significant. The other control variables “Professional Experience” and “Academic Level” were found not to be significant for both final year students and external auditors as illustrated in Panel A and B of Table 6.2 respectively. As to why gender is significant for final year students and not significant for auditors, calls for future research. Does being in the actual work place with accounting regulations and accountability mitigate any disparities existing between genders?

#### **7.4 Limitations of the Study**

This section highlights the potential limitations of the study. Experimental research suffers from several threats to validity. Some of these are threats to internal validity, construct validity, validity of statistical conclusion and external validity. Section 7.4.1 presents the measures used to minimise threats to internal validity. Section 7.4.2 presents the measures used to minimise threats to construct validity. Section 7.4.3 examines the measures used to minimise threats to statistical validity and section 7.4.4 discusses potential threats to external validity of the results.

#### ***7.4.1 Threats to internal validity***

Internal validity is defined as “the validity with which statements can be made about whether there is a casual relationship from one variable to another in the form in which the variables were manipulated or measured” (Cook et al. 1979).

Measures taken to minimize threats to internal validity were as follows. History was minimised by conducting controlled experiments. Participants completed the experiment at the training room of the respective accounting firms, supervised by a liaison officer of the firm. The liaison officer had no knowledge of the research objective nor had any association with the researcher. By having the experiment in the training rooms of the accounting firms, any inferences from a third person are eliminating. The decision making processes of the individual auditor is that of their own with no influences from colleagues. Maturation was minimised by designing short case studies. The case study used to measure internal control risk, a modified version of Joyce (1974) study, consisted of twelve short scenarios whereby participants had to measure internal control risk on a likert scale ranging from 1 (being very weak) to 7 (very strong). The information and the requirements of the case studies were well understood by the participants. Moreover, with regards to the second research instrument, CDQ (Kogan and Wallach 1964) participants were presented with twelve short case scenarios describing everyday situations in which they played the advisory role. Participants had to choose from a safe choice or a risky alternative. Resentful demoralization was minimised by not allowing participants to communicate during the experiment. All participants completed the experiment under strict supervision, with no communication among participants were permitted.

#### ***7.4.2 Threats to construct validity***

Construct validity refers to “the possibility that the operations which were meant to represent a particular cause or effect construct can be constructed in terms of more than one construct, each of which is stated at the same level of reduction” (Cook et al. 1979). Several threats to construct validity were identified for the present study. Inadequate pre-operational clarification of constructs were minimised as the operational measures used in this study were consistent with most previous research

and with those outlined in the professional auditing statements and the auditing literature. The operational measures were used in previous research across a number of professional domains, Entrepreneurs (Brockhaus 1980) Health (Smith and Friedland 1998) and Taxation (Collins and Cathey 1990). For auditing context, the measures were used in earlier studies (Joyce 1979; Vandervelde et al. 2009) and senior auditors are familiar with the requirements of ISA as per audit client engagements. In addition, tests of manipulations checks supported the operationalised of the constructs.

The demand effect due to the with-in subject's design (where subjects guess hypotheses or adopt a "good subject" or an "apprehensive subject" role) was minimised by the design and administration of research instruments. For example, the experiment was conducted in the training center of the firms, and the experimenter did not have a high status within the firm. The audit practitioners' years of experience ranged from two years to eleven years. With inexperienced auditors having an average 2.90 years of auditing experience and experience auditors having an average of 7.14 years of experience. Although it would have been desirable to have more experience auditors in the managerial and partner role participating in the experiment. It is suffice to acknowledge all participating auditors have had experience in the assessment of internal control risk at audit engagement. Participating auditors were assured of anonymity and data gathered from the case studies were treated as confidential. These conditions are less likely to produce any substantial demand effects.

#### ***7.4.3 Threats to statistical conclusion validity***

Statistical conclusion validity refers to "inferences about whether it is reasonable to presume co variation between cause and effect" (Cook et al. 1979). Threats to statistical conclusion validity depend on the type of statistical methods used (Cook et al. 1979). The following threats to statistical conclusion validity were highlighted. Low statistical power is a threat to statistical validity when sample sizes are small. The sample size in the present study is thirty-five participants. Therefore, the possibility of accepting a false null hypothesis (that is, Type II error) is low. Reliability of treatment implementation in the experimental setting were minimised

by conducting a controlled experiment. Thirdly, random heterogeneity of respondents that may influence the outcome of experiment was controlled by selecting auditors from the “Big Three” audit firms. While selecting auditors from several firms increased threats to statistical validity, external validity was improved.

#### ***7.4.4 Threats to external validity of the results***

External validity refers to the generalisability of the experimental results across people, settings, and time (Cook et al. 1979), and can be classified as population validity, ecological validity, and temporal validity (Trotman and Wright 1996). Population validity refers to the extent that the research results are generalisable from the sample to the population of interest. Population generalisability in this study was enhanced by selecting auditors from the “Big Three” firms and of all ranks. Firm effects tests were not possible because of the small sample size within some firms. However, this does not give rise to significant concerns as empirical evidence shows very little firm effects in audit judgment studies (Trotman and Wright 1996). Therefore, the results of the research are likely to generalize across the audit firms in Fiji.

The second threat is ecological validity. Ecological validity is concerned with generalisability across settings and environments. In judgment experiment, ecological validity depends on the extent to which the researcher has duplicated the real world in which the decision making task is conducted (Bronwell 1995). The extent to which the results generalize to, and across, real-world firms was maximised by adopting case studies that have been used extensively in the literature, across professional domains and are empirically supported. Moreover, in this study participants were asked to assume the role as they do in their natural setting as an auditor in charge of an audit. Creating a hypothetical manufacturing company allowed us to leverage participants’ abilities to place themselves in a natural group (Abrams and Hogg 1990; Stefaniak et al. 2012) and thus control the experimental setting. In summary, by having auditors take on the normal role as auditors in charge and analysing hypothetical manufacturing company, stating the expectation of the audit partner of having a cost-effective audit within a certain time frame, auditors are able to relate to their own work practices. Furthermore, a pilot testing of the

instruments with the final year audit students indicated that they were sufficiently realistic to represent a possible real-world situation. The procedures implemented within the experiment greatly allows for generalisability across settings and environment.

Finally, temporal validity refers to the extent to which results generalize across time. The temporal validity of the results of this study may be partially threatened in the future should legal precedence and auditing practice statements change. At present there is no mention of setting out an objective criterion of assessing audit risk as per audit standards or auditing firms not engaging in pre-determined fees or client management having no say in the selection of audit appointments. If the auditing practice statements or legal precedents were to incorporate direction, the results of this study are likely to change.

## **7.5 Implications of the study**

These results have some possible implications for practice, education, and research. Section 7.5.1 discusses some possible research implications. Section 7.5.2 discusses some possible implications for practice and education. Finally, Section 7.5.3 outlines some implication for regulators.

### ***7.5.1 Implications for research***

The present study extended current literature by providing additional insights into the behavioural effects of audit planning by incorporating auditor's cognitive or innate abilities, their risk propensity. This study satisfied the call made by Bonner (2008) for the need to increase audit research in the domain of risk propensity. The concept of risk propensity has important implications for the theoretical modeling of risk behavior and for practical insights into the motives underlying individual level choices about engaging in risky behavior. There has been extensive research carried out on motivations, confidence level as well as incentives in the auditing literature, however, little has been done with regards to an auditor's attitude towards risk. Risk propensity is not a new concept; extensive research has been done in the entrepreneurial, managerial, taxation, finance and health care literature. This study

has provided empirical results illustrating that risk propensity is present among auditors and may be one of the reasons as to why there are disparities in internal control assessments across auditors. This study only looked at the internal control assessment; future research needs to consider a more integrated audit risk assessment study with respect to risk behaviour. This is further discussed in the later section which discusses future directions in research.

### ***7.5.2 Implications for practice***

This study has important implications for audit engagements. Greater understanding of auditor's attitude towards risk or risk approaches to audit competitiveness and audit expectation. Ethical codes may need to be revised. Audit pricing should not be agreed upon without first carrying out an assessment of the client's system. A detailed assessment of how auditors and clients achieved the agreed price and terms of engagements should be made available. This will avoid any low-balling. By engaging in low price setting in an attempt to attract new clients and/or retain current clients, audit firms are placing cost pressure on own staff to minimise audit cost. Audit seniors should not be put under any cost pressure prior to audit planning as this can affect their assessment. The pressure to save costs and time may force managers to assess internal control risk as high in order to carry out less audit work. Therefore, it would be better for audit firms to set cost budgets after their assessment of their clients internal control risk. Moreover, in a bid to minimise audit costs, audit managers may assign the most junior staff to carry out audit work that should normally be done by senior staff. The reason is junior staff have a lower charge out rate than senior staff hence, having a settle effect on the cost budget. The overall effect of assigning junior staff on audit engagements is that the quality of the audit will be compromised.

Second, audit firms may need to allocate audit work according to auditor's risk propensity; for example, auditors who are risk averse may be better suited carrying out audit planning whereas auditors who are risk takers may carry out the audit procedures. The reason for this allocation of responsibilities according to risk profiles is to ensure that resources are being utilised efficiently. Cautious auditors are likely to apply greater amount of audit procedures than are warranted for a given level of

audit risk. Such "over auditing" results in an inefficient use of resources. For example, an inexperienced and overly cautious auditor might perceive internal control to be highly unreliable and thus, expend more resources than necessary on substantive testing. This not only wastes valuable auditing time but also impinges on the operation of the client's day to day running of the business. There is nothing wrong in having an efficient audit but applying procedures where auditing standards may consider unnecessary needs to be taken into account. Audit firms that over audit, or otherwise use resources inefficiently, may not remain in business very long in the current competitive audit environment. On the other hand, firms that are profit driven and cut corners when conducting an audit exposes themselves to high litigation claims. Thus, a balance needs to be achieved.

Third, audit firms should provide training to auditors to moderate risk propensity and to make audit managers aware of the effect that risk propensities have in the assessment of internal control risk. Through conducting training programs, risk behaviour effects may be mitigated and auditors are made aware of firm's approach to risk dilemmas. This is needed because auditors may decide to take risky alternative because of their innate personal characteristics, leaned decision making style and expectations of successful outcome. Auditors wishing to appear to excel in their profession may take the risk of trying to maximise on every engagement at the same time exposing the firms to legal suits and liabilities. Training and development efforts through selection techniques can be designed based on risk behaviour and aligned with firm's values. It is important that audit firms carry out awareness programs on their values to ensure that auditor's values are in line with that of the firm.

Finally, in the ongoing quest for sources of competitive advantage, auditing firms may wish to compare their actual risk profiles with those of competitors in the same industry and with any explicit organizational policies towards risk taking. This study has several important implications for the practice of auditors. The significant and positive relationship between audit risk and individual auditor's risk propensity has implications for hiring and audit staffing decisions.

This research provides an improved understanding of the effects of risk behaviour and may assist audit firms in improving the planning of audit engagements, the efficiency of the allocation of resources, and/or the effectiveness of audit procedures and hiring practices. Further, a better understanding of these factors may result in more consistent decisions and may lead to a reduction in the risk of lawsuits.

### ***7.5.3 Implications for regulatory bodies***

The results have implications for regulators of auditing practice and corporate governance. The results shows that requiring professional judgments as per auditing statements is too subjective and open to interpretation paving the way of innate behavioural attitudes affecting judgments. Therefore, in the face of large corporate failures, some guidelines in the auditing practice statements with respect to the direction of audit evidence or have stringent ethical behaviour and regulation needs be implemented. However, if stringent and clear guidelines on assessing audit risk cannot be provided, regulators could assign severe penalties to the individual auditors and firms on the factors that affect the market, such as the transparency of how prices are set, or ensuring that it is the shareholders who appoint auditors and not client's management or committee, or limited or even eliminating audit firms in taking non-audit services of their audit clients. These penalties and imposition on the audit environment may eventually change the assessment of audit risk to the point of uniformity.

## **7.6 Future Directions**

This section is an extension of Section 7.5.1. This study has provided empirical insights into an individual auditor's risk propensity and its assessment of internal control risk. First, this study only analysed on internal control risk of the audit risk model. The audit risk model has several components and thus generalization on overall audit risk needs to be done with caution. Future research needs to consider a more integrated audit risk assessment study. Second, future research could examine other audit tasks in the auditing cycle such as substantive testing or test of details to investigate whether our results are generalisable across other audit tasks. It would be

interesting to note if an auditor's risk propensity is the same across task complexity and if not, in which direction it takes from the initial planning assessment. Third, this research is experimental in nature; future research could investigate if our findings hold when employing other methods such as in an actual setting. Fourth, while the regression we analysed provided significant results, a relatively small sample was obtained. Future research could consider obtaining larger samples to provide a better understanding of the relationships in this study. In addition, further research needs to be conducted to explore ways in which individual auditor's differences can be mitigated in the audit judgment process. Moreover, research can be conducted to explain as to why "Gender" has a significant effect in the pilot study but doesn't have a significant effect in the main study using external auditors. What in the auditing environment mitigates any changes between genders? Are there any possible reasons for this disparity? Finally, future research needs to consider the impact of risk propensity on decision making and also assess the behavioural impact of managers and partners alone as they are in key decision making roles.

## **7.7 Summary and Conclusion**

The research questions investigated in this study is:

*Do auditors with a high risk propensity assess internal control risk as low and vice versa?*

The results have shown that risk propensity does have an effect on decision making with regards to internal control risk. Risk propensity studies have been widely researched in the field of managerial accounting and finance. This thesis contributes to behavioural accounting in the auditing domain as there have been calls for extensive research on audit judgment and decisions (Solomon and Trotman 2003). This chapter has highlighted possible limitations and implications for research, practice and auditing regulations.

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## APPENDICES

## **APPENDIX 1: INTERNAL CONTROL RESEARCH INSTRUMENT**

### **General Instruction**

It is important that you work independently. Please do not consult with others in performing this experiment. The responses of all participants will be held in strict confidence.

## **Instructions**

Assume that you have been assigned by your accounting firm as manager in charge of AAA Company, a manufacturing company, for the year ended 31 December, 2010. Although this is the first year that you have been on this engagement, your firm has performed the audit since 2000. An unqualified opinion has been issued for each year through 2009.

**You have been instructed by your managing partner that this audit has in the previous years run at a loss. You have been instructed to minimize the cost and your budget is set accordingly. The managing partner has indicated that you should complete the audit within the set budget.**

It is the middle of February, 2011 and you are now preparing the audit program for the 2010 year-end audit. Scheduling problems prevented any interim substantive tests of AAA Company's records. You were, however, able to conduct a review of internal control and perform compliance tests in November, 2010. No material exceptions were found and you were satisfied that internal controls were operating as intended.

This experiment is concerned only with accounts receivable. You will be required to form an opinion of the internal control structure of the accounts receivable. You are about to be presented with information that a review of the auditing literature indicates may be of interest for such a task. This includes both general information about the manufacturing industry as well as specific information about AAA Company. Most of the information is unchanging background information about industry conditions and AAA Company. Some of the information about AAA Company is varied to form a series of 12 different hypothetical situations you might encounter in your audit of AAA Company's accounts receivable. You are to respond to each situation taking into account the specific information presented in that situation and the unchanging background data. You will be asked to rate the strength of internal control of accounts receivable subsystem. Your response for each audit planning situation will take the form of four separate steps, one for each of four different sets of audit procedures you would choose in that situation.

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A more detailed description of the audit procedures included in each category are:

*(a) Confirmation of Accounts Receivable:*

Choice of sampling technique; selection of sample; preparation and mailing of initial and (where needed) second confirmation requests; checking of confirmation replies and investigation of discrepancies; summarization of results of confirmation requests.

*(b) Review of Uncollectible Accounts*

Preparation of an analysis of Allowance for Doubtful Accounts and reconciliation with related bad debt expense and general ledger; examination of authorizing documents; investigation of suspicious write-off; confirmation of selected charge-off accounts; examination of remittance advices for accounts not responding last year and not outstanding at December 31, 2010; investigation of credit standings for past-due or unusually large accounts.

*(c) Review of Cash Collection of Accounts Receivable*

Subsequent to Balance Sheet Date: self-explanatory.

*(d) Review of Year-End Sales Cutoff:*

Comparison of shipping and receiving records with sales invoices and credit memoranda for periods before and after balance sheet date.

The procedure to follow when responding to each situation is to:

- (1) review the unchanging background information;
- (2) examine the additional information presented in each situation;
- (3) based solely on this information, rate the strength of internal control.

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## **Background Information**

### **Firm History**

AAA Company is a mid-sized manufacturing company. It is engaged in the manufacture of food products and frozen chicken for consumption. AAA Company was founded in 1998 by its majority shareholder and Chief Executive Officer who holds 25 percent of its shares. A further 24 percent is owned by his family members. The remaining 51 percent is publicly held.

AAA has grown steadily from total assets of \$200,000 and total sales of \$700,000 in 1998 to total assets of \$5 million and sales of \$24 million in 2009. Unadjusted year-end figures indicate total assets of \$5.5 million as of December 31, 2010, and 2010 sales, up 12.5 percent to \$27 million.

### **Industry Condition**

The chicken industry is reasonably stable. Chicken market sales for 2009 were approximately 12 percent above the 1999 levels, which is a normal rate of increase in the industry during the last five years.

Accounts receivable is a critical audit area in manufacturing companies. Accounts receivable represents about 25 to 45 percent of total assets in most manufacturing companies.

### **Customers**

AAA Company has 3,800 customers in December of 2010. Approximately 70 percent of AAA Company's sales are to 800 wholesalers and large supermarkets, the other 30 percent is to 3000 retailers.

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### Sales Terms

Virtually all AAA Company's sales are on account, the infrequent exceptions being customers without established credit. The long-standing policy is that customer payments are due in 60 days. The firm offers cash discounts. The terms of the AAA invoice are 5/10, n/60. It also offers a discount to its customers ranging from 2 percent up to 7 percent according to the amounts of purchases. The firm's books show an unadjusted year-end accounts receivable balance of \$1.8 million.

### Bad Debts

AAA Company's accounts receivable turnover (sales/ average accounts receivable) and bad debts /sales have approximated the industry average for the years 2001-2004. While they have not yet been compiled for 2010, the chicken industry averages of bad debts/sales and accounts receivable turnover are expected to be unfavorable compared to the prior years. AAA Company's bad debts expense is determined through an annual review of the aged trial balance of accounts receivable by the controller and credit manager. The procedure is initiated in January each year.

### **Required:**

Given, the background information you are required to evaluate the 12 situations given hereafter and undertake the overall Internal Control Risk.

Please ensure that you have answered every question. Missing questions will mean all of your responses are unusable.

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Situation 1:

Sales Approval

All sales orders are **approved** by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are reviewed and approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Account receivable subsidiary ledger is maintained by a clerk **other** than the one who prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are not** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	adequate to strong	very strong

**PLEASE TURN TO THE NEXT PAGE**

Situation 2:

Sales Approval

All sales orders are **not** approved by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are reviewed and approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is maintained by a clerk **other** than the one who prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are not** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	adequate to strong	very strong

**PLEASE TURN TO THE NEXT PAGE**

Situation 3:

Sales Approval

All sales orders are **approved** by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are not** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are reviewed and approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is maintained by a clerk **other** than the one who prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are not** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	adequate to strong	very strong

**PLEASE TURN TO THE NEXT PAGE**

Situation 4:

Sales Approval

All sales orders are **approved** by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are **not** reviewed and approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is maintained by a clerk **other** than the one who prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are not** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	very strong	

**PLEASE TURN TO THE NEXT PAGE**

Situation 5:

Sales Approval

All sales orders are **approved** by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are reviewed and approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is **maintained by a clerk who also** prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	adequate to strong	very strong

**PLEASE TURN TO THE NEXT PAGE**

Situation 6:

Sales Approval

All sales orders are **approved** by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are reviewed and approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is maintained by a clerk **other** than the one who prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are not** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	adequate to strong	very strong

**PLEASE TURN TO THE NEXT PAGE**

Situation 7:

Sales Approval

All sales orders are **not approved** by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are not** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables **are** reviewed and approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is maintained by a clerk **other** than the one who prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	adequate to strong	very strong

**PLEASE TURN TO THE NEXT PAGE**

Situation 8:

Sales Approval

All sales orders are **not** approved by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are **not** reviewed but **are approved** by the controller.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is maintained by a clerk **other** than the one who prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	very strong	very strong

**PLEASE TURN TO THE NEXT PAGE**

Situation 9:

Sales Approval

All sales orders are **not** approved by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are not** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are reviewed and approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is maintained by a clerk **other** than the one who prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are not** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	very strong	strong

**PLEASE TURN TO THE NEXT PAGE**

Situation 10:

Sales Approval

All sales orders are **not** approved by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are reviewed and approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is maintained by a clerk **who also** prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	adequate to strong	very strong

**PLEASE TURN TO THE NEXT PAGE**

Situation 11:

Sales Approval

All sales orders are **approved** by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are **not** reviewed but approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is maintained by a clerk **other** than the one who prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	adequate to strong	very strong

**PLEASE TURN TO THE NEXT PAGE**

Situation 12

Sales Approval

All sales orders are **approved** by the **credit manager** before shipment.

Receiving Report Support

Credits for returned merchandise **are not** supported and approved by a receiving report.

Write-off Approval

Write-offs of receivables are **not** reviewed but approved by the **controller**.

Separation of Billing Function and Ledger Maintenance

Accounts receivable subsidiary ledger is maintained by a clerk **who also** prepares and mails out the monthly statements to customers.

Receivable Confirmation by Client

Accounts receivable **are** confirmed during the year by an employee independent of the accounts receivable and cash functions.

For the situation above, indicate your overall rating of internal control. Please circle your choice.

1	2	3	4	5	6	7
I _____	I _____	I _____	I _____	I _____	I _____	I _____
very Weak	weak	slightly weak	adequate	adequate to strong	adequate to strong	very strong

*Thank you for your participation*

## APPENDIX 2: CHOICE DILEMMAS QUESTIONNAIRE

### INSTRUCTIONS

On the following pages you will find a series of situations that are likely to occur in everyday life. The central person in each situation is faced with a choice between two alternative courses of actions, which we might call X and Y. Alternative X is more desirable and attractive than alternative Y, but the probability of attaining or achieving X is less than that of attaining or achieving Y.

For each situation on the following pages, you will be asked to indicate the minimum odds of success you would demand before recommending that the more attractive or desirable alternative, X be chosen.

Read each situation carefully before giving your judgment. Try to place yourself in the position of the central person in each of the situations. There are twelve situations in all.

Please ensure that you have answered every question. *Missing questions will mean all of your responses are unusable.*

1 Mr. A, an electrical engineer, who is married and has one child, has been working for a large electronics corporation since graduating from college five years ago. He is assured a lifetime job with a modest, though adequate, salary, and liberal pension benefits upon retirement. On the other hand, it is very unlikely that his salary will increase much more before he retires. While attending a convention, Mr. A is offered a job with a small, newly founded company which has a highly uncertain future. The new job would pay much more to start and would offer the possibility of share in the ownership if the company survived the competition of the larger firms.

Imagine that you are advising Mr. A. Listed below are several possibilities or odds of the new company's proving financially sound.

*Please check the lowest probability that you would consider acceptable to make it worthwhile for Mr. A to take the new job.*

- The chances are 1 in 10 that the company will prove financially sound.
- The chances are 3 in 10 that the company will prove financially sound.
- The chances are 5 in 10 that the company will prove financially sound.
- The chances are 7 in 10 that the company will prove financially sound.
- The chances are 9 in 10 that the company will prove financially sound.
- Place a check here if you think Mr. A should not take the new job no matter what the probabilities.

2. Mr. B, a 45 year old accountant, has recently been informed by his physician that he has developed a severe heart ailment. The disease would be sufficiently serious to force Mr. B to change many of his strongest life habits - reducing his workload, drastically changing his diet and giving up favorite leisure time pursuits. The physician suggests that a delicate medical operation could be attempted which, if successful, would completely relieve the heart condition. But its success could not be assured, and in fact, the operation might prove fatal.

Imagine that you are advising Mr. B. Listed below are several possibilities or odds that the operation will prove successful.

*Please check the lowest probability that you would consider acceptable for the operation to be performed.*

- Place a check here if you think Mr. B should not have the operation no matter what the probabilities.
- The chances are 9 in 10 that the operation will be successful.
- The chances are 7 in 10 that the operation will be successful.
- The chances are 5 in 10 that the operation will be successful.
- The chances are 3 in 10 that the operation will be successful.
- The chances are 1 in 10 that the operation will be successful.

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3. Mr. C, a married man with two children, has a steady job that pays him about \$8,000 per year. He can easily afford the necessities of life, but few of the luxuries. Mr. C's father, who died recently, carried a \$4,000 life insurance policy. Mr. C would like to invest this money in stocks. He is well aware of the secure "blue-chip" stocks and bonds that would pay approximately 6% on his investment. On the other hand, Mr. C has heard that the stocks of a relatively unknown Company X might double their present value if a new product, which is currently in production, is favorably received by the buying public. However, if the product is unfavorably received, the stocks would decline in value.

Imagine that you are advising Mr. C. Listed below are several probabilities or odds that Company X stocks will double their value.

*Please check the lowest probability that you would consider acceptable for Mr. C to invest in Company X Stocks.*

- The chances are 1 in 10 that the stocks will double their value.
- The chances are 3 in 10 that the stocks will double their value.
- The chances are 5 in 10 that the stocks will double their value.
- The chances are 7 in 10 that the stocks will double their value.
- The chances are 9 in 10 that the stocks will double their value.
- Place a check here if you think Mr. C should not invest in Company X stocks, no matter what the probabilities.

4. Mr. D is the captain of College X's football team. College X is playing its traditional rival, College Y, in the final game of the season. The game is in its final seconds, and Mr. D's team, College X, is behind in the score. College X has time to run one more play. Mr. D, the captain, must decide whether it would be best to settle for a tie score with a play which would be almost certain to work or, on the other hand, should he try a more complicated and risky play which could bring victory if it succeeds, but defeat if does not.

Imagine that you are advising Mr. D. Listed below are several probabilities or odds that the risky play will work.

*Please check the lowest probability that you would consider acceptable for the risky play to be attempted.*

- Place a check here if you think Mr. D should not attempt the risky play no matter what the probabilities.
- The chances are 9 in 10 that the risky play will work.
- The chances are 7 in 10 that the risky play will work.
- The chances are 5 in 10 that the risky play will work.
- The chances are 3 in 10 that the risky play will work.
- The chances are 1 in 10 that the risky play will work

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5. Mr. E is president of a light metals corporation in the United States. The corporation is quite prosperous, and has strongly considered the possibilities of business expansion by building an additional plant in a new location. The choice is between a building another plant in the US, where there would be a moderate return on the initial investment; or building the plant in a foreign country.

Lower labor costs and easy access to raw materials in that country would mean a much higher return on the initial investment. On the other hand, there is a history of political instability and revolution in the foreign country under consideration. In fact, the leader of a small minority party is committed to nationalizing, that is, taking over all foreign investments.

Imagine that you are advising Mr. E. Listed below are several probabilities or odds of continued political stability in the foreign country under consideration.

*Please check the lowest probability that you would consider acceptable for Mr. E's corporation to build a plant in the country.*

- The chances are 1 in 10 that the foreign country will remain political stable.
- The chances are 3 in 10 that the foreign country will remain political stable.
- The chances are 5 in 10 that the foreign country will remain political stable.
- The chances are 7 in 10 that the foreign country will remain political stable.
- The chances are 9 in 10 that the foreign country will remain political stable.
- Place a check here if you think Mr. E's corporation should not build a plant in the foreign country, no matter what the probabilities.

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6. Mr. F is currently a college senior who is very eager to pursue graduate study in chemistry leading to Doctor of Philosophy degree. He has been accepted by both University X and University Y. University X has a world wide reputation for excellence in chemistry. While a degree from University X would signify outstanding training in this field, the standards are so rigorous that only a fraction of the degree candidates actually receive the degree. University Y, on the other hand, has much less of a reputation in chemistry, but almost everyone admitted is awarded the Doctor of Philosophy degree, though the degree has much less prestige than the corresponding degree from University X.

Imagine that you are advising Mr. F. Listed below are several probabilities or odds that Mr. F would be awarded a degree at University X, the one with the greater prestige.

*Please check the lowest probabilities that you would consider acceptable to make it worthwhile for Mr. F to enroll in University X rather than University Y.*

Place a check here if you think Mr. F should not enroll in University X, no matter what the probabilities.

The chances are 9 in 10 that Mr. F would receive a degree from University X.

The chances are 7 in 10 that Mr. F would receive a degree from University X.

The chances are 5 in 10 that Mr. F would receive a degree from University X.

The chances are 3 in 10 that Mr. F would receive a degree from University X.

The chances are 1 in 10 that Mr. F would receive a degree from University X.

7. Mr. G, a competent chess player, is participating in a national chess tournament. In an early match, he draws the top-favored player in the tournament as his opponent. Mr. G has been given a relatively low ranking in view of his performance in previous tournaments. During the course of his play with the top-favored man, Mr. G notes the possibility of a deceptive though risky maneuver which might bring him a quick victory. At the same time, if the attempted maneuver should fail, Mr. G would be left in an exposed position and defeat would almost certainly follow.

Imagine that you are advising Mr. G. Listed below are several possibilities or odds that Mr. G's deceptive play would succeed.

*Please check the lowest probability that you would consider acceptable for the risky play in question to be attempted.*

The chances are 1 in 10 that the play would succeed.

The chances are 3 in 10 that the play would succeed.

The chances are 5 in 10 that the play would succeed.

The chances are 7 in 10 that the play would succeed.

The chances are 9 in 10 that the play would succeed.

Place a check here if you think Mr. G should not attempt the risky play, no matter what the probabilities.

**PLEASE TURN TO THE NEXT PAGE**

8. Mr. H, a college senior has studied the piano since childhood. He has won amateur prizes and given small recitals, suggesting that Mr. H has considerable musical talent. As graduation approaches Mr. H has the choice of going to medical school to become a physician, a profession which would bring certain prestige and financial rewards; or entering a conservatory of music for advanced training with a well known pianist. Mr. H realizes that even upon completion of his piano studies, which would take many more years and a lot of money, success as a concert pianist would not be assured.

Imagine that you are advising Mr. H. Listed below are several probabilities or odds that Mr. H would succeed as a concert pianist.

*Please check the lowest probability that you would consider acceptable for Mr. H to continue with his musical training.*

Place a check here if you think Mr. H should not pursue his musical training, no matter what the probabilities.

The chances are 9 in 10 that Mr. H would succeed as a concert pianist.

The chances are 7 in 10 that Mr. H would succeed as a concert pianist.

The chances are 5 in 10 that Mr. H would succeed as a concert pianist.

The chances are 3 in 10 that Mr. H would succeed as a concert pianist.

The chances are 1 in 10 that Mr. H would succeed as a concert pianist.

9. Mr. J is an American captured by the enemy in World War II and placed in a prisoner-of-war camp. Conditions in the camp are quite bad, with long hours of hard physical labor and a barely sufficient diet. After spending several months in this camp, Mr. J notes the possibility of escape by concealing himself in a supply truck that shuttles in and out of the camp. Of course, there is no guarantee that the escape would prove successful. Recapture by the enemy could well mean execution.

Imagine that you are advising Mr. J. Listed below are several probabilities or odds of a successful escape from the prisoner-of-war camp.

*Please check the lowest probability that you would consider acceptable for an escape to be attempted.*

The chances are 1 in 10 that the escape would succeed.

The chances are 3 in 10 that the escape would succeed.

The chances are 5 in 10 that the escape would succeed.

The chances are 7 in 10 that the escape would succeed.

The chances are 9 in 10 that the escape would succeed.

Place a check here if you think Mr. J should not try to escape, no matter what the probabilities.

**PLEASE TURN TO THE NEXT PAGE**

10. Mr. K is a successful businessman who has participated in a number of civic activities of considerable value to the community. Mr. K has been approached by the leaders of his political party as a possible congressional candidate in the next election. Mr. K's party is a minority party in the district, though the party has won occasional elections in the past. Mr. K would like to hold political office; however, this would involve a serious financial sacrifice on his part, since the party has insufficient campaign funds. He would also have to endure the attacks of his political opponents to a heated campaign.

Imagine that you are advising Mr. K. Listed below are several probabilities or odds of Mr. K's winning the election in his district.

*Please check the lowest probability that you would consider acceptable to make it worthwhile for Mr. K to run for political office.*

Place a check here if you think Mr. K should not run for political office, no matter what the probabilities

The chances are 9 in 10 that Mr. K would win the election.

The chances are 7 in 10 that Mr. K would win the election.

The chances are 5 in 10 that Mr. K would win the election.

The chances are 3 in 10 that Mr. K would win the election.

The chances are 1 in 10 that Mr. K would win the election.

11. Mr. L, a married 30 year old research physicist, has been given a five year appointment by a major university laboratory. As he contemplates the next five years, he realizes he might work on a difficult, long-term problem which, if a solution could be found, would resolve basic scientific issues in the field and bring high scientific honors. If no solution were found, however, Mr. L would have little to show for his five years in the laboratory, and this would make it hard for him to get a good job afterwards. On the other hand, he could, as most of his professional associates are doing, work on a series of short-term problems where solutions would be easier to find, but where the problems are of lesser scientific importance.

Imagine that you are advising Mr. L. Listed below are several probabilities or odds that a solution would be found to the difficult, long-term problem that Mr. L has in mind.

*Please check the lowest probability that you would consider acceptable to make it worthwhile for Mr. L to work on the more difficult long-term problem.*

The chances are 1 in 10 that Mr. L would solve the long-term, difficult problem.

The chances are 3 in 10 that Mr. L would solve the long-term, difficult problem.

The chances are 5 in 10 that Mr. L would solve the long-term, difficult problem.

The chances are 7 in 10 that Mr. L would solve the long-term, difficult problem.

The chances are 9 in 10 that Mr. L would solve the long-term, difficult problem.

Place a check here if you think Mr. L should not choose the long-term, difficult problem, no matter what the probabilities.

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12. Mr. M is contemplating marriage to Miss T, a girl whom he has known for a little more than a year. Recently, however, a number of arguments have occurred between them, suggesting some sharp differences of opinion in the way each views certain matters. Indeed, they decide to seek professional advice from a marriage counselor, as to whether it would be wise for them to marry. On the basis of these meetings with the marriage counselor, they realize that a happy marriage, while possible, would not be assured.

Imagine that you are advising Mr. M and Miss T. Listed below are several probabilities or odds that their marriage would prove to be a happy and successful one.

*Please check the lowest probability that you would consider acceptable for Mr. M and Miss T to get married.*

Place a check here if you think Mr. M and Miss T should not marry, no matter what the probabilities.

The chances are 9 in 10 that the marriage would be happy and successful.

The chances are 7 in 10 that the marriage would be happy and successful.

The chances are 5 in 10 that the marriage would be happy and successful.

The chances are 3 in 10 that the marriage would be happy and successful.

The chances are 1 in 10 that the marriage would be happy and successful.

***Thank you for your Participation.***