



# **Fraud risk factors and auditing standards : an integrated identification of a fraud risk management model**

Sitorus, Tumpal Wagner

<https://researchportal.scu.edu.au/esploro/outputs/graduate/Fraud-risk-factors-and-auditing-standards/991012880000202368/filesAndLinks?index=0>

---

Sitorus, T. W. (2008). Fraud risk factors and auditing standards: an integrated identification of a fraud risk management model [Southern Cross University].

<https://researchportal.scu.edu.au/esploro/outputs/graduate/Fraud-risk-factors-and-auditing-standards/991012880000202368>

---

Southern Cross University Cross Connect: <https://researchportal.scu.edu.au/esploro/crossconnect@scu.edu.au>

Open

Downloaded On 2024/05/03 18:38:43 +1000

**Fraud risk factors and auditing standards:**  
**An integrated identification of a fraud risk management model**

A thesis submitted by Tumpal Wagner Sitorus (SE [Accounting], MSi [Finance]) to the Southern Cross University Division of Research and University School of Commerce and Management, Faculty of Business and Law for its Masters Thesis examination process and the award of a Master's degree of Business by thesis.

## **Abstract**

The aims of this thesis are to set out the ten audit outcome based scenarios and the research questions and auditing problems derived from the scenarios, to develop a wide fraud framework and two hypothesised models of fraud symptoms, and to examine the questions and problems using literature review studies and the models using structural equations modelling. This approach is in accordance with the direct call for the use of more advanced statistical methods by Michael & Adler (1971), Steane & Cockerell (2005), and Zahra *et al.* (2005). The thesis uses a range of references drawn from the fields of economics, finance, auditing, criminology, law, psychology, organisational behaviour and research methodology.

It finds that the fraud risk factors listed in the International Standards on Auditing (ISA) 240, have only been drawn from the findings of Cressey (1950, 1973), and that later models proposed by Krambia-Kapardis (1999, 2001, 2002), for instance, have still not fully explained the aetiology of fraud and the complexity of all forms of fraud and corruption (Wells, 1997, 2005, 2007).

Three additional fraud risk factors, namely collusion, justice avoidance, and organisational orientation, were included in an examination of two hypothesised models that incorporated rationalisation into causal relationships within a fraud commission model and hence of a pre-fraud risk management model.

A half-sample of 122 Indonesian respondents, who had ever encountered fraud or corrupt practices, was used to test two theory based structural equations models. Because of the poor fit of the two models to the data as shown by the Standardized Root Mean Residual (SRMR) index and because the path between rationalisation and commission of fraud was found to be non-significant, an exploratory research process

was used to derive a *post-hoc* model. The outcome of this process was the introduction of additional paths into the second model.

The post-hoc model was tested using another half-sample of 122 respondents and produced a good fit to the data. Significant direct and indirect drivers of commission of fraud were identified and these extended the theory, introduced a wider range of fraud risk factors for consideration by the International Federation of Accountants (IFAC) and the Public Company Accounting Oversight Board (PCAOB), for instance, and called for both the establishment of an integrated mechanism by audit and justice institutions and more integrated curriculum.

Collusion was perceived to be the strongest direct influence on commission of fraud with a lesser effect arising from opportunity for fraud and a final direct influence arising from the avoidance of justice. In addition, organisational orientation was perceived to provide another indirect influence on the fraud commission.

The overall findings in regard to all of the research questions and problems, theoretical models, and the search for a more robust methodology have provided guidance for the expansion of the consideration of fraud risk factors and hence of fraud risk theories, for the more robust prescription to overcome the fraud symptoms, and for the stronger solution to resolve problems and failures, hence the eight recommendations that can be proffered. These should be taken into consideration by the accounting profession and auditing (self-) regulators (e.g., Indonesian Audit Board), fraud and auditing researchers, practitioners, fraud experts, criminologist, academia or authorities (e.g., Indonesian justice institutions).

*Key Words:* Fraud risk factors, collusion, justice avoidance, organisational orientation, auditing standards setters, structural equations modelling.

*Data Availability:* For data and a potentially collaborative study (using worldwide data), contact the author.

## Declaration and statement of original authorship

This thesis includes the following published material or material that is invited for several refereed publications:

1. Sitorus, T. & Scott, D. (2008) 'The roles of collusion, organisational orientation, justice avoidance, and rationalisation on commission of fraud: a model based test', *Review of Business Research*, Vol. 8, No.1, pp. 132-147. Available at: [http://findarticles.com/p/articles/mi\\_6776/is\\_1\\_8/ai\\_n28552092](http://findarticles.com/p/articles/mi_6776/is_1_8/ai_n28552092), <http://ssrn.com/abstract=1297948>, and [http://epubs.scu.edu.au/comm\\_pubs/44](http://epubs.scu.edu.au/comm_pubs/44).
2. Sitorus, T. & Scott, D. (2008b) *The roles of collusion, organisational orientation, justice avoidance, and rationalisation on commission of fraud: a model based test*, paper to be presented at the International Academy of Business and Economics (IABE) - Stockholm-Summer Conference, South Stockholm University (Södertörn University), Stockholm, Sweden, 6 – 8 June. Title and author of the paper above available at: <http://www.iabe.org/domains/iabeX/Documents/IABE-2008%20Stockholm-%20Program%20Outline-Online.pdf>.
3. Sitorus, T. & Scott D. (2008c) *Comments on exposure draft: proposed revised and redrafted international standard on auditing ISA 505 (revised and redrafted), external confirmations*. Available at: <http://www.ifac.org/Guidance/EXD-commentDL.php?EDCID=03371>, and [http://epubs.scu.edu.au/comm\\_pubs/43](http://epubs.scu.edu.au/comm_pubs/43), and Indonesian accountants' magazine (*Majalah Akuntan Indonesia*), Vol. 2, No. 7.
4. Sitorus, T. & Scott, D. (2008d) 'Integrated fraud risk factors and robust methodology', *International Journal of Auditing* (reviewed, invited for

resubmission by the editor of International Journal of Auditing, on 15 July 2008, 30 October 2008, 7 November 2008, and accepted for publication on 16 December 2008).

5. Sitorus, T. & Scott, D. (2008e) 'Fraud risk factors and auditing standards: a call for the replication of empirical research', *The Arab Journal of Accounting* (invited by Managing Editor of the Arab Journal of Accounting and submitted on 19 June 2008, and resubmitted on 21 November 2008).
6. Sitorus, T., Scott, D. & Morton, A. (2008) 'Group perceptual fraud symptoms differences: A multi-group model analysis. Working paper. School of Commerce and Management, Southern Cross University (it is planned to submit before 31 January 2009 to <papers@isarhq.org> for the 15th Annual International Symposium on Audit Research (ISAR) and after that to the Managerial Auditing Journal.

The author's contribution to all of these papers was 90%.

I hereby declare that the work presented in this thesis is the original work of the author except as acknowledged in the text and above. It has not previously been submitted, either in whole or in part, for a degree at this or any other university.

The Southern Cross University (SCU) Human Research Ethics Committee (HREC) granted ethics approval with special conditions for the research described in this thesis and the approval number is ECN-07-52, of 15 May 2007.

December 2008

T. Sitorus

## Table of contents

|                                                                    |       |
|--------------------------------------------------------------------|-------|
| Abstract                                                           | ii    |
| Declaration and statement of original authorship                   | iv    |
| Table of contents                                                  | vi    |
| List of tables                                                     | xiv   |
| List of figures                                                    | xv    |
| List of appendices                                                 | xvi   |
| Acknowledgements                                                   | xvii  |
| <br><i>1 Introduction</i>                                          | <br>1 |
| 1.1 Background to the research                                     | 2     |
| 1.1.1 The USA and global fraud risk factors and their limitations  | 2     |
| 1.1.2 Proposing alternative fraud risk factors                     | 3     |
| 1.1.3 The message from recent major fraud scandals                 | 4     |
| 1.1.4 Author's motivation                                          | 4     |
| 1.1.5 The Southern Cross University Division of Research policy    | 5     |
| 1.2 Research objective, research questions and hypothesised models | 5     |
| 1.2.1 Research objective                                           | 5     |
| 1.2.2 Research questions                                           | 6     |
| 1.2.3 Two hypothesised models                                      | 7     |
| 1.3 Justification                                                  | 8     |
| 1.4 Fraud definition and classification                            | 11    |
| 1.4.1 All forms of fraud                                           | 11    |
| 1.4.2 Other definitions                                            | 11    |
| 1.5 Scientific research methodologies                              | 11    |
| 1.5.1 Calls for more appropriate scientific research methodologies | 11    |
| 1.5.2 Structural equations modelling                               | 13    |
| 1.6 Outline of the thesis                                          | 14    |

|                                                             |        |
|-------------------------------------------------------------|--------|
| 1.7 Initial limitations and key assumptions                 | 15     |
| 1.7.1 The ethics aspect                                     | 15     |
| 1.7.2 Environmental factors                                 | 16     |
| 1.7.3 Control of all measured variables                     | 17     |
| 1.8 Conclusion                                              | 17     |
| <br><i>2 Literature review</i>                              | <br>18 |
| 2.1 Introduction                                            | 18     |
| 2.2 Possible outcomes from an auditing process              | 19     |
| 2.3 The broad range of a fraud risk factors framework       | 22     |
| 2.3.1 Asymmetric information                                | 23     |
| 2.3.2 Theory of accounting fraud                            | 25     |
| 2.3.3 Theory of planned behaviour and its extension         | 27     |
| 2.3.4 Practical problem of law enforcement;                 | 29     |
| 2.3.5 Social identity theory                                | 29     |
| 2.3.6 The theory of monitoring                              | 30     |
| 2.3.7 Two views of conspiracy                               | 31     |
| 2.3.7.1 Collusive fraud                                     | 32     |
| 2.3.7.2 Cooperation                                         | 32     |
| 2.3.8 Organisational identity                               | 34     |
| 2.3.9 Organisational reputation                             | 34     |
| 2.3.10 Organisational image                                 | 35     |
| 2.3.11 Organisational adaptation                            | 36     |
| 2.3.12 Contextual factors                                   | 36     |
| 2.4 Summary                                                 | 37     |
| <br><i>3 Two initial theoretical fraud risk models</i>      | <br>39 |
| 3.1 Introduction                                            | 39     |
| 3.2 The outcomes of fraud theory and its theoretical models | 40     |
| 3.2.1 Reflective models                                     | 40     |
| 3.2.2 Causal multiple relationships                         | 41     |
| 3.2.2.1 From opportunity for fraud to personal behaviour    | 42     |

|                                                                             |    |
|-----------------------------------------------------------------------------|----|
| 3.2.2.2 From organisational orientation to opportunity for fraud            | 42 |
| 3.2.2.3 From rationalisation to fraud commission                            | 43 |
| 3.2.2.4 From personal behaviour to the fraud commission and rationalisation | 43 |
| 3.2.2.5 From justice avoidance and collusion to the fraud commission        | 43 |
| 3.3 Two hypothesised models                                                 | 44 |
| 3.4 A call for appropriate tests of the theoretical model                   | 46 |
| 3.5 Summary                                                                 | 47 |
| <i>4 In search of a robust scientific research methodology</i>              | 48 |
| 4.1 Introduction                                                            | 48 |
| 4.2 In search of methodologies of fraud risk investigations                 | 47 |
| 4.2.1 Qualitative methodologies                                             | 50 |
| 4.2.2 Quantitative methodologies                                            | 53 |
| 4.3 Summary                                                                 | 55 |
| <i>5 Scientific research methodology: Structural equations modelling</i>    | 58 |
| 5.1 Introduction                                                            | 58 |
| 5.2 Definition of individual factors                                        | 59 |
| 5.2.1 Factors                                                               | 59 |
| 5.2.2 Scale development and measurement                                     | 60 |
| 5.2.3 Human ethics committee review                                         | 61 |
| 5.2.4 Expert review                                                         | 61 |
| 5.2.5 Multivariate normal data                                              | 62 |
| 5.2.6 Preliminary factor exploration                                        | 62 |
| 5.2.7 MLFA                                                                  | 63 |
| 5.2.8 Tandem process                                                        | 64 |
| 5.3 Overall models                                                          | 64 |
| 5.3.1 Unidimensionality                                                     | 65 |
| 5.3.2 Congeneric model                                                      | 65 |
| 5.3.3 Indicators per factor                                                 | 66 |
| 5.3.4 Over-identified model                                                 | 67 |
| 5.3.5 Reflective measurement theory                                         | 68 |

|                                                                        |    |
|------------------------------------------------------------------------|----|
| 5.4 Empirical study                                                    | 69 |
| 5.4.1 Measurement scales                                               | 69 |
| 5.4.2 Sample                                                           | 69 |
| 5.4.3 Response rate                                                    | 70 |
| 5.4.4 Estimation technique                                             | 70 |
| 5.4.5 Model complexity                                                 | 71 |
| 5.4.6 Missing data                                                     | 71 |
| 5.4.7 Amount of average error variance among the reflective indicators | 71 |
| 5.4.8 Model specification                                              | 72 |
| 5.4.9 Identification problems avoidance                                | 72 |
| 5.4.10 A Heywood case                                                  | 72 |
| 5.5 Measurement model validity assessment                              | 73 |
| 5.5.1 Fit assessment                                                   | 73 |
| 5.5.1.1 The basics of goodness-of-fit                                  | 73 |
| 5.5.1.2 Absolute fit measures                                          | 74 |
| 5.5.1.2.1 Chi-square statistic                                         | 74 |
| 5.5.1.2.2 Goodness-of-fit index (GFI)                                  | 75 |
| 5.5.1.2.3 Adjusted goodness-of-fit index (AGFI)                        | 75 |
| 5.5.1.2.4 Root mean square residual (RMSR)                             | 75 |
| 5.5.1.2.5 Standardized root mean square residual (SRMR)                | 75 |
| 5.5.1.2.6 Root mean square error of approximation (RMSEA)              | 76 |
| 5.5.1.2.7 Normed chi-square                                            | 76 |
| 5.5.1.2.8 Expected cross-validation index (ECVI)                       | 76 |
| 5.5.1.2.9 Actual cross-validation index (CVI)                          | 76 |
| 5.5.1.2.10 Gamma hat                                                   | 77 |
| 5.5.1.3 Incremental fit indices                                        | 77 |
| 5.5.1.3.1 Normed fit index (NFI)                                       | 77 |
| 5.5.1.3.2 Tucker Lewis index (TLI)                                     | 77 |
| 5.5.1.3.3 Comparative fit index (CFI)                                  | 78 |
| 5.5.1.3.4 Relative non-centrality index (RNI)                          | 78 |
| 5.5.1.4 Parsimony fit indices                                          | 78 |

|                                                                                                     |    |
|-----------------------------------------------------------------------------------------------------|----|
| 5.5.1.4.1 Parsimony normed fit index (PNFI)                                                         | 78 |
| 5.5.1.4.2 Parsimony goodness-of-fit index (PGFI)                                                    | 78 |
| 5.5.2 Using fit indices                                                                             | 79 |
| 5.5.2.1 Problems with the chi-square test                                                           | 79 |
| 5.5.2.2 Guideline for the cut-off values for fit indices                                            | 79 |
| 5.5.3 CFA test based construct validity                                                             | 80 |
| 5.5.3.1 Convergent validity                                                                         | 81 |
| 5.5.3.1.1 Regression weights                                                                        | 81 |
| 5.5.3.1.2 Variance extracted (VE)                                                                   | 81 |
| 5.5.3.1.3 Reliability                                                                               | 81 |
| 5.5.3.2 Discriminant validity                                                                       | 82 |
| 5.5.3.3 Face validity                                                                               | 82 |
| 5.5.4 Modifying the measurement model                                                               | 83 |
| 5.6 Structural model specification                                                                  | 83 |
| 5.6.1 Units of analysis                                                                             | 83 |
| 5.6.2 Model specification using a path diagram                                                      | 84 |
| 5.6.3 Development of the SEM                                                                        | 84 |
| 5.7 Structural model assessment                                                                     | 85 |
| 5.7.1 SEM fit assessment                                                                            | 85 |
| 5.7.2 Hypothesised dependence relationships examination                                             | 85 |
| 5.7.3 Model development strategy                                                                    | 86 |
| 5.7.4 Types of relationships within a model                                                         | 86 |
| 5.7.4.1 Direct effects                                                                              | 87 |
| 5.7.4.2 Indirect effects                                                                            | 87 |
| 5.7.4.3 Total effects                                                                               | 87 |
| 5.8 Summary                                                                                         | 87 |
| <i>6. Analysis of the data: construct development and testing of two initial theoretical models</i> | 89 |
| 6.1 Introduction                                                                                    | 89 |
| 6.2 Defining the individual constructs                                                              | 90 |
| 6.2.1 Fraud                                                                                         | 90 |

|                                                                        |     |
|------------------------------------------------------------------------|-----|
| 6.2.2 Opportunity for fraud                                            | 91  |
| 6.2.3 Rationalisation                                                  | 91  |
| 6.2.4 Potential network of collusion and commission of fraud           | 92  |
| 6.2.5 Organisational orientation vis a vis fraud                       | 92  |
| 6.2.6 Justice avoidance                                                | 92  |
| 6.2.7 Personal behaviour                                               | 93  |
| 6.3 Scale development and measurement                                  | 93  |
| 6.4. Ethics approval                                                   | 94  |
| 6.4.1 In relation to further scholarly background                      | 94  |
| 6.4.2 In relation to the ethics complaints statement                   | 94  |
| 6.4.3 In relation to contact details                                   | 94  |
| 6.4.4 In relation to information on the last page of the questionnaire | 95  |
| 6.5 Experts                                                            | 95  |
| 6.6 Data                                                               | 96  |
| 6.6.1 Survey participants                                              | 96  |
| 6.6.2 Requirement for multivariate normal data                         | 99  |
| 6.7 MLFA                                                               | 99  |
| 6.7.1 Preliminary factor exploration                                   | 100 |
| 6.7.2 MLFA structure                                                   | 100 |
| 6.7.2.1 Collusion                                                      | 101 |
| 6.7.2.2 Commission of fraud                                            | 102 |
| 6.7.2.3 Rationalisation                                                | 102 |
| 6.7.2.4 Opportunity for fraud                                          | 103 |
| 6.7.2.5 Organisational orientation vis a vis fraud                     | 103 |
| 6.7.2.6 Justice avoidance                                              | 104 |
| 6.7.2.7 Personal behaviour                                             | 105 |
| 6.8 Tandem CFA process and CFA based convergent validity assessment    | 106 |
| 6.8.1 Collusion (F3)                                                   | 106 |
| 6.8.2 Commission of fraud (F4)                                         | 106 |
| 6.8.3 Rationalisation (F2)                                             | 106 |
| 6.8.4 Opportunity (F1)                                                 | 107 |

|                                                                             |     |
|-----------------------------------------------------------------------------|-----|
| 6.8.5 Organisational orientation (F5)                                       | 107 |
| 6.8.6 Justice avoidance (F6)                                                | 107 |
| 6.9 Measurement model CFA discriminant validity                             | 109 |
| 6.10 Testing the two hypothesised model                                     | 110 |
| 6.11 Summary                                                                | 112 |
| <i>7 Analysis of the Data: testing of the post hoc model</i>                | 114 |
| 7.1 Introduction                                                            | 114 |
| 7.2 Model modification                                                      | 115 |
| 7.2.1 Locating the badness of SRMR                                          | 115 |
| 7.2.2 Adding causal paths amongst latent constructs and indicator variables | 116 |
| 7.2.2.1 The three new paths in the structural model                         | 118 |
| 7.2.2.2 The nine new paths from the measurement model                       | 119 |
| 7.3 Cross-validation                                                        | 123 |
| 7.4 Final results                                                           | 123 |
| 7.5 Summary                                                                 | 127 |
| <i>8 Discussion and conclusions</i>                                         | 129 |
| 8.1 Research question 1                                                     | 132 |
| 8.2 Research questions 2                                                    | 133 |
| 8.3 Research questions 3                                                    | 134 |
| 8.4 Research questions 4                                                    | 134 |
| 8.5 Research questions 5                                                    | 135 |
| 8.6 Research questions 6                                                    | 135 |
| 8.7 Research questions 7                                                    | 135 |
| 8.8 Research questions 8                                                    | 136 |
| 8.9 The first and second hypothesised models                                | 137 |
| 8.10 The post hoc model                                                     | 137 |
| 8.11 The extension of fraud theory                                          | 138 |
| 8.12 A more robust scientific research methodology                          | 140 |
| 8.13 Recommendations                                                        | 141 |
| 8.13.1 In relation to an organisational culture perspective                 | 141 |

|                                                                      |     |
|----------------------------------------------------------------------|-----|
| 8.13.2 In relation to a business ethics perspective                  | 142 |
| 8.13.3 In relation to an auditing perspective                        | 142 |
| 8.13.4 In relation to a fraud auditing perspective                   | 142 |
| 8.13.5 In relation to an institutional arrangements perspective      | 142 |
| 8.13.6 In relation to fraud risk factor considerations               | 143 |
| 8.13.7 In relation to a cooperation and mechanism design perspective | 143 |
| 8.13.8 In relation to a curriculum and knowledge perspective         | 143 |
| 8.14 Study limitation                                                | 144 |
| 8.14.1 Content, context, and other manifest features                 | 144 |
| 8.14.2 Chi-square test                                               | 144 |
| 8.15 Suggestions for future research                                 | 146 |
| 8.16 Summary                                                         | 146 |
| References                                                           | 148 |
| Appendices                                                           |     |
| Appendix 1 (a, b)                                                    | 182 |
| Appendix 2 (a, b, c, d)                                              | 201 |
| Appendix 3                                                           | 215 |
| Appendix 4                                                           | 217 |
| Appendix 5 (a, b, c, d, e, f)                                        | 220 |
| Appendix 6 (a, b)                                                    | 238 |
| Appendix 7 (a, b)                                                    | 240 |
| Appendix 8 (a, b, c, d )                                             | 242 |

## **List of tables**

|                 |                                                                         |     |
|-----------------|-------------------------------------------------------------------------|-----|
| Table 2         | Ten possible auditing process outcomes                                  | 20  |
| Table 3.1       | The direction of paths                                                  | 41  |
| Table 3.2       | The integrated fraud symptoms                                           | 45  |
| Table 6.1       | Respondent composition                                                  | 98  |
| Table 6.2 (a)   | MLFA framework for collusion with each variable's communality           | 101 |
| Table 6.2 (b)   | MLFA framework for commission of fraud with each variable's communality | 102 |
| Table 6.2 (c)   | MLFA framework for "rationalisation" with each variable's communality   | 102 |
| Table 6.2 (d)   | MLFA framework for opportunity with each variable's communality         | 103 |
| Table 6.2 (e)   | MLFA framework for organisation with each variable's communality        | 103 |
| Table 6.2 (f-1) | MLFA framework for justice avoidance with each variable's               | 104 |
| Table 6.2 (f-2) | MLFA framework for justice avoidance with each factor loading           | 104 |
| Table 6.2 (g-1) | MLFA framework for personal behaviour with each variable's communality  | 105 |
| Table 6.2 (g-2) | MLFA framework for personal behaviour with each factor loadings         | 105 |
| Table 6.3       | Construct variance extracted and reliability (sample 2)                 | 107 |
| Table 6.4       | CFA – fit indices (sample 1)                                            | 108 |
| Table 6.5       | The correlation matrix (sample 2)                                       | 109 |
| Table 7.1       | The path between rationalisation and commission                         | 116 |
| Table 7.2       | Result of the 1st and 2nd models                                        | 117 |
| Table 7.3       | The new three paths in the structural model                             | 118 |
| Table 7.4       | The new nine measurement model paths                                    | 119 |
| Table 7.5       | Regression weights for structural model (maximum likelihood estimation) | 125 |
| Table 7.6       | Standardised significant direct, indirect, and total effects            | 126 |

## **List of figures**

|            |                                                                                  |     |
|------------|----------------------------------------------------------------------------------|-----|
| Figure 1.1 | Initial fraud risk model                                                         | 7   |
| Figure 1.2 | Types of samples used in 136 prior fraud studies from 1950 to 2008               | 9   |
| Figure 1.3 | The structure of thesis                                                          | 14  |
| Figure 2.1 | Demand curves for fraudulent practices                                           | 26  |
| Figure 2.2 | Planned behaviour theory implemented in regard to a financial statement decision | 28  |
| Figure 4.1 | Methodologies of fraud risk investigations (1924 to 2008)                        | 49  |
| Figure 4.2 | Qualitative methodologies of fraud risk investigations (1924 to 2008)            | 50  |
| Figure 7.1 | Model with additional introduced paths                                           | 122 |
| Figure 7.2 | Tested model showing path values (error terms omitted)                           | 124 |

## **List of appendices**

|                  |                                                                      |     |
|------------------|----------------------------------------------------------------------|-----|
| Appendix 1 (a)   | The types of samples drawn by 136 prior fraud (risk factors) studies | 182 |
| Appendix 1 (b)   | Complete reference details for the third thesis justification        | 186 |
| Appendix 2 (a)   | Cover letter to the leaders of Indonesian institutions               | 201 |
| Appendix 2 (b)   | Cover letter to prospective respondents                              | 202 |
| Appendix 2 (c)   | Questionnaire                                                        | 203 |
| Appendix 2 (d)   | Indonesian translation of the questionnaire                          | 209 |
| Appendix 3       | Research methodologies of fraud risk investigations                  | 215 |
| Appendix 4       | Skewness and kurtosis of all the observed variables                  | 217 |
| Appendix 5 (a)   | Tandem process – “Opportunity for fraud”                             | 220 |
| Appendix 5 (b)   | Tandem process – “Rationalisation”                                   | 223 |
| Appendix 5 (c)   | Tandem process – “Collusion”                                         | 226 |
| Appendix 5 (d)   | Tandem process – “Commission of fraud”                               | 229 |
| Appendix 5 (e)   | Tandem process – “Organisational orientation”                        | 232 |
| Appendix 5 (f)   | Tandem process – “Justice avoidance”                                 | 235 |
| Appendix 6 (a)   | SEM – fit indices: the first theoretical model                       | 238 |
| Appendix 6 (b)   | SEM – fit indices: the second theoretical model                      | 239 |
| Appendix 7 (a)   | Standardized residual covariances (the first model)                  | 240 |
| Appendix 7 (b)   | Standardized residual covariances (the second model)                 | 241 |
| Appendix 8 (a)   | Post hoc model: fit indices                                          | 242 |
| Appendix 8 (b)   | Post hoc model: standardized residual covariances                    | 246 |
| Appendix 8 (c)   | Post hoc model: regression weights                                   | 247 |
| Appendix 8 (d-1) | Post hoc model: standardized total effects                           | 248 |
| Appendix 8 (d-2) | Post hoc model: standardized direct effects                          | 249 |
| Appendix 8 (d-3) | Post hoc model: standardized indirect effects                        | 250 |

## **Acknowledgments**

The author receives financial support and non-financial support and awards from the Australia Indonesia Partnership for Reconstruction and Development, the Southern Cross University Pro Vice-Chancellor (Research) and the Head of the School of Commerce and Management. The Southern Cross University Division of Research, School of Commerce and Management, Library, International Office, Human Research Ethics Committee, Information Technology and Telecommunication Services, Postgraduate Association leaders and staff have also supported me in achieving international refereed publications and conference presentations during my Master of Business studies.

This thesis has been supervised by Emeritus Professor Don (Donald) Robert Scott. Based on weekly meetings and daily emails, he has provided me with explanations of queries, comments and edits of my writings, as well as also directions to assist in my exploration of the appropriate scientific research methodology. Since the pre-departure training in Indonesia, orientation days in Lismore, Australia, and the first days of Semester I – 2007 in Australia, he has been happy to be my (principal) supervisor and he gave valuable comments on my first draft of my research proposal and literature review papers. He provided me with some literature in the area of scientific research methodology and the structure of a thesis, provided a critical examination of the research design and provided input for the design of the theoretical questionnaire. From the start, he also identified the importance of doing an intensive literature review, obtaining data and research ethics committee approval, working with the university SPSS and AMOS software, publishing and presenting papers during candidature, producing a thesis in the shortest time possible, and complying with my personal time-table and contract. Finally, he approved the

submission of this thesis (revised) for the two stages of the SCU Higher Degrees Committee (Research) process, and hence for the award of the degree.

I have many supportive persons to thank including all of the 244 anonymous respondents in Indonesia, anonymous referees of Review of Business Research, International Academy of Business and Economics (IABE), and International Journal of Auditing, and anonymous external examiners of this thesis. Some of them are as follows (listed in alphabetical order by family name).

|                     |                                                   |
|---------------------|---------------------------------------------------|
| Anderson, Robyn     | Southern Cross University, Australia              |
| Arifin, Muchtar     | Attorney General's Office, Indonesia              |
| Baker, Ulrike       | Southern Cross University, Australia              |
| Bracher, Michael    | Australian Partnership Scholarship, Indonesia     |
| Carter, Viv         | Southern Cross University, Australia              |
| Donnelly, Sallyanne | Southern Cross University, Australia              |
| Ellis, Allan        | Southern Cross University, Australia              |
| Gold, Anna          | Rotterdam School of Management Erasmus University |
| Graham, Rosemary    | Southern Cross University, Australia              |
| Fisher, Kath        | Southern Cross University, Australia              |
| Flower, Ruth        | Southern Cross University, Australia              |
| Guthrie, Sandra     | Southern Cross University, Australia              |
| Haynes, Monica      | Melbourne University Publishing                   |
| Jasin, Mochammad    | Corruption Eradication Commission, Indonesia      |
| Jayne, Nicola       | Southern Cross University, Australia              |
| Juhaeri, Udju       | Supreme Audit Institution, Indonesia              |
| Juhmani, Omar Issa  | University of Bahrain, Bahrain                    |
| Kable, Ian          | Southern Cross University, Australia              |
| Kelly, Stephen      | Southern Cross University, Australia              |
| Leeson, Lee         | Southern Cross University, Australia              |
| Marshall, Malcolm   | Southern Cross University, Australia              |

|                            |                                                                                           |
|----------------------------|-------------------------------------------------------------------------------------------|
| McCabe, Fionnuala          | Southern Cross University, Australia                                                      |
| Meliala, Adrianus          | Partnership for Governance Reforms in Indonesia                                           |
| Morton, Anja               | Southern Cross University, Australia                                                      |
| Mumpuni, J. Widodo         | Supreme Audit Institution, Indonesia                                                      |
| Mundie, Alani              | Institute for Fraud Prevention                                                            |
| Patel, Bhavesh             | Review of Business Research and International<br>Academy of Business and Economics (IABE) |
| Phillips, Lauren           | ProQuest Company                                                                          |
| Ryan, Neal                 | Southern Cross University, Australia                                                      |
| Scott, (Don) Donald Robert | Southern Cross University, Australia                                                      |
| Suffolk, Emily             | Southern Cross University                                                                 |
| Stewart, Jenny             | International Journal of Auditing                                                         |
| Sylph, James               | International Federation of Accountants                                                   |
| Viol, Jane                 | Embassy of Sweden                                                                         |
| Violetta, Sukma            | Attorney General's Office, Indonesia                                                      |
| Vitartas, Peter            | Southern Cross University, Australia                                                      |
| Yahya, Yoen                | Consulate General of the Republic of Indonesia                                            |

I have also received supportive comments from Dr. Anja Morton, who suggested examining a two group model (of the audit and the justice institutions), with her support as the third author of our working research paper (see Declaration and statement of original authorship No. 6, p. v). Additionally, she will also be pleased to be involved in future auditing research (the 2009 Institute for Fraud Prevention Research Grants). This indicates that there is always something more to learn (Ashleigh Brilliant).

Finally, thanks go to my wife, Henny, and to my son, Johan, for their understanding and unconditional love.

## ***Chapter 1***

### **Introduction**

Fraud is a worldwide issue. In an Indonesian context, the 2008 Corruption Perception Index (CPI) revealed that the CPI of Indonesia was 2.6 (0 = the worst score; 10 = the best score). In other words, “the problem remains widespread” (Transparency International, 2008, p.20).

Additionally, in an e-mail message to the author on October 18, 2008, Alani Mundie revealed that “we will be inviting proposals on topics identified by the IFP (Institute for Fraud Prevention) membership ....”

Accounting fraud and all forms of fraud and corruption are taking place in Indonesia, Asian countries, and across the globe (e.g., Teh, 1997; Gersten, 1999; World Bank, 2003, 2008; Davidsen *et al.*, 2006; McCormick & Paterson, 2006; Dye, 2007; Shen & Chih, 2007; Williams, 2007; World Bank's Department of Institutional Integrity, 2007).

In relation to the independent auditors' responsibility to deter and to detect fraud risk, the accounting profession has merely focused on fraudulent financial reporting and misappropriation of assets (ISA 240, SAS 99 or AUS 210). However, since fraud and corruption is still a global issue, a broader definition of fraud should be taken into account in order to systematically address all problems (e.g., Sutherland, 1941; Wells, 1997, 2005, 2007).

Specifically, fraud auditing has been a critical role for the Audit Board of the Republic of Indonesia. When auditors on behalf the Audit Board find a financial crime case, the Board has to provide the justice institutions (the National Police, the Attorney General, or the Corruption Eradication Commission) with a fraud

report proving state financial loss as well as identifying any parties who were involved in the commission of fraud (Law No.15 of 2004 and the State Finance Audit Standard). This is a difficult task and this study will focus on fraudulent activity in Indonesia to assist in the comprehensive identification of fraud risk factors by the Indonesian authorities.

This chapter will introduce research issues in relation to different forms of fraud, including corruption and required auditing standards. The chapter will outline the background to the research, research problems and hypotheses, justification for the research, fraud definition and classification, scientific research methodology, initial limitations and key assumptions, and a complete overview of the thesis.

The following section begins with the background to the research.

### ***1.1 Background to the research***

This section provides five aspects of background to this thesis research. These were the global fraud risk factors and their limitations, alternative fraud risk factors, recent large fraud scandals, author's motivation, and the Southern Cross University Division of Research policy.

The next sub-section outlines the consideration of global fraud risk factors and their limitations as evaluated in this thesis research, and is followed by sub-sections covering topics ranging from the consideration of alternative fraud risk factors to the University Graduate Research guidelines.

#### ***1.1.1 The USA and global fraud risk factors and their limitations***

Since early days, the global accounting profession has been of the opinion that the symptoms of fraud consist of pressure (Cressey, 1950), rationalisation (for example see Mills, 1940), and opportunity for management to override internal controls (for example see Lafrentz, 1924). Cressey (1950) concluded that the central problem of trust violation (fraud) was the non-shareable problem of financial pressure supplemented by rationalisation and opportunity.

International (fraud) auditing standards (for example see ISA 240) that have been used by the accounting profession have been influenced by the findings and conclusions of Cressey who undertook his research fieldwork in an American context from April 1949 to September 1949 by interviewing American trust violators (fraud perpetrators). Fraudsters who can also collude within an organisation and with third parties have been only briefly mentioned in ISA 240.

Additionally, IFAC (2007) argued that it was difficult for the auditor to detect collusive fraud. Therefore, it is not surprising that collusion was not one of the fraud risk factors listed in ISA 240.

Cressey's fraud work was carried out more than 50 years ago and Wells (2007) has opined that these days Cressey's model may not meet all conditions, particularly in relation to a global context. Therefore, the next sub-section will propose an alternative consideration of fraud risk factors.

### ***1.1.2 Proposing alternative fraud risk factors***

Loft *et al.* (2006) have suggested that the global accounting profession and audit organisations should also take into account any substantial current academic accounting and auditing research. In order to provide such an input, the author decided to conduct a comprehensive investigation to identify the drivers of all forms of fraud (also see this perspective in the study of Krambia-Kapardis, 1999, 2001, 2002).

The need to explore possible alternative fraud risk factors was also identified in the writings of Michael & Adler (1971). They said that individuals might need to be classified according to contextual factors. In other words, the findings of Cressey might have been different if he were to have investigated non-American participants in a non-American environment. Another factor that should also be taken into account is the variations in the environment that can take place over

time. Hence, there is a necessity to carry out 21st century research in order to accommodate the conditions that are to be encountered in the modern world.

The next sub-section outlines several fraud scandals so as to point out that fraud is a major global issue.

### ***1.1.3 The message from recent major fraud scandals***

Recent large fraud scandals, such as those involving major companies like Enron, WorldCom, Kmart, Tyco, Merrill Lynch, Qwest, Xerox, ASEA-Brown Boveri, Swiss Air, Global Crossing, Adelphia, Xerox, Merck, HIH, and public accounting firms like Arthur Andersen, have shown that an auditing self-regulator should be aware of the need to constantly work at redeveloping, and where necessary, reforming even the best auditing practices. This aspect has also been identified by a number of writers such as, for example, George (2002), Jones (2002), Katsoris (2002), David (2003), Doost (2003, 2004), and George (2007).

The need to gain an integrated understanding of fraudulent (human) behaviour, not only from work experience, but also from the research arena, will be outlined in the following sub-section covering the author's motivation.

### ***1.1.4 Author's motivation***

The author has been working as an auditor for the Audit Board of the Republic of Indonesia, since the year 2000. The author was responsible for detecting and deterring any types of irregularity including fraud and for carrying out auditing assignments aimed at preventing financial loss resulting from fraudulent transactions, irregularities, or material financial reporting misstatements.

Conducting this research has provided a golden opportunity for the author to close a gap between auditing practice and research, and hence to make a contribution that can be of immediate practical application.

The next sub-section will outline the policy of the University Division of Research that supports the author's motivation for publishing and attending

conferences during candidature in order to provide input into global and local policies and to share information on this research area with academics.

#### ***1.1.5 The Southern Cross University Division of Research policy***

During his term as a Masters' degree by thesis candidate with the Southern Cross University Division of Research and the University School of Commerce and Management from 2007 to (July) 2008, the author published several papers that were aimed at making auditing research-based recommendations to the IFAC International Auditing and Assurance Standards Board or auditing self-regulators and other interested readers. Southern Cross University promotes and supports the integration into Higher Degree Research theses of published research papers developed during the candidature of Higher Degree students.

The next section will present the research objective detailed by the eight research questions and two hypothesised models.

### ***1.2 Research objective, research questions and hypothesised models***

This section provides the research objective that was expanded into eight research questions, and two hypothesised models. The first sub-section begins with the research objective.

#### ***1.2.1 Research objective***

Corporate scandals have become damaging phenomena. Consequently, a more integrated (research) investigation in the area of fraud prevention, deterrence, and detection is warranted. Therefore, the following broad research objective was identified:

***To investigate how fraudsters can perpetrate and cover-up fraudulent acts and what factors directly or indirectly affect the commission of fraud.***

The following sub-section lists a set of research questions (for detail, see Chapter 2) followed by two hypothesised models (Chapter 3) that may also suit Indonesian situations. Secondly, a developmental process (Chapter 7) was utilised culminating in the use of structural equations modelling software (Chapter 5) to examine the goodness of fit of a post-hoc model developed after the examination of the two hypothesised models (Chapter 6) and finally to learn more from the post-hoc model (Chapter 8).

### ***1.2.2 Research questions***

The set of research questions that were addressed from the literature review studies are as follows:

- 1) Were the examples of fraud risk factors provided by the auditing standard of value to the independent auditor?
- 2) Were there other significant fraud risk factors?
- 3) Under what circumstances would the auditor not be independent?
- 4) Should a system be developed to allow auditors to work in a judicial environment to ensure that any case that is referred for prosecution is properly handled?
- 5) Is conspiracy that is identified during an audit, always found to have a harmful influence? In other words, how do auditors identify positive results of cooperation?
- 6) During an audit, is the influence of collusion on the commission of fraud more difficult to detect than the influences of pressure, rationalisation, and opportunity (for fraud)?
- 7) When an audit is being conducted, what types of collusive actions need to be tested?

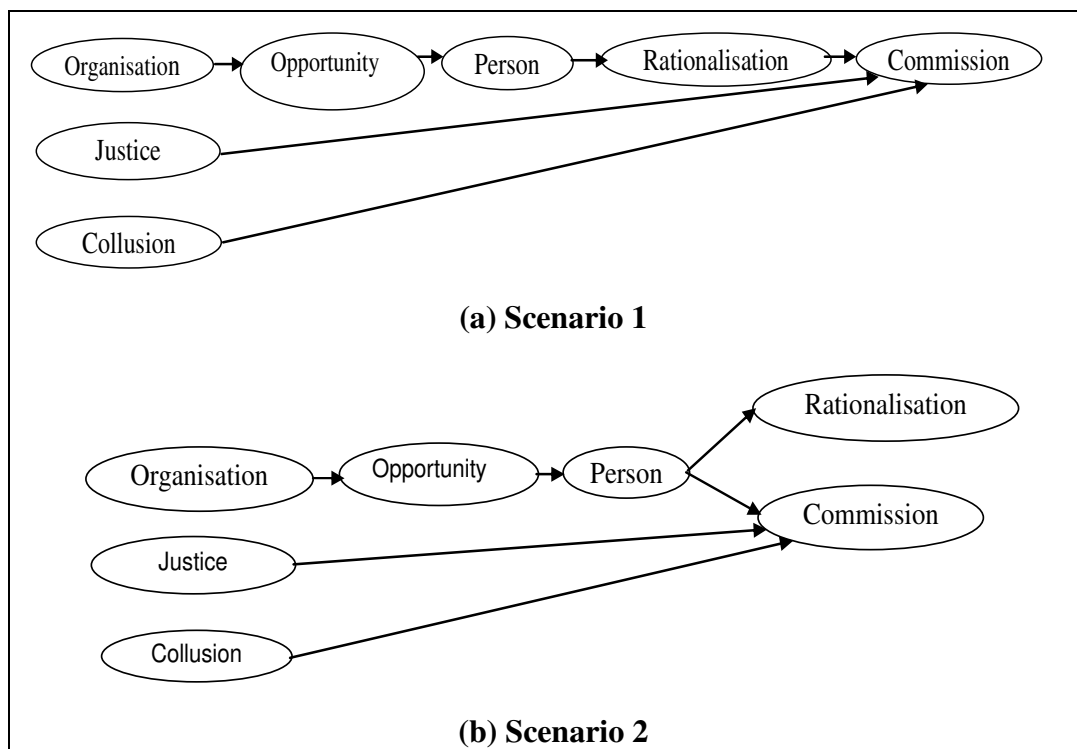
- 8) Why is the possibility of the existence of the other specific fraud risk factors not identified by the International Auditing and Assurance Standards Board?

The examination of the set of research questions (Chapter 2) assisted in the initial development of two hypothesised (theoretical) models and the badness of fit of the two models gave direction for the development of a better (final) model.

The following sub-section portrays the two theoretical models.

### 1.2.3 Two hypothesised models

Figure 1.1 depicts the initial two models that were developed from the literature (Chapter 3).



Source: Author

**Figure 1.1**  
**Initial fraud risk model**

The next section will provide four justifications for the need for this thesis research.

### ***1.3 Justification***

This section points out four justifications for conducting a fraud risk management research (in an Indonesian context). Firstly, as indicated in section 1.1, the research outputs will be able to be used by, for instances, the supreme audit institution, accounting profession, and/or other auditing organisations, to improve their appreciation of fraud risk factors, auditing standards, auditing planning and auditing programs (e.g., Graham & Bedard, 2003; Mock & Turner, 2005; Dye, 2007a,b). Moreover, research that has been undertaken in the appropriate environment (e.g., Michael & Adler, 1971) will be better placed to convince the authorities to take the research recommendations into account (Chapter 8).

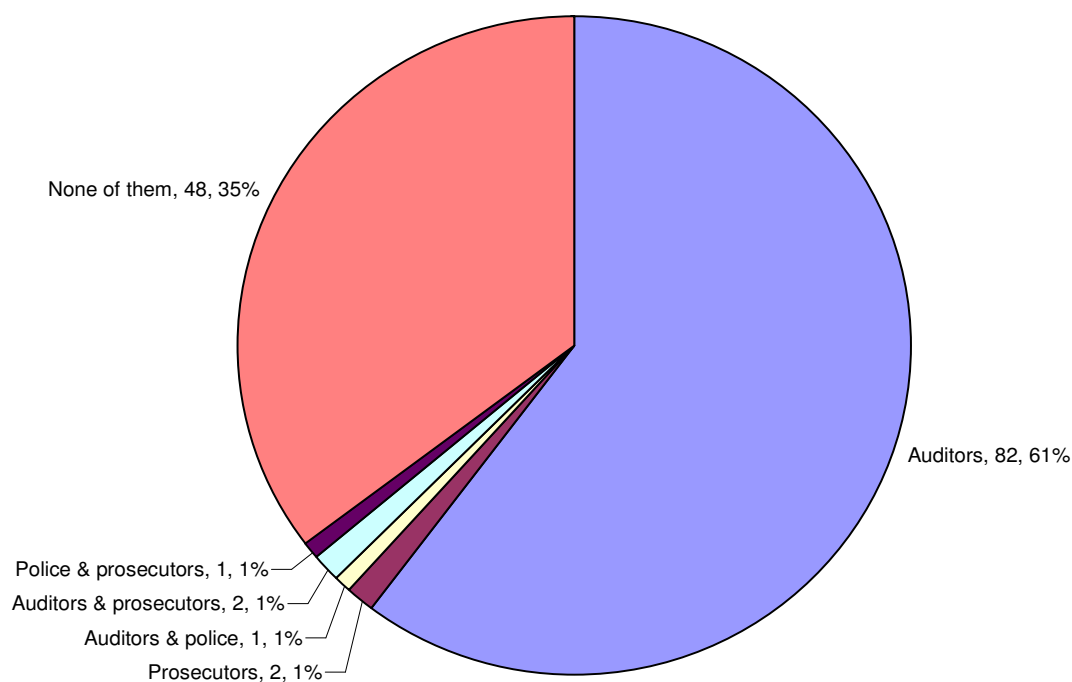
Secondly, fraud and corrupt practices are costly (e.g., Louis, 1995; Kammen, 1997; Crow, 1999; Kuncoro, 2004, 2006; Richardson, 2005; Olken, 2007) and some firms have been involved in corrupt practices (sub-sections 1.1.3, 2.3.2, and 2.3.12). Steane & Cockerell (2005) and Brown (2006) have called for institutional changes aimed at reducing fraud.

The integrated fraud risk models that are assessed by using structural equations modelling (Chapter 5) set out the complexity of the problem. The best fitting model and its assessment of the impact of a range of factors (Chapter 7), can be used as a source of information that can be applied by authorities, and the auditing self-regulator, when developing a strategic direction aimed at promoting institutional change (section 8.13).

Thirdly, in the literature, there are no studies of fraud (risk factors) that use information that has been derived from samples drawn from senior people in the audit and justice institutions and departments and their assisting auditors, police interrogators and fraud prosecutors.

From Figure 1.2, it can be seen that the preponderance of the types of respondents used in 136 prior fraud studies carried out from 1950 to 2008 have been auditors (82 studies, 61%). Therefore, the respondents would not have been able to

comment on a more holistic (institutional) environment such as could have been captured from the opinions of fraud prosecutors and police interrogators (justice environment) in regard to fraud risk factors, determined from fraud reports, that they will have processed for the courts. For further information, see Appendix 1.



**Figure 1.2:**  
**Types of samples used in 136 prior fraud studies from 1950 to 2008**

Welch *et al.* (1996) and Holmes *et al.* (2002) used samples drawn from members of the Certified Fraud Examiners (ACFE) some of whom would be expected to be from audit and justice institutions. However, ACFE is only one of the institutions containing fraud experts and the samples did not therefore represent the opinions that could have been derived from other justice institution areas, such as police interrogators and prosecutors.

In this thesis research, the author decided that the fraud experts, who were to provide the information, would be better chosen from the broad area of auditors consisting of auditor supervisors, auditor managers or partners, auditor leaders of their institutions or departments, fraud auditors, fraud experts, (forensic) accountants, investigating auditors, government auditors, external (independent) auditors, and internal auditors.

Indonesia<sup>1</sup> is an ideal source of such data since Indonesian justice officers have referred a large number of fraud and corruption cases to the courts and to arbitration (e.g., Kantor, 2002; Pompe, 2005).

Fourthly, in the literature there was a lack of use of more robust scientific research methodologies in order to investigate all forms of fraud. The integrated fraud risk factors used in this thesis were derived from multiple disciplines including theory and from practical problems of law enforcement (Chapter 2).

This thesis used both qualitative and quantitative research methodologies (Chapters 2, 3, and 4) prior to using structural equations modelling (Chapter 5) in order to conduct the final aspects of the research and to evaluate the drivers of fraudulent activity. The results from this analysis will be of assistance to the Indonesian Audit Board and to other authorities and auditing self-regulators (auditing standard setters) who have been facing the issue of identifying all forms of fraud and corrupt practices, fraud risk factors and related (fraud) auditing standards (e.g., the State Finance Audit Standard used by the Audit Board of the Republic of Indonesia [2007], Appendix 7, paragraph 22).

In the next section, the definition and classification of all forms of fraud are provided.

---

<sup>1</sup> This thesis research is intended to address an Indonesian context.

## ***1.4 Fraud definition and classification***

The following definition is provided to explain the author's positioning in regard to this research.

### ***1.4.1 All forms of fraud***

“Fraud can encompass any (white collar) crime (intentionally) for gain which uses deception ..., but all deceptions ... aren't fraud .... (because) there must be damage ....“ (Wells, 1997, p. 4). Fraud, including white collar crime (Sutherland, 1941), was not only about accounting fraud (fraudulent statement) and misappropriation of assets (ISA 240 [Redrafted], paragraph 3), but also about corrupt practices, comprised of conflict of interest (purchases scheme and other types), bribery (including kickback and other types), illegal gratuities, and economic extortion. For details, see Akers & Bellovary (2006), Wells (1997, 2005, 2007) or the Fraud Examiners Manual (2003).

### ***1.4.2 Other definitions***

The details of the rest of the definitions can be seen in section 6.2 and the next section will cover the relevant aspects of the qualitative and quantitative research methodologies and structural equations modelling.

## ***1.5 Scientific research methodologies***

This section initially lists several calls for the use of more appropriate research methodologies. Thus, the first sub-section will outline these calls followed by coverage of structural equations modelling (SEM) in the following sub-section.

### ***1.5.1 Calls for more appropriate scientific research methodologies***

When examining organisational fraud, researchers have used a variety of techniques, both qualitative and quantitative (for details, see Chapter 4). There have been ongoing calls for more robust methodologies to be used to examine

fraud risk factors. Firstly, Michael & Adler's study<sup>2</sup> (as cited in Jordan, 1935) said that: "Existing empirical researches into the causes of crime have no etiological significance (p. 96); ... they prove nothing ... (p. 161) ... because they are incompetent in the use of statistics (p. 167), which are essential ... "(p.110).

At this time, the development of structural equations modelling was still in its infancy and was only known to a few social science researchers. However, the development of this method has continued over time with the evolution of higher power computers and the provision of statistical software so that this methodology can now be used to examine causal and complex conceptual theory based questions leading to its growing use in a range of areas of social science (e.g., Savalei & Bentler 2006).

Secondly, Cressey (1973) pointed out the influences of both direct effects (non-shareable problem) and indirect effects (gambling) that could lead to a fraudulent act. He gave as an illustration that "... one who gambles will not necessarily violate a position ..., but a person who gambles might construe a financial problem arising from gambling as non-shareable problem ....' (p.146). The involvement of direct and indirect effects is effectively a call for the use of a more advanced multivariate statistical methodology such as structural equations modelling which can examine all direct, indirect, and total effects.

Thirdly, Steane & Cockerell (2005) developed a more robust fraud risk model comprised of motivation, opportunity, suitable target, fraud indicator, fraud method, and fraud consequence. However, it did not provide any measures of the strength of the influences of the different factors upon each other. At a similar time, Zahra *et al.* (2005) "... were surprised by the limited and unsystematic empirical research on this complex topic and the various variables ..." (p. 822), and their writing identified a need for more advanced research methodologies so that causal relationships could be examined.

---

<sup>2</sup> Their study was published in 1933 and reprinted again in 1971 (Michael & Adler, 1971).

Fourthly, for research in an area requiring “in-depth information” such as fraud studies, Tilman & Indergaard (2007) opined that: “... researchers often turn to case studies ... to see events more holistically, to relate different aspects of a phenomenon to one another chronologically, and to understand subtle variations over time and across cases” (p. 22). The need for the use of explorative techniques to allow researchers to see, more holistically, all related potential (new) research problems that might not have been found in earlier studies, is also another call for the use of a more advanced multivariate statistical methodology. Such a methodology can enable the examination of all the integrated fraud risk factors, their indicators and their linkages in a statistically significant overall chronological relationships model.

The next sub-section outlines an introduction to structural equations modelling (SEM).

### ***1.5.2 Structural equations modelling***

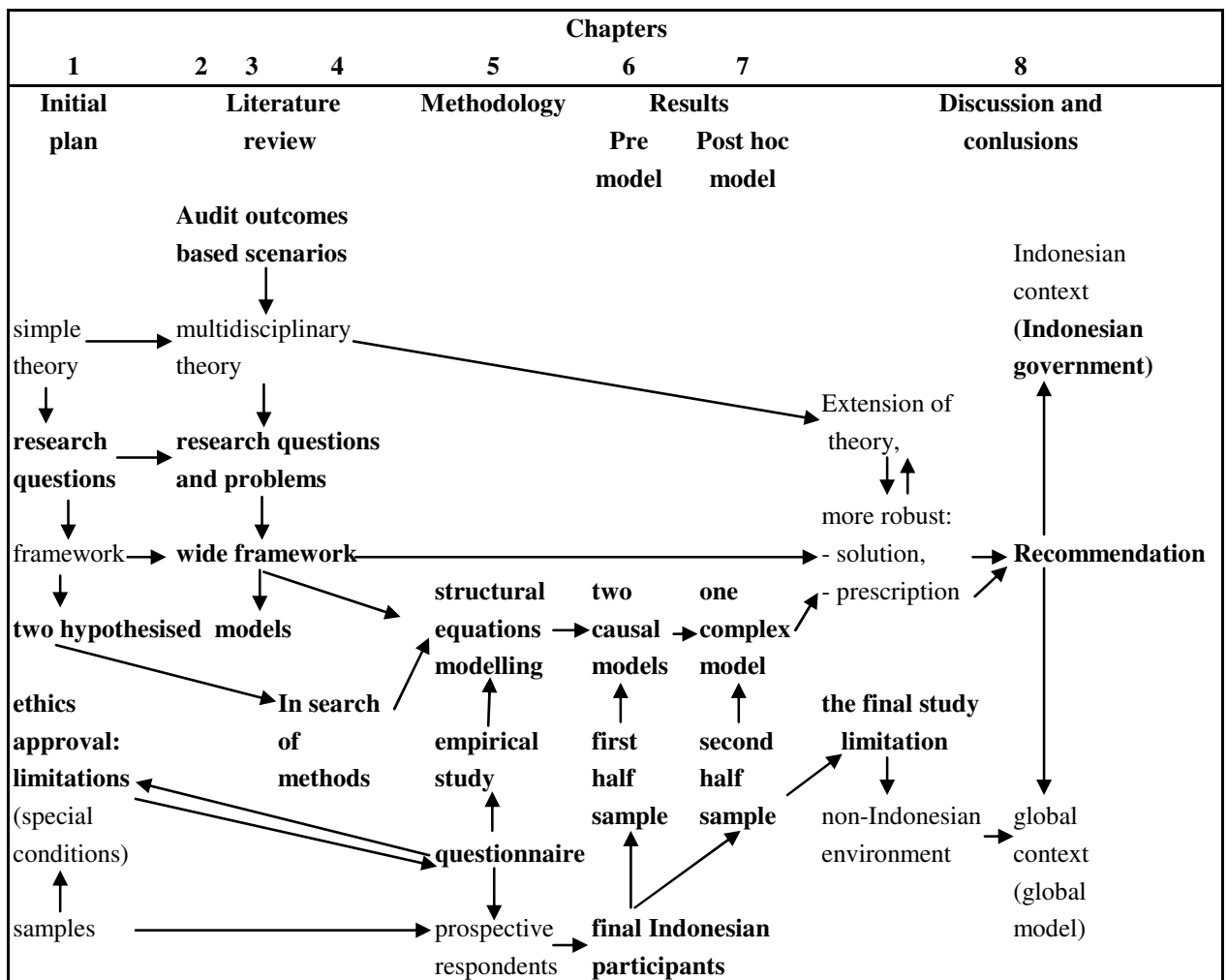
Rabe-Hesketh *et al.* (2004) said that: “... the advent of comprehensive methodologies for structural equation modelling ... (p. 167)” was, for instance, developed by Jöreskog as can be read in his 1973 paper, and that the software such as LISREL became available in 1989.

Structural equation modeling (or latent variable modeling) is a combination of confirmatory factor analysis (CFA) and regression analysis. It tests an hypothesised set of relationships between latent variables (factors or constructs). The method is a very powerful way of examining a host of inter-related effects. For details, see Chapter 5.

As all research stages have been identified, the following section outlines the overall thesis.

### 1.6 Outline of the thesis

The thesis consists of eight chapters (Figure 1.3) reflecting the stages that were followed in carrying out the research and commencing with the research proposal, research objective and this introductory chapter. A literature review then examines the set of research questions (Chapter 2), and is followed by the development of two initial theoretical models and hence of two hypothesised models (Chapter 3), while the following chapter examines the use of more robust research methodologies (Chapter 4).



**Figure 1.3**  
**The structure of thesis**

Chapter 5 details the more robust scientific research methodologies that were used and the procedures undertaken to collect the data and to split them into two

samples of equal size. The results detailing the number and nature of the respondents and the analysis of two initial theoretical models and a post-hoc model, are shown in Chapter 6 and Chapter 7 respectively.

Finally, the thesis discusses both the implications of the findings and the more appropriate prescriptions that the research results suggest should be recommended (Chapter 8).

The following section will provide some initial limitations and key assumptions from sample instruments, environmental factors, and control of variables.

### ***1.7 Initial limitations and key assumptions***

This section describes limitations and control procedures. These covered the lack of need for an ethics complaint statement (sub-section 6.4.2), other requirements that needed to be complied with before the research could be conducted, the use of Indonesian participants (environmental factors), and control of all measured variables from the translation of the theoretically based questionnaire and the covering documentation.

The first sub-section outlines the situation regarding the need for an ethics complaint statement, followed by coverage of the other issues in the successive sub-sections.

#### ***1.7.1 The ethics aspect***

The Southern Cross University Human Research Ethics Committee (2007) had indicated that the Ethics Complaints statement had to be included in letters to participants. The author then explained that there was no need for that concern because the research used an anonymous questionnaire with voluntary participants. This process is ethically acceptable as is identified in the (Australian) National Statement (NS) 1.11 on Ethical Conduct in Research Involving Humans

(Australian Government National Health and Medical Research Council, Australian Research Council & Australian Vice Chancellors' Committee, 2007).

According to the Australian Research Council & Australian Vice-Chancellors' Committee, 2007, there is also a requirement that "... their institutions (*Southern Cross University, Australia*) should respect the ... cultural sensitivities of the (*Indonesian*) participants ...” (p.13).

Therefore, in accordance with Indonesian institution protocols, and prior to the anonymous questionnaire being distributed, the author sent a formal letter and a set of the questionnaire documents to the following: leaders of the Indonesian Corruption Eradication Commission, the Indonesian Attorney General's Office, Indonesian National Police, the Audit Board of the Republic of Indonesia, the Indonesian Financial and Development Supervisory Board, the Indonesian Capital Market Supervisory Agency – Financial Institute, Indonesian Financial Transaction Reports and Analysis Centre, other Indonesian companies and non-government institutions. This was done after ethics clearance had been obtained from the Southern Cross University Human Research Ethics Committee (HREC).

The research fieldwork therefore conformed to all the requirements of both the Indonesian institutions and the Southern Cross University Human Research Ethics Committee.

### ***1.7.2 Environmental factors***

All data were obtained from Indonesian participants. This research was therefore carried out in relation to one country and one culture (Indonesia) and therefore cultural and/or national characteristics were held constant.

The research was therefore limited to an Indonesian environment and future research action could be to replicate the study in other cultures and countries (see section 8.15).

### ***1.7.3 Control of all measured variables***

Independent Indonesian experts were used to vet the translation of the set of questionnaire documents from English to Indonesian and to determine whether the measured variables (questions) could be uniformly interpreted.

The researcher (the author) is from Indonesia and is able to write in the Indonesian language (for the two versions of the structured questionnaire, see appendices 2 [c] and 2 [d]). However, the translational step was necessary in order to produce an English version of the questionnaire for inclusion in this thesis, for vetting of the questionnaire by the Southern Cross University Human Research Ethics Committee (HREC) and to ensure that questions that had been based on English language publications were given the same meaning when translated into Indonesian.

The following section is the last section of this introductory chapter and provides an overview of all the key elements in this thesis introduction.

## ***1.8 Conclusion***

This thesis that is to be submitted to the Southern Cross University Division of Research and to its Masters Thesis examination process is comprised of eight chapters. This first chapter has introduced the research objective, eight research questions, two hypothesised (theoretical) models and a final explorative (post-hoc) model as well as the scientific research methodologies that were employed in conducting the research. The justification for the research, key definitions and classifications, initial limitations and assumptions including ethics concerns, the University Division of Research policy and the author's scholarly background and motivation, have been provided.

The following chapters will present the literature from which the set of research questions was derived and two theoretical models were developed, the use of robust analytical methodologies and the collection and analysis of a suitable set of data.

## ***Chapter 2***

### **Literature review**

#### ***2.1 Introduction***

The second chapter incorporates material that has since been included in a paper by Sitorus & Scott (2008d)<sup>3</sup>. This chapter, which is part of the three literature review chapters, firstly introduces the possible outcomes from an auditing process and hence the need for the identification of a wide ranging fraud risk framework. Therefore, this chapter will go beyond the existing fraud theory (sub-section 1.1.1).

The additional fraud risk factors that will be examined theoretically and practically are from the three following issues. The first issue is drawn from theories that identify the relationship between organisational orientation and fraud namely asymmetric information (sub-section 2.3.1), accounting fraud theory (2.3.2), theory of planned behaviour and its extension (2.3.3), social identity theory (2.3.5), theory of monitoring (2.3.6), organisational identity (2.3.8), organisational reputation (2.3.9), organisational image (2.3.10), organisational adaptation (2.3.11), and Indonesian contextual factors (2.3.12). The second issue is the practical problem of law enforcement (2.3.4) that identifies a justice (detection) avoidance factor. The final issue is a broad view of conspiracy theory (2.3.7) that will identify a collusion factor.

---

<sup>3</sup> Sitorus, T. & Scott, D. (2008d) 'Integrated fraud risk factors and robust methodology', *International Journal of Auditing* (accepted for publication on 16 December 2008).

Eight research questions are identified, the existence of fraud risk factors and auditing standards is commented upon and an integrated system of fraud risk factors is developed.

The following section lists the possible outcomes from an auditing process.

## ***2.2 Possible outcomes from an auditing process***

Since early days, the global accountancy profession (the International Federation of Accountants) has been of the opinion that the symptoms of fraud consist of pressure, rationalisation, and opportunity (see sub-section 1.1.1). For example, in its proposed revised and redrafted form ISA 505, IFAC (2008) did not mention the risk of collusion which can involve employee(s) and/or management, as another fraud risk factor<sup>4</sup>.

In order to advance discourse, the US Public Company Accounting Oversight Board (PCAOB) Standing Advisory Group Meeting (2004) posed the following two research questions:

- 1) Were the examples of fraud risk factors provided by the auditing standard of value to the independent auditor?
- 2) Were there other significant fraud risk factors?

Additionally, PCAOB (2008) is going to propose a new fraud risk factor structure and required auditing standards by the year 2009.

Consider the ten possible scenarios, listed in Table 2 that can relate to auditors' successful detection and deterrence of fraudulent transactions that would lead to material misstatements in financial reports.

---

<sup>4</sup> Sitorus, T. & Scott D. (2008c) *Comments on exposure draft: proposed revised and redrafted international standard on auditing ISA 505 (revised and redrafted), external confirmations*. Available at: <http://www.ifac.org/Guidance/EXD-commentDL.php?EDCID=03371> and [http://epubs.scu.edu.au/comm\\_pubs/43](http://epubs.scu.edu.au/comm_pubs/43).

**Table 2**  
**Ten possible auditing process outcomes**

| <i>The state</i> | <i>Illustration</i>                                                                                                                                                                                                                                                                                                                                            |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | Having identified a problem the auditor recommends adjustment of a public company's financial statement which is then approved by management. In consequence, the case is deleted from the auditor's report.                                                                                                                                                   |
| 2                | Management disagrees with the material misstatement identified by the auditor. As a result, the auditor gave a qualified opinion and this was part of the auditor's report.                                                                                                                                                                                    |
| 3                | Management asked the auditor to solve a problem so that it would not be part of the auditor's report. The auditor provided a recommendation which was successfully followed up by management. As a result, the case was deleted.                                                                                                                               |
| 4                | The auditor made a recommendation, but management could not fully comply with the recommendation and asked to the auditor for help. The auditor found a successful solution to the problem and the case was therefore deleted.                                                                                                                                 |
| 5                | The case was not solved before the deadline for submission of the company's audited financial statements to the stock exchange. However, there was a good likelihood that the case could be solved after the deadline (although there was a penalty for that situation). After the deadline, the case was solved and it was deleted from the auditor's report. |
| 6                | The case was not solved, the auditor decided to adjust the company's financial statement and management agreed. The case was deleted from the auditor's report.                                                                                                                                                                                                |
| 7                | The case was not solved, and even though it was the end of the audit process, management still refused to agree to an adjustment to the company's financial statement. As a result, it was agreed to collude by omitting the case and to thereby avoid the justice system.                                                                                     |
| 8                | The case was referred for prosecution because of the fraudulent transaction found by the auditor.                                                                                                                                                                                                                                                              |
| 9                | The case was properly handled by the judiciary.                                                                                                                                                                                                                                                                                                                |
| 10               | The case was handled by the judiciary but the case was then dropped.                                                                                                                                                                                                                                                                                           |

In searching for the best practices to be incorporated into the next auditing reform after the Sarbanes-Oxley Act (US House of Representative, 2002), Apostolou & Crumbley (2005) decided to consider the 1994, 1998, and 2003 KPMG surveys which identified collusion as being “...the factor that most contributed to fraud” (p. 108).

A year later, Sanchirico (2006) explained how a practical law enforcement problem, namely justice (detection) avoidance, could inhibit fraud prosecutions. He said that fraudsters would carry out practical activities (for example, bribes) to avoid being identified by justice officials.

In order to combat such actions and to identify necessary additions to the fraud auditing standards, the following two research questions need to be addressed:

- 3) Under what circumstances would the auditor not be independent?
- 4) Should a system be developed to allow the auditor to work in a judicial environment to ensure that a fraud finding that is referred for prosecution is properly handled (consider the 10th point in Table 2)?

Conspiracy or collusion usually implies a negative consequence (Black's Law Dictionary, 1990) and the Public Oversight Board Panel on Audit Effectiveness (2000) argued that it would be hard to detect. However, Johnson (1980) and Davia *et al.* (2000) found that it was also possible to find collusive fraud (including pseudo-conspiracy) through normal audit procedures. In contrast, Katyal (2003) pointed out that conspiracy can be applied to cooperative interactions that lead to positive results, hence to re-solve fraud. Table 2 also shows that, on some occasions, independent auditors, may cooperate positively with management in order to monitor, to correct, and/or to resolve findings of fraudulent actions that had been noted in regard to their financial statements. This raises the next three research questions:

- 5) Is conspiracy that is identified during an audit, always found to have a harmful influence? In other words, how do the management and its auditor identify positive results of cooperation? (Consider the 3rd, 4th, and 5th points in Table 2)
- 6) During an audit, is the influence of collusion on the commission of fraud more difficult to detect than the influences of pressure, rationalisation, and opportunity (consider the 7th point in Table 2)?
- 7) When an audit is being conducted, what types of collusive actions need to be tested (consider the 7th point in Table 2)?

When there is no possibility of correcting a major fraud leading to material misstatement, management and the auditor could collude and omit the case so as to avoid the justice system (consider the 7th point in the Table 2). These situations provide special possibilities (“higher level fraud identification”) for collusion or conspiracy and justice avoidance and the final research question that is raised is:

- 8) Why is the possibility of the existence of the other specific fraud risk factors not identified by the International Auditing and Assurance Standards Board (consider the 7th point in Table 2 and ISA 505 [proposed revised and redrafted])?

All of these questions are qualitatively examined in the following section in order to gain a better understanding from the literature perspective.

### ***2.3 The broad range of a fraud risk factors framework***

Michael & Adler (1971) pointed out that the sole concern of fraud studies was the consideration of fraudulent behaviour or how to detect and/or to deter fraud. They believed that a much wider range of effects should be taken into consideration and they therefore suggested that fraud research should be expanded to also examine other areas of possible influence (see sub-section 1.1.2).

This study will therefore examine literature in the areas of economics, psychology, law, organisational behaviour, criminology, and auditing where influences

that could be linked to the causes of fraudulent behaviour and where strategies for reducing unethical behaviour, may be found.

The following section addresses asymmetric information which is one of the major issues in the area of economics. Akerlof (1970) linked asymmetric information to the economic cost of dishonesty. This can be used to gain a better understanding of the results of the Transparency International Corruption Perception Index and is, for instance, able to be applied to the case of the Arthur Andersen's auditor (Kaplan *et al.*, 2007).

### ***2.3.1 Asymmetric information***

Akerlof (1970) opined that “Business in under-developed (developing) countries is difficult; in particular, a structure is given for determining the economic costs of dishonesty” (p. 488). When considering the 2007 Corruption Perception Index (Transparency International, 2007), for instance, Akerlof's opinion seems correct as the results showed that most countries which had the lower (worse) and lowest (worst) scores (0= the worst score; 10 = the best score) were from the following developing countries: Myanmar (1.4) and Somalia (1.4), Iraq (1.5), Haiti (1.6), Tonga (1.7), Uzbekistan (1.7), Afghanistan (1.8), Chad (1.8), Sudan (1.8), Democratic Republic of the Congo (1.9), Equatorial Guinea (1.9), Guinea (1.9), Laos (1.9), Bangladesh (2.0), Cambodia (2.0), Central African Republic (2.0), Papua New Guinea (2.0), Turkmenistan (2.0), Venezuela (2.0), Azerbaijan (2.1), Belarus (2.1), Republic of the Congo (2.1), Côte d'Ivoire (2.1), Ecuador (2.1), Kazakhstan (2.1), Kenya (2.1), Kyrgyzstan (2.1), Liberia (2.1), Sierra Leone (2.1), Tajikistan (2.1), Zimbabwe (2.1), Guinea-Bissau (2.2), Nigeria (2.2), The Gambia (2.3), Indonesia (2.3), Russia (2.3), Togo (2.3), Angola (2.3), Cameroon (2.4), Ethiopia (2.4), Pakistan (2.4), Paraguay (2.4), Syria (2.4), Burundi (2.5), Honduras (2.5), Iran (2.5), Libya (2.5), Nepal (2.5), Philippines (2.5), Yemen (2.5).

However, the World Bank (2008) blacklisted individuals and companies not only from some of the countries above, but also from some of the following developed

countries and other countries (with the higher [better] and highest [best] index scores): Singapore (9.3), Sweden (9.3), Netherlands (9.0), Canada (8.7), UK (8.4), Germany (7.8), France (7.3), Ireland (7.5), Japan (7.5), USA (7.2), United Arab Emirates (5.7), Greece (4.6), and India (3.5). For other examples of fraud scandals, see sub-sections 1.1.3 and 2.3.7.1.

Akerlof (1970) used an illustration of the automobile market for good and bad (lemon) cars to explain the economic cost of dishonesty, and hence the asymmetric information issue. In this situation and his economic equation, he said that a (potential) buyer might not know the probability of “ $q$ ” as a good car and/or “ $(1-q)$ ” as a lemon.

Kaplan *et al.* (2007) applied the Akerlof theory to the Andersen case and the market for “lemons” as low quality auditors’ reports. In this case, they said that the shareholders were the “buyer”, who could not know the low (lemon) quality of the audit report and had to rely on the report.

In the case of Enron, the Andersen’s auditor seemed to have avoided fraud detection as indicated by the documented evidence (Duska, 2005) and faced accusations of collusion with the key participants (Cunningham & Harris, 2006). The cost of this practice was finally very expensive and ended in the closure of the Andersen business.

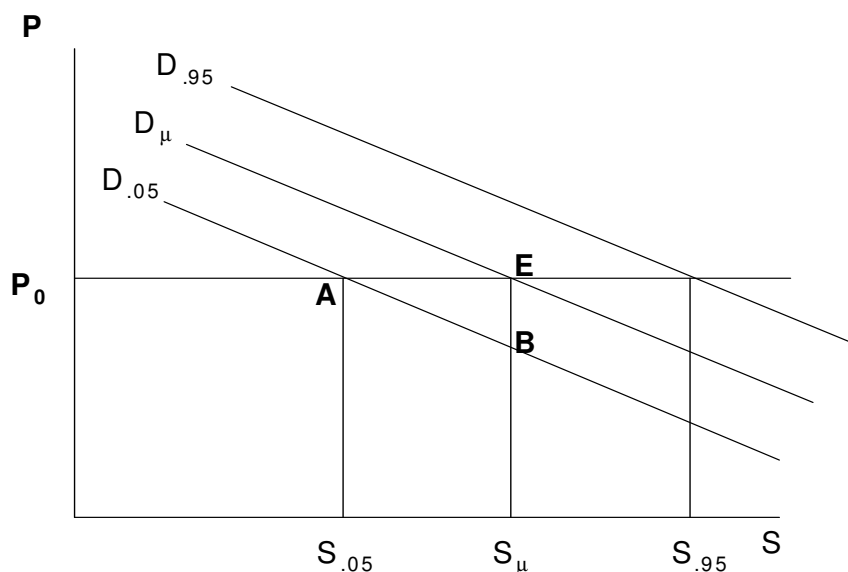
Information asymmetry reflects the link between the economic cost of unethical behaviour and the limitation of knowledge. Because of asymmetry, the “seller” who does know the information better than “buyer” will gain a benefit, and hence will increase his/her wealth. Therefore, the following section will examine both the costs and benefits of (accounting) fraud.

### 2.3.2 *Theory of accounting fraud*

Darby & Karni (1973) and Demsetz & Lehn (1985) introduced a cost-benefit and external forces approach that could apply to an organisation (a firm) that provided false information. This theory was later found to be useful in understanding accounting fraud theory. Earlier Nelson (1970) had suggested that stakeholders (for example, consumers) could be defrauded through a lack of availability of information on price or quality and Stigler (1961) and Nelson (1970) had suggested that this should be the subject of re-search. In their study of consumer analysis, Darby & Karni (1973) later, also pointed out that incomplete information created an opportunity for fraudulent practices.

Using an economic modelling approach, Darby & Karni (1973) identified the potential use of three demand curves to explain the defrauding of consumers when there was no risk of detection by, for instance, charging for a service that was not provided.

Figure 2.1, shows how Darby & Karni (1973) used the three different demand curves to explain how consumers could be defrauded. The curve denoted  $D_{\mu}$  was the curve for an average unit of demand for a repair service. The curve identifying the demand for a unit of a service which could work better than 95 per cent of the other units was  $D_{.05}$ . Demand for the worst level of service was denoted by  $D_{.95}$ . A consumer, who consumed a unit of a service that was better than the other 95 percent of units, would be misinformed as to the service level that related to the demand for an average unit. Thus, at  $P_0$ , the (non-expert) consumer would pay  $(S_{.05} - S_{\mu}) P_0$  for a marginal service worth the value represented by the area  $S_{.05}AB S_{\mu}$ . In other words, the repair service agent would have created a fictitious and possibly fraudulent service of value ABE.



Source: Darby and Karni (1973, p.71)

**Figure 2.1**  
**Demand curves for fraudulent practices**

On the supply side, the associated cost of a fraudulent act, such as the expected cost of prosecution, would vary in accordance with the incidence of business transactions and market information and the cost of a prosecution for fraud or the imposition of a penalty would be unavoidable when there was proof (Darby & Karni, 1973). A market arrangement, which could apply a mixed-monitoring system (Jacob & Page, 1980) to both buyers and owners, would be able to further client relationships, to build a brand name, to maintain a reputation for honesty and fairness, and to attract employees by guaranteeing their performance (Darby, 1973). In consequence, once it was identified that there was an expected cost of fraud prosecution, there would be a market based arrangement that could be used to eliminate fraudulent practices as well as to improve quality and efficiency as had been earlier suggested by Alchian & Demsetz (1972). This mixed-monitoring system could use a contractual structure (Alchian & Demsetz, 1972) to create a movement from fraudulent to efficient practices through a reduction in the cost of detection or a revision of contracts. However, Jarell & Bradley (1980) found that a new regulation (law or revised contract) created a significant cost that needed to

be evaluated more cautiously. In other words, the revision of contract could be a better option if there is no significant cost.

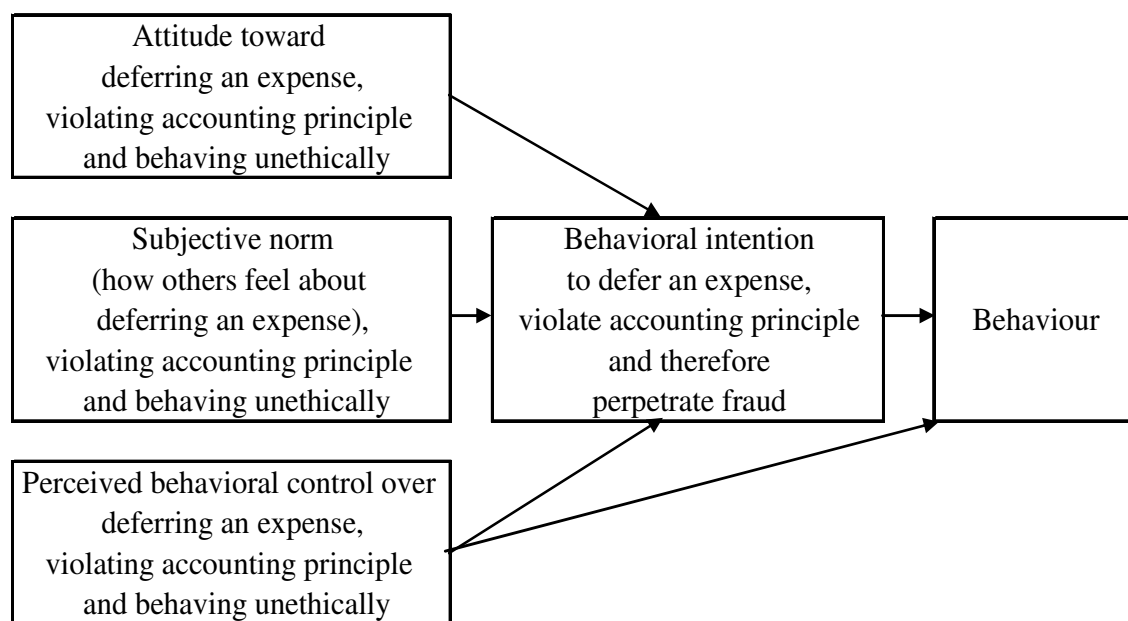
On the other hand, Demsetz & Lehn (1985) said that the aim of regulation was to give some subsidised monitoring and disciplining of the regulated firms. In other words, the regulator had a mandate to force the firms to replace management who were not aware of risk factors reported to or evaluated by the regulator. For example, Demsetz & Lehn (1985) said that: “A bank whose balance sheet looks too risky to regulators will find itself under considerable pressure to replace its management” (p.1161).

In a later empirical study, Gerety & Lehn (1997) used the expected cost-benefit and external forces perspective as a foundation for their theory of accounting fraud. They found that the decision to report accounting fraud would be driven by external forces through institutions such as independent auditors and equity markets or internally through the design of monitoring and reward systems which could produce a variation in costs and benefits.

The theory of accounting fraud indicates that it is possible for individuals and/or organisations to evaluate the expected benefits and potential costs of committing fraud. If the benefits of fraud are found to exceed the costs, a plan to commit fraud may develop. The next phase in the commission of fraud is therefore that of planning and hence the following section will examine the theory of planned behaviour.

### ***2.3.3 Theory of planned behaviour and its extension***

The theory of planned behaviour said that the clue to understanding behaviour is intention which is formed by attitudes toward the behaviour, social norms, and perceived control over behaviour (Ajzen, 1991). This formulation (Figure 2.2) was then used by Carpenter & Reimers (2005) to explain a decision to commit accounting fraud.



Source: Carpenter and Reimers (2005, p.118)

Figure 2.2

Planned behaviour theory implemented in regard to a financial statement decision

In conditions where ethical behaviour occurred, moral obligation could be an additional causal factor driving intentions (Ajzen, 1991) or attitude (Conner & Armitage, 1998). Examples of sources of moral obligations were, from law (audit regulation) or from professional ethical codes (Kurland, 1996).

The theory of planned behaviour points out that intention is the best guide to understanding individual and organisational behaviour. Management can develop a strategic plan but that plan may be difficult to execute. In attempting to solve this problem, management may be persuaded to carry out incorrect actions that can then create a further problem that may, on occasion, be intentionally covered up by management. In order to examine what should be done about this possible action it is necessary to consider relevant aspects of law. The following section will therefore examine practical aspects relating to the involvement of the law when fraudulent activities are addressed.

### ***2.3.4 Practical problem of law enforcement***

In considering the theory of law enforcement, Sanchirico (2006) pointed out that wrongdoers' attempts at "detection avoidance" had been mainly ignored by prior studies. An example of this was the consideration of fraud risk factors issued by International Auditing and Assurance Standards Boards which mainly referred to Cressey (1950, 1973) who focused on criminology and social psychology perspectives rather than on the problem of law enforcement that might substantially affect the audit report. In an exceptional circumstance, sanctions could also send a negative message to the fraudsters and suggest that they should rather solve the fraud case through bribery (Wright, 2006 and Chen *et al.*, 2008). In regard to this problem, Sanchiro (2006) suggested that a better method of detecting fraud was to design and utilise a strong evidentiary procedure.

The practical problems associated with law enforcement indicate that transferring a case of fraud to the justice system may produce another problem namely an attempt to cover up the case. Auditors may identify this potential situation (illustrated by the 7th point in Table 2) and therefore prefer to recommend that management should immediately eliminate the core problem and thereby improve management's performance. In order to gain an understanding of this preference, the following section will examine the role that the professional ("social") identity of auditors and managers may play when the auditors' findings are discussed.

### ***2.3.5 Social identity theory***

Social identity theory is an aspect of social psychology that was used to describe group processes and intergroup relations (Hogg *et al.*, 1995). This social identity approach can "... think in terms of 'we' and 'us' ... that enables people to engage in meaningful, integrated and collaborative organizational behaviour ... to achieve social cohesion, communicate effectively, influence and persuade each other, act collectively and go beyond the call of duty" (Haslam, 2004, p.17). Thus, this can

create "... a system (an integrated auditing mechanism) where all (good) advice or knowledge was bought as required" (Coase, 1937, pp. 400-401).

This theory was then used by Bamber & Iyer (2007) to examine the relationships between professional auditors and their clients. They found that auditors could identify both with the requirements of their profession and with client (management) positions. However, only the more senior auditors and auditors who showed higher levels of professional identification were less likely to follow a management position. In other words, there was still an opportunity for less experienced auditors, or auditors who failed to exhibit higher levels of professional standards, to acquiesce to a management position.

In the work relationship area, social identity theory indicates that it will be very unlikely for an auditor not to take into account management's response to the auditor's findings. However, auditors may also have their own independent professional judgment of the validity or accuracy of management's reporting of financial information, and this information may affect the contractual relationship between management and stakeholders (Williamson, 1988). The following section will therefore examine the need for stakeholders to obtain and to evaluate all available information before making an investment decision.

### ***2.3.6 The theory of monitoring***

An organisation (a private corporation or a firm) can also deal with a potentially conflicting set of individual contractual relationships. Thus, based on contractual agreements, management, as an agent, can employ independent auditors to examine their financial reporting to ensure a high degree of precision and reporting correctness. The results (the auditor's report) will then be available to the stakeholder or principal (Jensen & Meckling, 1976). However, Fama (1970) has previously identified that investors needed, not only the auditor's report (historical information), but also all information relevant for price calculation and that this was normally provided by other methods such

as, for example, the security analysts and the analysis done by each investor before making an investment decision.

The theory of monitoring indicates that stakeholders need all available information and that auditors can be a potential source of such information. However, auditors need cooperation either from management or from external parties if they are to obtain sufficient information to be able to identify any (financial) reporting errors. In the absence of such cooperation true information may never be obtained. As a result, the independent auditor should qualify his or her opinion (ISA 705 [Revised and Redrafted]). Therefore, the next issue that is to be addressed is how the management and its auditor can build a mutually supportive environment that allows for good cooperation. Because this is a critical aspect of an audit, the next section will examine two contradictory views of cooperation and conspiracy.

### ***2.3.7 Two views of conspiracy***

Collusion or conspiracy has also been intensively discussed in the literature (Johnson, 1980; Kofman & Lawarree, 1993; Anderson, *et al.*, 1998; Davia *et al.*, 2000; Riahi-Belkaoui & Picur, 2000; Krambia-Kapardis, 2001). However, Katyal (2003) opined that previous studies had failed to extend “collusion” into also being a group behaviour that could achieve positive outputs. In other words, the expected costs or benefits of cooperative activities and related regulation or law, to both auditors and justice officials had not been fully investigated in a comprehensive study.

This paper will therefore examine the concept of conspiracy including cooperative behaviour since it may affect global auditing self-regulation policy in respect of existing auditing standards and drafts. The first conspiracy aspect is collusive fraud which has been the more commonly identified aspect in the auditing standards, but which is still not listed when considering fraud risk factors (ISA 240). The second aspect is cooperative behaviour that is able to create

organisational or firm efficiencies; however, this is rarely introduced as an auditing perspective.

#### ***2.3.7.1 Collusive fraud***

Individuals holding top positions have been identified in the literature as being able to perpetrate collusive fraud. In the year of 1923, Girard & Co created fictitious transactions (Dohr, 1941). Similarly, Lafrentz (1924) showed how a successful business person's sons and sons-in-law were able to create improper loans using their national bank, a savings bank and a trust company.

After the case of McKesson and Robbins, Inc. where fictitious assets were organised by the top executive, in the year of 1940, the US Securities and Exchange Commission indicated that: "...accountants can be expected to detect ... collusive fraud ..." (Dohr, 1941, p. 94). As a result, the following five areas were included in auditing procedures (Barr & Galpeer, 1987). Firstly, accounts receivable should be confirmed. Secondly, inventories should be inspected. Thirdly, internal controls should be reviewed. Fourthly, auditors should be responsible to stakeholders. Fifthly, the scope of audit work should be clearly written.

#### ***2.3.7.2 Cooperation***

When discussing their findings with management, auditors might identify wrongdoers who had colluded with other parties, whereupon, following management agreement with these findings, cooperative action could be used to eliminate the key problem. In order for auditors to succeed, Argyle cited in Chen *et al.* (1998, p. 287) proposed that: "... more coordination, more helping, more communication ... (1991: 127)", was necessary.

The theory of organisational adaptation (Dutton & Dukerich, 1991) can help to provide an understanding as to why management might prefer cooperation (based on their auditor's recommendations). This theory states that "... individuals in organisations keep one eye on the organisational mirror when they interpret

(the auditor's findings), react to them and commit to organisational action" (Dutton & Dukerich, 1991, p. 551). In addition, a study by Tyler cited in Smidts *et al.* (2001) has pointed out that: "...the feeling of being respected ... strongly affects ... cooperative behaviour" (p.1059).

In order to understand different conceptions of cooperation, Chen *et al.* (1998) reviewed three prior studies. The first was a study by Mead (1976) who defined cooperation as "... the act of working together to one end" (p. 8). The second study was that by Deutsch who introduced the idea of using social situations in cooperative relationships when there was a positive aim (for example to solve a case of fraud). A third study was by Tjosvold who conceptualised cooperation as meaning actual or perceived goal relationships. In a fourth study, cooperation was also identified as meaning an act that maximised interest (Komorita & Park, 1995).

The discussion of conspiracy suggests that cooperation may sometimes be the best method to be used to solve an audit problem. However, cooperation should not be used to protect management from any adverse findings in regard to their having committed fraudulent acts and, should management agree with an auditor's findings, it is to be expected that management will act on those findings.

The behaviour of management can have a major impact on external perceptions of the identity of an organisation. The following section will therefore examine those dimensions that can lead to positive perceptions of organisational identity.

### **2.3.8 Organisational identity**

In an article that examined organisational identity, Jackson & Dutton (1988) defined organisational identity in terms of the dimensions of an issue (finding) that were viewed as providing a warning and that could therefore assist in finding answers that could produce a positive outcome. In a second article, that also explored this topic, Weick (1988) concluded that organisational identity was a medium by means of which, opinions could promote proper (ethical) action.

When specifically examining an auditing issue, a study by Dutton *et al.* cited in Dutton & Dukerich (1991) also concluded that: “Perceptions of issue importance were in turn important predictors of willingness to invest (*to solve*) in an (*fraud related*) issue” (p. 543). Therefore, if important issues relating to fraud are identified, auditors should be aware that in the case of organisations with “proper” identities, management would follow up the report (consider the third point in Table 2).

The theory of organisational identity indicates that management will respond to findings that can be addressed. For that reason, the next section will examine the value of organisational reputation and the link between identity and reputation.

### **2.3.9 Organisational reputation**

Wilson, cited in Weigelt & Camerer (1988), identified the potential value of organisational reputation when he said that: “... an organisational (good) reputation was an asset which can generate future rent” (p. 443). However, Hall (1993) pointed out that reputation, while intangible, was a resource (asset) that could easily be destroyed. This aspect of reputation is exemplified by McKesson and Robbins, Inc. (Dohr, 1941) and Arthur Anderson and Enron (Katsoris, 2002) examples where a lack of awareness of an unethical act would seem to have been the cause of a rapid destruction of a reputation. Hall (1993) further indicated that a good reputation could not be achieved in a short period of time. For instance, producing a perception of a higher level of competency, was a reputational

requirement that could not be bought but that required a visible level of performance over an extended period.

Theory of organisational reputation indicates that management will value reputation as an intangible asset that should be continuously maintained. Since there are also perceptions of people that may affect the value of organisation, the next section will examine the importance of organisational image.

### ***2.3.10 Organisational image***

Initially, organisational image was perceived to be a mental picture of top executive characteristics (Hambrick & Mason, 1984). In other words, it was about upper echelon leadership (Sutton & Callahan, 1987). Later, however, organisational image was defined more widely as being based on organisational members' assessments of the opinions of outsiders (Dutton & Dukerich, 1991), and Dutton *et al.* (1994) said that insiders' belief about what outsiders thought about the organisation was the key aspect of image.

Because of the association between senior executive characteristics and/or outsiders' opinions, and organisational image, a positive image of an organisation could become a negative one if senior managers were to be found to have been involved in fraudulent activities or if evidence of fraud were to become known to outsiders.

The theory of organisational image indicates that external judgements can be used to evaluate management characteristics. Thus, information about top executives can, for instance, be taken into account by auditors when considering recommendations. In addition, vital requirements for enabling change, hence for deleting the cause (Stewart & Kringas, 2003) may also need to be considered if management is to be provided with fully beneficial auditors' recommendations. The next section will therefore examine the challenges and consequences arising from organisational adaptation.

### ***2.3.11 Organisational adaptation***

Dutton & Duncan (1987) have suggested that assessments of urgency and feasibility are vital requirements if the elimination of fraud (symptoms) is to take place. It requires support from the leaders, as is indicated by the Stewart & Kringas (2003). This model shows that an initial auditor's recommendation should consider feedback from management (see Ilgen *et al.*, 1979).

Because of consequences for individuals' careers (as identified in a study by Chatman *et al.* as cited in Dutton & Dukerich, 1991), Dutton & Dukerich (1991) argued that bringing out a new way of thinking about the organisational adaptation process was not as simple as that of in organisational identity and image.

Organisational adaptation indicates that re-solving fraud needs support that it may not be easy to provide. Therefore, the following section will introduce Indonesian contextual factors so as to assist the reader in gaining an understanding of the difficulty.

### ***2.3.12 Contextual factors***

Anderson (1972) pointed out that power based on wealth is legitimate in the Javanese (Indonesian) culture. The expectation that wealth should flow to Indonesian leaders could explain many of the fraud and corruption cases that have been tried in the Indonesian courts.

When searching for causes, the findings by Purbasari (2006) indicate that: "... government and firms pay attention to political connection ... (and) firms create demand for corruption ..." (p. 10). Darby & Karni (1973) had illustrated this demand by using an economics model (see Figure 2.1). As a result, some Indonesian individuals and companies were also blacklisted by the World Bank because of fraud and corrupt practices (World Bank, 2008).

The contextual factors indicate that, in the Indonesian environment, fraudulent activity has occurred over a long period of time.<sup>5</sup> The causes could be due to leaders with roles in both government and companies who could make fraud and corruption difficult to reduce, as has been indicated by Stewart & Kringas (2003).

The following section summarises this thesis chapter.

## **2.4 Summary**

A range of references that identify a need for the consideration of a wide range of fraud risk factors has been highlighted, so as to assist a specialist agent (for example, an independent auditor) to correct, monitor, and/or eliminate fraudulent practices and thereby improve the efficiency of organisations. These theories should, for instance assist in developing an initial fraud risk factors model.

Auditing standard setters have adopted the framework of causality of trust violators proposed by Cressey (1950, 1973) which consisted of the non-shareable problems of financial pressure, rationalisation, and opportunity, as the fraud risk factors to be considered (for example, see ISA 240). However, examination of the fields of economics, finance, psychology, law, organisational behaviour, criminology, and auditing, has resulted in a finding that other causes of fraudulent practices, that should also be introduced and examined, are collusion, justice avoidance, and organisational orientation (*vis a vis* fraud).

Information that the author can use to develop the two initial theoretical models in the next chapter and to answer all of the questions, has been identified. However, the complete answers for all of the questions were deferred until after the testing of the final (*post-hoc*) model. In other words, the direct answers for each research question will be given in the final chapter (see from sections 8.1 to 8.8).

---

<sup>5</sup> See Chapter 1 paragraph 1.

Finally, this literature review will also enable global auditing self-regulators and auditors to become aware of a wider range of fraud risk factors.

## *Chapter 3*

### **Two initial theoretical fraud risk models**

#### ***3.1 Introduction***

The third chapter updates the paper by Sitorus & Scott (2008a)<sup>6</sup>. This chapter covers the integration of fraud risk factors and their indicators. In other words, the addition of factors to expand these risk factors beyond those of the non-shareable problem of financial pressure (personal behaviour), rationalisation, and opportunity for fraud is identified.

Cressey (1950, 1973) showed that rationalisation could come into play either during or after the fraudulent act. Because rationalisation can play two different roles, two initial hypothesised models were identified.

Research into fraud risk behaviour (e.g., Michael & Adler, 1971; Krambia-Kapardis, 1999, 2001, 2002; Steane & Cockerell, 2005; Zahra *et al.*, 2005; Tillman & Indergaard, 2007; Wells, 2007) indicates that fraud is a complex phenomenon. Thus, fraud influencing factors are not restricted to only those of (non-shareable problem of financial) pressure, rationalisation, and opportunity for fraud (Chapter 2).

The following section examines the other possible fraud risk components that have been identified in chapter 2 and the relationships amongst these components and their potential indicators.

---

<sup>6</sup> Sitorus, T. & Scott, D. (2008a) 'The roles of collusion, organisational orientation, justice avoidance, and rationalisation on commission of fraud: a model based test', *Review of Business Research*, Vol. 8, No.1, pp. 132-147. Available at: [http://findarticles.com/p/articles/mi\\_6776/is\\_1\\_8/ai\\_n28552092](http://findarticles.com/p/articles/mi_6776/is_1_8/ai_n28552092), <http://ssrn.com/abstract=1297948>, and [http://epubs.scu.edu.au/comm\\_pubs/44](http://epubs.scu.edu.au/comm_pubs/44).

### ***3.2 The outcomes of fraud theory and its theoretical models***

In earlier times, one of the outcomes of the discovery of the non-shareable problem of trust violators (fraud theory) was the setting up of methods for the prevention and detection of the types of issues that could lead to fraud (Cressey, 1973). In order to inhibit fraud, educational programs were then used with the aim of decreasing, for example, the number of non-shareable problems. The educational programs also stressed the role of rationalisation and emphasized that when difficulties were experienced there was a need for potential violators to behave in the same manner as non-violators (Cressey, 1973).

In this thesis research, the initial development of two integrated fraud risk models was used as a route to the development of a final more appropriate model (see Chapter 7) leading to the identification of integrated methods of fraud prevention and detection and to consequently better outcomes.

The first sub-section of 3.2 will begin with a description of the type of model to be used to examine the factors (or constructs) that will measure the fraud risk factors.

#### ***3.2.1 Reflective models***

In 1949 when interviewing trust violators imprisoned in the Illinois State Penitentiary, Cressey (1950, 1973) found that the critical element in trust violations was the “non-shareable” character of a personal finance based problem that arose from ascribed obligations, personal failure, business reversals or economic and financial crises, physical isolation, employer-employee relations or a need to improve the violator’s economic status. These various personal problems can be considered dependent (indicator) variables (personal behaviour aspects) that are reflected in the latent factor (construct) describing personal behaviour (the independent variable). It is considered that the independent variable (latent construct) of personal behaviour causes the effects that are measured by (reflected in) the dependent variables. Thus, this measurement model for personal behaviour and the other fraud risk management models to be

examined in this research will all be reflective models. For further explanation of this type of relationship between a latent construct and its indicator variables, see section 5.3.5.

The next sub-section sets out the causal multiple relationships.

### ***3.2.2 Causal multiple relationships***

In studying the misappropriation of assets, Lafrentz (1924) identified “opportunity” for fraud as a key fraud risk factor. The cases that he studied showed that the reason why opportunity acted as a risk factor was because of a lack of supervision of the accounting function in banking, manufacturing and distributing systems.

**Table 3.1**  
**The direction of paths**

| The direction of paths |                                 | References                                                                                            |
|------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------|
| opportunity for fraud  | <--- organisational orientation | Khalil & Lawarre (2006)                                                                               |
| personal behaviour     | <--- opportunity for fraud      | Lafrentz (1924); Gottfredson & Hirschi as cited in Smith (2004).                                      |
| rationalisation        | <--- personal behaviour         | Mills (1940); Elliot (2007)                                                                           |
| commission of fraud    | <--- Rationalisation            | Cressey (1950, 1973)                                                                                  |
| commission of fraud    | <--- justice avoidance          | Lanham, (1997); Graycar (2000); Steane & Cockerell (2005); Wright (2006); Tillman & Indergaard (2007) |
| commission of fraud    | <--- Collusion                  | Lanham, (1997); Graycar (2000); Steane & Cockerell (2005); Wright (2006); Tillman & Indergaard (2007) |
| commission of fraud    | <--- personal behaviour         | Mills (1940); Elliot (2007)                                                                           |

In this thesis research, the opinion expressed by each respondent (case) in regard to the influences associated with components of fraudulent activity can be

illustrated in a causal relationship model of fraud behaviour with the following seven logical paths as derived from the literature (see Table 3.1).

From Table 3.1, it can be seen that there were seven identified and anticipated causal paths which were from organisational orientation to opportunity for fraud, from opportunity for fraud to personal behaviour, from personal behaviour to rationalisation, from rationalisation to commission of fraud, from justice avoidance to commission of fraud, from collusion to commission of fraud, and from personal behaviour to commission of fraud.

The first sub-section of 3.2.2 outlines the first path from the opportunity for fraud to personal behaviour, followed by the next paths in the subsequent sub-sections.

#### ***3.2.2.1 From opportunity for fraud to personal behaviour***

As previously mentioned, opportunity for fraud was a key factor (Lafrentz, 1924). A newer fraud study of this factor showed that the ease of creating improper loans, for instance, due to a lack of supervision (the absence of a high risk of detection), was to the immediate economic benefit of the likely offender (personal behaviour). This was an obvious opportunity for fraud (for details, see the study of Gottfredson & Hirschi as cited in Smith, 2004). Thus, this opportunity can be expected to influence (predict) personal behaviour.

#### ***3.2.2.2 From organisational orientation to opportunity for fraud***

Opportunity for fraud will depend on the organisation orientation vis a vis fraud<sup>7</sup> and can occur in the case of companies that are able to be defrauded (e.g., see Khalil & Lawarre, 2006). Thus, organisational orientation can be expected to influence (predict) opportunity for fraud.

---

<sup>7</sup> For the definition of organisational orientation vis a vis fraud and all of the other fraud risk factors, see section 6.2.

### ***3.2.2.3 From rationalisation to fraud commission***

In Cressey's (1950, 1973) work, when personal finance based problems were absent, no fraudulent acts were perpetrated. However, when personal finance based problems were present, the person with these non-shareable problems would use rationalisation of the proposed fraudulent activity to justify proceeding with the commission of the act. Thus, rationalisation can be expected to influence (predict) fraud commission.

### ***3.2.2.4 From personal behaviour to the fraud commission and rationalisation***

Rationalisation, on some occasions, was the motivating factor for commission of the act (Mills, 1940) and the role of rationalisation was also found to appear either during or after the fraudulent act (Cressey, 1950, 1973). In his example, Cressey (1973) said: "... he buys the car because he is able to rationalize. The rationalization is his motivation (to improve his economic status, for instance)" (p. 94). Thus, it can be expected that personal behaviour (aimed at an extravagant lifestyle) influences (predicts) both fraud commission and its rationalisation for perpetrating fraud.

### ***3.2.2.5 From justice avoidance and collusion to the fraud commission***

Another initiative to incorporate justice system characteristics into fraud risk assessment opened the possibility of identifying further potential fraud risk factors. The first characteristic that was identified was judicial punishments which played a role in decreasing the number of perpetrators of fraud (Graycar, 2000). Since the fraudsters might not be involved in face-to-face interactions when committing their fraudulent activities, this situation also brought up legal issues of jurisdiction and extradition (Lanham, 1997) as other judicial punishment considerations. A second characteristic was institutional governance which could be used to manage fraud risk (e.g., see Steane & Cockerell, 2005). In addition, the presence of exceptional circumstances (within a justice institution environment), such as a potential network of collusion, intimidation, or bribery, could increase the incidence of ("higher degree of") fraud and the failure of prosecutions (e.g., see

Sanchirico, 2006; Wright, 2006; Tillman & Indergaard, 2007). Thus, both justice avoidance and collusion can be expected to influence (predict) fraud commission.

Overall, the initial development of hypothesised models indicates the need to develop a wider range of fraud risk factor models and their relationships and to take into account the different possible roles of rationalisation as was indicated by Cressey (1950, 1973).

The following section will introduce the two hypothesised models.

### ***3.3 Two hypothesised models***

Integration of the various factors that have been suggested by previous authors into models, leads to the initial fraud risk models as shown in Figure 1.1. The relationships that are portrayed in these models could be inter-linked in several ways (see Table 3.1).

These models reflect two scenarios that will be the subject of the initial investigations that are reported in this section.

The factors that are shown in Figure 1.1 can be measured by a number of aspects and Table 3.2 lists the component aspects of these factors and the literature where these indicators were identified.

Because of the role of rationalisation, as shown in Figure 1.1, there are two hypothesised scenarios reflected by the models. The first scenario is where commission of fraud depends directly on rationalisation. The second scenario suggests that rationalisation is a side effect of the commission of fraud.

**Table 3.2**  
**The integrated fraud symptoms**

| Fraud Risk Factors              | Fraud Risk Indicators                                                                                                                                                                                 | Related References                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Opportunity (for fraud) (F1)    | Lack of an audit (v45), physical controls (v49), and transaction authorisations (v47), poor accounting records (v48), or ineffective supervision.                                                     | Lafrentz (1924); Hough <i>et al.</i> (1980); Matsumura & Tucker (1992); Kofman & Lawarree (1993); Wells (1993); Albrecht <i>et al.</i> (1995); Hillison <i>et al.</i> (1999); Gottfredson & Hirschi as cited in Smith (2004); Khalil & Lawarre (2006). |
| Rationalisation (F2)            | “No body will get hurt” (v21); “It is for a good purpose” (v23); “I am not really stealing” (v28), “The company can afford it (v29)”, I work hard and deserve it”; or “I deserve more”.               | Sykes & Matza (1957); Cressey (1973); Albrecht, <i>et al.</i> (1995); Bezanis (2002); Elliot (2007).                                                                                                                                                   |
| Collusion (F3)                  | Motivated offenders can also collude with individuals such as commissioners (v59) or parent companies (v62), subsidiary companies (v61), affiliated companies (v63), or shareholders.                 | Lafrentz (1924); Duggar & Duggar (2004); Tillman & Indergaard (2007).                                                                                                                                                                                  |
| Commission (of fraud) (F4)      | Commission involves individuals such as directors (v88) or parent companies (v92), shareholders (v90), subsidiary companies (v91) or affiliated companies.                                            | Lafrentz (1924); Hough <i>et al.</i> (1980); Shapiro (1990); Blackburn (1993); Tillman & Indergaard (2007).                                                                                                                                            |
| Organisational Orientation (F5) | Lack in use of technologies of fraud prevention (v73), no reward for good work results (v80), poor conflict resolution (v77), or lack of open internal communications (v78).                          | Hooks <i>at al.</i> (1994); Grabosky & Smith (1996); Bardhan (1997); Cordeiro (1997); Graycar (2000); Crowfoot (2004).                                                                                                                                 |
| Justice (avoidance) (F6)        | An attempt is made to intimidate (v101) or to bribe the court or justice institutions (v102); the defendant leaves the jurisdiction before the trial starts or during the course of the trial (v105). | Lanham (1997); Graycar (2000); Wright (2006).                                                                                                                                                                                                          |
| Personal behaviour (Person)     | See a reward (e.g. bonus) from committing fraud, perform menial task, and be careful to maintain custody of records and office space, or have relatively few complaints.                              | Bezanis (2002); Albrecht <i>et al.</i> (1995); Krambia-Kapardis (2001, 2002); Wolfe & Hermanson (2004); Steane & Cockerell (2005); Gordon (2006).                                                                                                      |

The next section will outline the call for appropriate theoretical model testing.

### ***3.4 A call for appropriate tests of the theoretical model***

In relation to individual violator differences, Cressey (1950, 1973) referred to Michael & Adler's study (as cited in Jordan, 1935) who said that: "Existing empirical researches ... are incompetent in the use of statistics" (p. 167). For detail, see section 1.5.1.

Cressey (1950, 1973) then added and argued that this is also because of the lack of understanding of the major causal (direct effect) problem (section 1.5.1). This understanding he considered to be a must if one were to address the etiological issue in terms of a set of definite factors and indicators.

However, he also raised the following concerns as had been indicated earlier by Michael & Adler (1971). Firstly, the (fraud risk) factors and indicators (see Table 3.2) should be distinguished as dependent and independent variables (for this approach, see sub-sections 3.2.1 and 5.3.5). Secondly, the interrelationships of the latent and observed variables with each other should be identified and developed (sub-section 3.2.2). Thirdly, the sub-sets of latent variables (constructs) within the total set of variables should be isolated, controlled, and tested (for all of the procedures and the identified sub-sets of constructs and their indicator items, see sections 6.7 to 6.9). Finally, the set of variables should be significant factors and indicators (for the results, see section 7.4 and Figure 7.2). In other words, there was a need to employ a multiple-relationship statistical tool for the study of any fraud risk management model (sub-section 1.5.2)<sup>8</sup>.

It is suggested that a lack of methodology could have been the reason why the study by Romney *et al.* (1980a) who developed a fraud-risk-evaluation questionnaire, found no etiological significant results from their study of fraudsters' psychological profiles.

---

<sup>8</sup> This is the main motivation for this thesis research (see sub-section 1.1.4).

In spite of the call for the use of more advanced analytical methods no causal based multiple-relationships test was used to examine the descriptive model of fraud aetiology proposed by Krambia-Kapardis (1999, 2001, 2002). This model included a variety of persons' motives and crime-prone personality aspects.

This thesis research tested multiple-relationship models using an appropriate methodology namely structural equations modelling (Chapter 5).

### ***3.5 Summary***

This chapter has identified areas of improvement that can be made in the consideration of integrated symptoms of fraud. It identifies that the following fraud risk factors should be added, namely collusion, justice avoidance and organisational orientation vis a vis fraud and their potential indicators (see Table 3.2 and Appendix 2 [c]) and several paths for the structural model (see Table 3.1) and hence two hypothesised models (see figure 1.1).

The chapter also identifies the need to use more robust methodologies, to better examine the multiple inter-relationships that are encountered when conducting research in the area of fraud.

The next chapter will discuss the qualitative and quantitative methodologies that have been used in studies of fraud risk (factors).

## ***Chapter 4***

### **In search of a robust scientific research methodology**

#### ***4.1 Introduction***

The fourth chapter, which is part of the three literature review chapters, incorporates material that has since been included in a paper by Sitorus & Scott (2008d).<sup>9</sup> It presents a review of the research methodology literature covering both qualitative and quantitative approaches, before determining the most appropriate scientific methodology to be used in this thesis. A range of methodologies is introduced, some research methodologies are commented upon and a more robust scientific research methodology is identified.

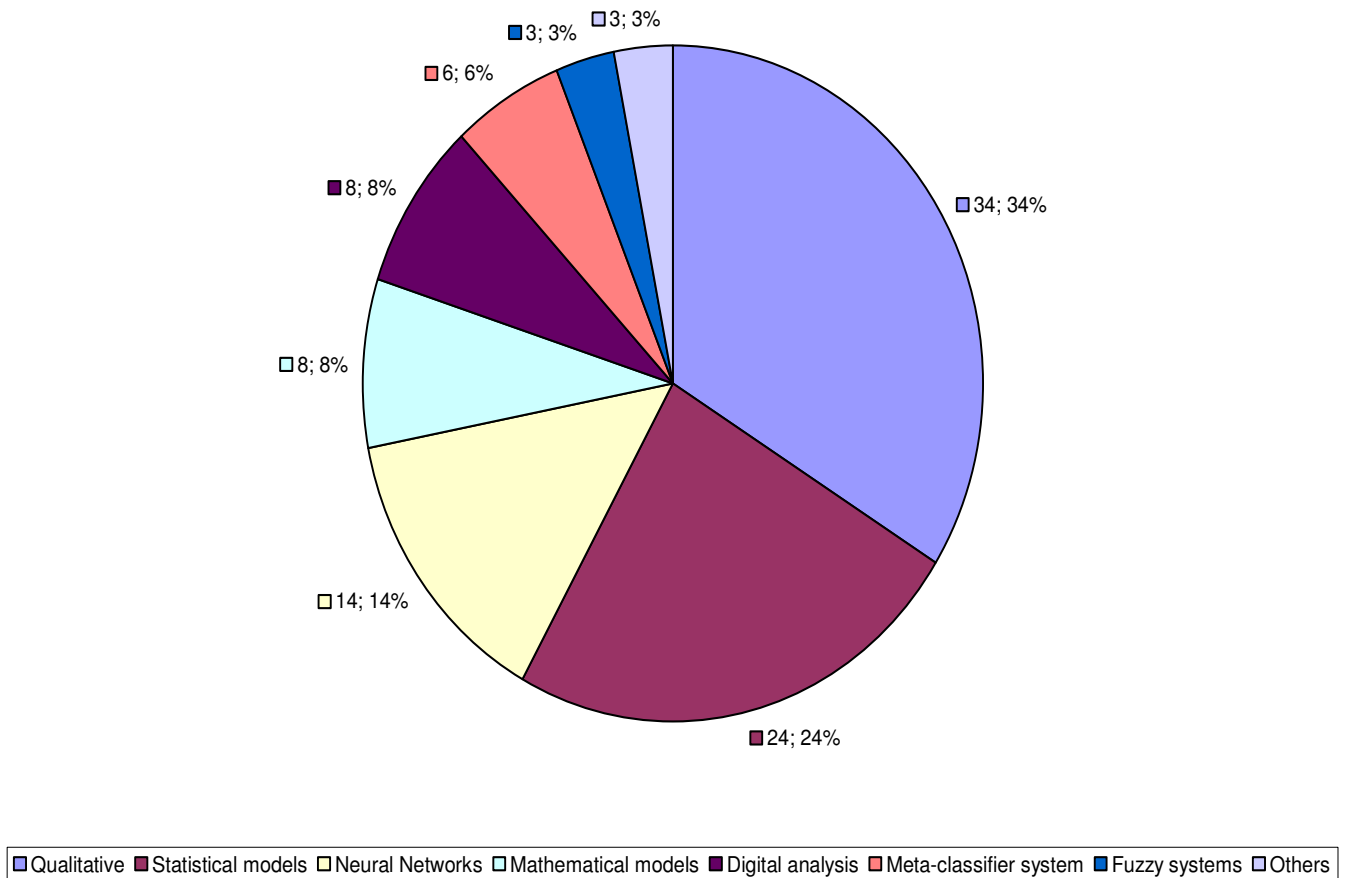
The following section provides a graphical illustration of the types of methodologies used by prior fraud risk factor studies, followed by an explanation of each type of methodology.

#### ***4.2 In search of methodologies of fraud risk investigations***

During the period from 1924 to 2008, there have been over hundred published papers that have used a variety of techniques to examine organisational fraud. These papers have for instance covered qualitative (analytic induction, field survey, experiment, critical review, case study) and quantitative (for example, statistical models including discriminant analysis, logit and probit models, mathematical models (for example, game theory), computational science (for example, neural networks, meta-classifier system, fuzzy systems, and digital analysis [Benford's law]) methods. Figure 4.1 identifies the range of published studies.

---

<sup>9</sup> Sitorus, T. & Scott, D. (2008d) 'Integrated fraud risk factors and robust methodology', *International Journal of Auditing* (accepted for publication on 16 December 2008).



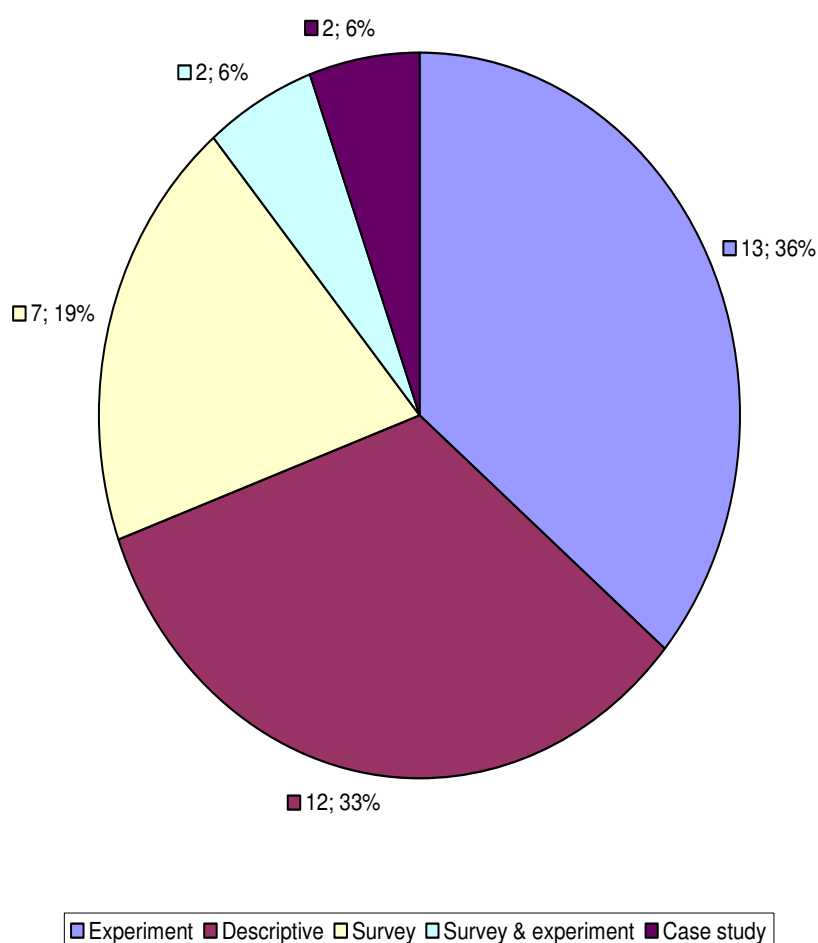
Source: Author

**Figure 4.1**  
**Methodologies of fraud risk investigations (1924 to 2008)**

As indicated by the years of publication (Appendix 3), the methodologies of fraud risk investigations have, to some extent, followed the development of research modelling. Some researchers have changed the types of models used from descriptive and empirical study models (e.g., Cressey, 1950, 1973; Krambia-Kapardis, 2001, 2002; Tillman & Indergaard, 2007) to empirical study and advanced quantitative analysis based models (section 4.2.2). The next sub-section will start with coverage of the qualitative approaches that have been used.

### 4.2.1 Qualitative methodologies

From Figure 4.2, it can be seen that the preponderance of qualitative fraud related research has been carried out by using experiments (13 authors or 36%), followed by the use of descriptive knowledge (12; 33%). Next was the use of a survey (7; 19%) and the rest used a combination of survey and experiment (2; 6%) and case study (2; 6%).



Source: Author

**Figure 4.2**  
Qualitative methodologies of fraud risk investigations (1924 to 2008)

An experiment can evaluate the involvement of different types of human participants based on a particular researcher's interest and focus of research (e.g., see Braun, 2000). For example, the 1949 survey study by Cressey (1950, 1973) interviewed trust violators in the Illinois State Penitentiary at Joliet, USA, and therefore highlighted trust violation factors (the non-shareable problem of financial pressure, the opportunity for trust violation, and violators' vocabularies of adjustment or rationalisations). These were then adopted by the global auditing standard setters (2002) when considering fraud risk factors. See, for example, ISA 240.

The identification of a logical structure for the science of logic ("analytic induction") was the outcome of Cressey's search for a methodology of generalisation (Cressey, 1950, 1973). One of the key aspects of the Cressey (1950) research design was that: "when such (negative) cases were found, the hypothesis was reformulated" (p.740) and, as Robinson (1951) indicated, statisticians would expect some negative cases to occur from time to time.

Later, it was found that not only statisticians but also fraud prevention and deterrence professionals and non-statistical fraud researchers who conducted field survey and experiment studies had made critical comments about the findings and conclusions of Cressey's fraud (trust violation) theory. With international experience in the area of fraud examination, Wells (2007), for instance, suggested that the Cressey's findings and conclusions were insufficient, to some extent, as an explanation of all fraudulent acts. In other words, there must be some negative cases in existence that would count against the Cressey hypothesis. In assisting Commander Allen Bowles, Krambia-Kapardis (2001), for instance, found some major fraud cases in the Australian Victorian Police files that showed that persons were often in collusion and not alone, when they committed fraud,.

The findings of Krambia-Kapardis (2001) showed that different findings did occur in different contextual factors (section 1.7.2) so that if one identified a negative case from Australia, for instance, it could not be simply used as negative case for Cressey's hypothesis.

The descriptive knowledge that resided in this researcher's professional experience and from survey/experiment were some of the types of qualitative information gathering approaches that have also been used by other fraud prevention and deterrence professionals like Romney *et al.* (1980a,b), Bezanis (2002), Wolfe & Hermanson (2004). For details of other fraud prevention and deterrence professionals or authors who wrote about examining the descriptive knowledge of fraud and using other types of qualitative methodologies, see Appendix 3.

Cressey's suggestions to reformulate a hypothesis if, in the future, there was a negative case, were taken up by Robinson (1951) and Turner (1953) when they considered the analytical process of induction. However, Turner (1953) said that Cressey's studies probably did not produce any empirical relationships that could for instance be used to identify "... who will have non-shareable problem (?) ..." (p. 606) since trust violators (fraudsters) would not let other(s) know about their problem (Cressey, 1950, 1973).

This then raised the issue of developing better empirical methods and therefore gave direction to the next researchers to employ more advanced quantitative research procedures (Michael & Adler, 1971) and to examine a descriptive (qualitative) model that had been developed from a subjective review or evaluation (Goldberg, 1970; Libby & Libby, 1989; Kleinmuntz, 1990). Specifically, Zahra *et al.* (2005) called for an examination of the relationships between the different fraud risk factors that had been identified (for detail, see sub-section 1.5.1).

These prior qualitative studies indicated that the identification of fraud risk factors may need to be increased in terms of their research status by not only using qualitative methodologies or professional (human) judgment but by also examining the research results from qualitative (descriptive) models by using more appropriate quantitative approaches, since there are many different fraud risk factors and their indicators (Zahra *et al.*, 2005).

In order to gain more understanding of quantitative methodologies, the following sub-section will continue the search for a more robust scientific research methodology by exploring a range of quantitative research approaches.

#### ***4.2.2 Quantitative methodologies***

From Figure 4.1 it can be seen that the preponderance of fraud related research has been carried out by using statistical models (24; 24%), followed by the use of neural networks (14; 14%). Next was the use of mathematical models (8; 8%) and digital (numerical) analysis, called Benford's law (8; 8%), followed by the use of other types, like meta-classifier system (6; 6%), fuzzy systems (3; 3%) as well as the other quantitative methodologies (3; 3%), such as the use of signal detection theory (SDT), analytic hierarchy process (AHP), and principal component analysis of RIDIT. However, the quantitative methodologies shown in the table were not designed to examine multiple-relationships between factors or constructs as called for by Turner (1953), Michael & Adler (1971), and Tillman & Indergaard (2007). In other words, they are, for the following reasons, unable to test statistically the hypothesised and *post-hoc* models (Figures 1.1 and 7.1) put forward in this thesis.

Firstly, multiple linear regression, discriminant analysis, logit, and probit models are used to examine single-equation fraud risk models in order to provide auditors with an aid to fraud risk assessment (e.g., Nieschwietz *et al.*, 2000). For details of statistical and multivariate models, see for example, Hair *et al.* (2006) and for the use of a particular type of statistical model such as the use of a probit model in the area of (insurance) fraud, see Pinquet *et al.* (2007).

Secondly, in order to improve the degree of correctness of results from statistical classification models, Artificial Neural Networks (ANN), as a class of computational models, have also been applied. ANN are able to use artificial intelligence (e.g., see Feroz *et al.*, 2000) and to identify and to simulate non-linear relationships such as step, sigmoid, hyperbolic, bubble, Gaussian, and Mexican-hat functions (e.g., see Koskivaara, 2004). However, like the traditional statistical models, they have only been used to examine single-relationship fraud classification models, as for example in the study by Green & Choi (1997).

Thirdly, as with most economics studies, some auditing researchers have changed a model that was derived from a descriptive (qualitative) approach, to a mathematical model using, for instance, probability (Bayes' Theorem), or even Game Theory (one of the most popular mathematical models in leading economic research that was on several occasions given awards by the annual Economics Nobel Prize ceremony). Game Theory can be applied in an experimental mode based on a "hidden action" (auditing) game in several potential states created by the researcher (e.g., see table 2). One of the examples of this was where an executive financial officer was required to choose whether to report a financial status fairly or to keep it fraudulently (e.g., see Bloomfield, 1997). The other authors who ever applied this type of mathematical models can be seen in Appendix 3.

Fourthly, to achieve better results from Artificial Neural Networks (ANN), a Meta-Classifer System has also been used because this type of model is able to allow for some or all combinations of the algorithms (that were applied in ANN). For an overview of this approach, see Bolton & Hand (2002). For further information including the authors who used this type of methodology, see Appendix 3.

Fifthly, fuzzy set approaches have formulated fraud risk factors in a binary (yes or no) format; which was still utilised in a single equation, for example Deshmukh *et al.* (1997). The other authors who employed this type can be seen in Appendix 3.

Sixthly, findings by Reed & Pence (2005) indicated that Benford's Law (numerical analysis) was not always the best tool to be used to detect fraudulent information. For detailed information covering the other authors who ever used Benford's Law, see Appendix 3.

Other different methodologies that have been used were Signal Detection Theory (SDT), Analytic Hierarchy Process (AHP) and Principal Component Analysis (PCA) of RIDIT-s<sup>10</sup>. SDT was a decision tool that could be applied by auditors leading to their acceptance of an account balance, if no fraud were to have been identified, or to reject an account balance if fraudulent transactions were found. For details, see Deshmukh *et al.* (1998). However, there was no empirical evidence that auditors would estimate the probability of the existence of each type of audit signal even when such signals could have been found (Bernardi, 1994). AHP was employed by Apostolou *et al.* (2001) to evaluate the degree of importance of fraud risk indicators (red flags). Fraud classification using PCA of RIDIT scores was used to develop measures of both the individual fraud indicators and of potential fraudsters (Brockett *et al.*, 2002).

Another type of quantitative methodology is Structural Equation Modelling (or latent variable modeling) that uses a combination of confirmatory factor analysis and regression analysis (section 1.5.2 and chapter 5). Using structural equation modelling (SEM), Uddin & Gillett<sup>11</sup> (2002, 2005) examined an (extended) reasoned action model of Ajzen & Fisbein (1980). Their model illustrated the effects of moral reasoning and self-monitoring and included indicators such as

---

<sup>10</sup> The term of "RIDIT-s" was popular due to the analogy with "logits" and "probits (for detail, see Bross, 1958).

<sup>11</sup> For full references, see Uddin & Gillet (2002) and Gillet & Uddin (2005).

company size and compensation structure on CFO intention to report fraudulent financial statements.

The use of SEM allowed for the examination and development of multiple-relationships between integrated fraud risk symptoms and is an approach that can now be used to better evaluate the complex inter-relationships that can be expected to exist in fraud and auditing research (section 3.2.1). Therefore, this is the methodology that was considered to be the most appropriate to use in this thesis research, to develop and to examine an integrated fraud symptoms model.

### ***4.3 Summary***

Researchers should be careful to choose the most appropriate scientific research methodology that will be able to analyse a number of samples (cases) so as to address their research questions, their hypothesised models and hence the purpose of their study. It has been found that studies have not always used the most appropriate methodology and this has been commented upon by Robinson (1951), Turner (1953), Michael & Adler (1971) or Zahra *et al.* (2005).

When a researcher is faced with examining a set of interrelated research questions that can be depicted as theoretical (and causal) models, Structural Equations Modelling (SEM) should be taken into account. Statistical advances have now made it possible to easily use such more sophisticated methods of assessment of multiple inter-relationships, by means of SEM software programs such as LISREL, EQS and AMOS.

This chapter identifies the reason for using a SEM program, in order better to examine the multiple inter-relationships that are to be encountered when conducting research in the area of fraud risk factors and auditing standards.

The next chapter will continue with an outline of SEM methodology, and the SEM procedural stages followed in this thesis research.

## ***Chapter 5***

### **Scientific research methodology: Structural equations modelling**

#### ***5.1 Introduction***

This chapter covers the structural equations modelling (SEM) procedures that were relevant to this thesis.

When using SEM, previous model builders (e.g., Burt, 1973, 1976; James *et al.*; 1982; Herting & Costner, 1985; Anderson & Gerbing, 1988, 1992; Joreskog, 1993; Joreskog & Sorbom, 1993; Medsker *et al.*, 1994; Hurley *et al.*, 1997) have recommended employing a number of scientific research procedures from exploratory factor analysis (EFA) to confirmatory factor analysis (CFA) and from CFA to structural modelling.

According to the two step process of Anderson & Gerbing (1988), the preliminary step for SEM is to test the fit and construct validity of the proposed measurement models or constructs. Hair *et al.* (2006) identify four initial stages namely:

- defining the individual latent constructs or (fraud risk) factors,
- developing the overall (fraud symptoms) model,
- designing a (fraud risk) study to produce empirical results and;
- assessing the (fraud risk management) model validity.

Once a satisfactory model has been obtained, the final (second step of the Anderson and Gerbing (SEM process) is to test the theory by using SEM. Hair, *et al.*, (2006) identify this final stage as consisting of specifying the structural model and assessing its fit to the data so as to assess the correctness of the relationships.

The following section starts with the initial stage suggested by Hair *et al.* (2006) namely defining the individual (seven) latent constructs (fraud risk factors, in this thesis).

## ***5.2 Definition of individual factors***

This process begins with the development of a sound definition of the (fraud risk) factors and their indicators (Churchill, 1979; Lewis *et al.*, 2005) followed by scale development and measurement, ethical conduct of the thesis research, expert review, examination of multivariate normality of the data and preliminary factor exploration using MLFA and CFA (for more information on these aspects, see Heeler *et al.* 1977; Churchill, 1979; Gorsuch, 1983; Sudman & Bradburn, 1986; Bollen, 1989; DeVellis, 1991; Sethi & King, 1991; West *et al.*, 1995; Fabrigar *et al.*, 1999; Tabachnick & Fidell, 2001; Malhotra, 2004; Haig, 2005; Lewis *et al.*, 2005; Brown, 2006; Worthington & Whittaker, 2006).

In the initial stage, the researcher (investigator) needs to operationalise the (fraud risk) latent variables (factors) or constructs (Churchill, 1979; Lewis *et al.*, 2005), and hence the first sub-section of this chapter deals with the development of new (fraud risk) measures (indicators) for each factor.

### ***5.2.1 Factors***

In order to develop better (new) measures and to ensure good face validity (see sub-section 5.5.3.3), this thesis research commenced with an exploration of the domain of observables covering the constructs required for conceptualising and operationalising the definitions of (a) opportunity for fraud (sub-section 6.2.2), (b) “rationalisation” (6.2.3), (c) potential networks of “collusion” and (d) “commission of fraud” (6.2.4), (e) “organisational orientation vis a vis fraud” (6.2.5), (f) “justice avoidance” (6.2.6), (g) “personal behaviour” (6.2.7), by carefully selecting their measurement scale items and scale types as suggested by Churchill, (1979), Bollen, (1989) and Lewis *et al.*, (2005).

In this thesis the author decided to develop new multi-item measurement scales for each latent construct (factor). The reason for this will be set out in the next sub-section. Hence, the following sub-section establishes the critical foundation required for the development of the new scales.

### ***5.2.2 Scale development and measurement***

Prior studies may have already used fraud risk measurement scale items and scale types and these may be able to be used, after having been tested to ensure that they can provide a sufficient level of validity in the different context. Examples of a set of items can be seen in the handbooks of Smitherman & Brodsky (1983) or Bearden *et al.* (1993).

Alternatively, the investigator may need to develop new multi-item scales to measure each factor applicable to a particular context (see sub-section 1.1.2). In the four simulation studies of Wylie, Martin, Bollen & Barb, and Olsson *at al.* cited in Bollen (1989), it was concluded that: “the greatest attenuation (of multi-item scales) occurs with few categories (e.g., <5)” (p. 435). In other words, five or seven scale points for new multi-item scales were considered to be less likely to suffer from problems with kurtosis and skewness; and therefore have been recommended.

In this thesis research, the author developed multi-item scales to measure each fraud symptom applicable to an Indonesian context and used attitude (anchor points of disagree and agree) scales with numerical values of 1= disagree through to 7 = agree. The statements that covered the indicators for all of the latent constructs (see Appendix 2 [c]) were derived from multidisciplinary studies (Chapters 2 and 3 and section 6.2), were approved by the University Human Research Ethics Committee (section 5.2.3) and were reviewed by two Indonesian experts (5.2.4).

As the measurement involved human subjects, the author, who is a research masters degree by thesis candidate (see sub-section 1.1.5), was required to conform to the requirements of the University Human Research Ethics Committee (HREC). Hence, the next sub-section will firstly outline the human ethics committee review outcome.

### ***5.2.3 Human ethics committee review***

The University HREC reviewed the research questionnaire (which covered the indicators for seven latent constructs) in relation to ethics standards (sub-section 1.7.1 and section 6.4) before a pre-test was commenced (using experts) and prior to the research survey which was carried out in Indonesia (see sub-section 6.6.1). There were several positive outcomes from this process. Firstly, the HREC gave its certification (ECN-07-52 on May 15, 2007) before the research survey was commenced in June 2007. Having this approval was of assistance in regard to the research protocol that should be followed for Indonesia both ethically and with appropriate cultural sensitivity (see the author's research letter to Indonesian institutions in Appendix [2a]). As a result, the author obtained support from a large number of Indonesian participants and hence gained a sample of sufficient size (sub-section 5.4.2). The ethics approval was also reported in publications.

In order to obtain independent judgement of the questionnaire, the author discussed the content with two Indonesian experts before distributing the anonymous questionnaire and obtaining data from the respondents. Therefore, the involvement of the experts will be outlined in the next sub-section.

### ***5.2.4 Expert review***

Suitable experts can provide insights into scale measurement items (e.g., see Sudman & Bradburn, 1986; Malhotra, 2004) and can possibly identify additional sources of data (e.g., see Churchill, 1979; Sethi & King, 1991) if the expert gives information about other potential respondents (see section 6.5).

This thesis research used two Indonesian experts, who were drawn from the prospective respondents' workplaces, to comment on the indicators that were to be used for the various constructs or factors. Their opinions were that the measures that had been identified would be suitable.

After the data has been collected, the normality of data should be assessed. Therefore, the next section will outline the rules for assessing the normality of the distribution of the multivariate data.

#### ***5.2.5 Multivariate normal data***

As MLFA, CFA and SEM require multivariate normal data, any significant kurtosis and skewness should be identified. However, if the skewness and kurtosis of all of the observed variables (indicator items) were not more than 2 and 7 respectively, the transformation of the data prior to using MLFA would not be required (e.g., see West *et al.*, 1995).

In this thesis research, the author firstly used SPSS to explore for any significant kurtosis or skewness (see section 6.6.2). In the stages of CFA and SEM, the AMOS program also provided an assessment of the normality of the multivariate data as shown in appendices 5, 6 and 8 (a). The data was found to fall within the acceptable limits for it to be considered to be multivariate normal.

The following sub-section outlines the use of EFA and the preliminary exploration of the factors.

#### ***5.2.6 Preliminary factor exploration***

For many years, EFA has been employed in psychometric evaluations (e.g., see Spearman, 1904, 1927). If the data is in a correct range for the assumption of normality (see sub-section 5.2.5), the researcher is able to use MLFA in order to explore the underlying dimensions of the attitudinal data (sub-section 5.2.2) and hence the acceptability of each (fraud risk) factor structure (e.g., see Heeler *et al.* 1977).

In this thesis, the author produced a set of psychometric evaluations of 14, 13, 19, 17, 13, 17, and 9 questionnaire items (Appendix 2 [c]) that the author believed were indicators of personal behaviour, rationalisation, opportunity for fraud, collusion, organisational orientation vis a vis fraud, commission of fraud, and justice avoidance, respectively (section 6.7). These were then examined using MLFA (sub-section 5.2.7).

The following sub-section outlines MLFA and the procedure to be used in a tandem process (see section 5.2.8).

### **5.2.7 MLFA**

The first aspect when using MLFA is for the investigator to omit any poorly defined factors with low indicator communalities (the squared multiple correlations of each indicator with the factors). In other words, indicator communalities were used to identify the items with the highest explanation of variance (e.g., see Gorsuch, 1983, Fabrigar *et al.*, 1999; Tabachnick & Fidell, 2001; Worthington & Whittaker, 2006).

The assessment of communalities allowed for an initial purification step whereby items with low communalities of below 0.3, which therefore provided little explanation of the relevant latent variable (construct) or factor, were eliminated.

In addition, since an acceptable MLFA factor structure ideally requires four indicator items if one of the indicator items were to have a low communality value (from 0.3 to 0.4), the MLFA factor structure might still be acceptable for use in CFA and SEM. This could occur if the factor loadings were still in the correct range (e.g., see Cliff & Hamburger, 1967) and importantly if the factor could show a good CFA fit (see sub-section 5.5.2.2) and evidence of construct validity (see sub-section 5.5.3).

In this thesis, the author used MLFA indicator items with communalities greater than 0.3 (see sub-section 6.7.2). The communality values are reported in section 6.7.

The MLFA derived structure should be tested in a tandem process. Thus, the next sub-section will outline the tandem process using MLFA and CFA on the same (half) data (sample 1).

### ***5.2.8 Tandem process***

The data that was collected from the Indonesian respondents was randomly split into two samples of equal size. These samples were termed sample 1 (the first half data) and sample 2 (the second one). Using sample 1, a tandem construct development procedure was carried out (see section 6.8). This procedure consisted of an initial use of MLFA (see section 5.2.7) followed by the use of CFA in order to test the hypothesis about the population (fraud risk) factor structure. This process also eliminated poorly fitting measures from the MLFA structure and achieved the best fit for each measurement model (e.g., see Hurley *et al.*, 1997; Haig, 2005; Brown, 2006).

The statistical software programs used to perform both of these processes were SPSS 14.0 for MLFA and AMOS 6.0 for CFA.

The second stage as suggested by Hair *et al.* (2006) develops the overall measurement models and hence the two initial theoretical (fraud risk) models.

## ***5.3 Overall models***

This section provides details of the evaluation of the (hypothesised or theoretical fraud risk) models (Chapter 3) from the point of view of unidimensionality, a congeneric model, indicators per factor, to an over-identified model. The following sub-section therefore begins with unidimensionality followed by the other aspects in the sequential sub-sections.

### ***5.3.1 Unidimensionality***

In the MLFA and CFA stages, unidimensionality should also be assessed. The assessment of unidimensionality in either MLFA or CFA is that each indicator should load highly on a single factor. In other words, each factor should be a “simple structure” (e.g., see Nunnally, 1978; McDonald, 1981; Hattie, 1985; Anderson *et al.*, 1987; Nunnally & Bernstein, 1994), as unidimensionality is one of the requirements for a congeneric measurement model (see the next sub-section).

To make certain of this aspect the thesis research did not use any observed variable indicator) that had a high level of cross loading.

The other aspect of the models that should be evaluated is whether the two hypothesised models (see sub-section 1.2.3) were congeneric models.

The next sub-section will therefore outline the requirements for a congeneric model.

### ***5.3.2 Congeneric model***

A congeneric model will have sound measurement properties if the hypothesised model is a simple structure that has only a one-dimensional latent construct (a single factor) with all possible cross-loadings constrained to nil and with no covariance between or within (latent) construct error variances. In other words, covariance between or within the construct error variances are all fixed at zero (e.g., see Carmines and McIver, 1981).

In this thesis, the MLFA results indicated that each MLFA factor was a simple structure with the number of indicators in the range of 4 to 8. In other words, no construct had one or more significant cross-loadings (see section 6.7). Thus, the MLFA and CFA tested measurement models, used in this thesis research, were deemed to be congeneric.

Due to the range of indicators for each acceptable MLFA construct of 4 to 8, the next section will address the issue of using four indicators for each measurement model.

### ***5.3.3 Indicators per factor***

Parsimony promotes the use of four observed variables to allow for the estimation of a factor (e.g., see Hayduk & Glaser, 2000a,b). Therefore, at the CFA stage, care should be taken to omit excess indicators and to use only the best four indicators (see sub-section 5.2.7).

The use of three indicators or fewer for a factor should be avoided since these will produce a just or under-identified model with zero or negative degrees of freedom (e.g., see Marsh *et al.*, 1988b). The fit of such a model cannot be tested and would therefore be unable to be used to test Cressey's (1950, 1973) theory of trust violations (fraud risk factors), in this thesis research, as called by Zahra *et al.* (2005) (sub-section 1.5.1).

However, if an investigator were to have only three indicator items for a factor, identification might still be able to be achieved in a larger overall model if there were additional linkages (James *et al.*, 1982; Anderson & Gerbing, 1984; Boomsma, 1985; Bentler & Chou, 1987; James & James, 1989). Thus, in an overall SEM model, the use of fewer than three indicator variables for a construct, or even a single indicator (e.g., Hayduk & Glaser, 2000a,b), could be possible if there were other linkages in the model that enabled the under-identified problem to be overcome. In this thesis the addition of linkages in the post-hoc model stage

could have addressed any such problem were it to have existed (see sub-section 5.7.3).

This thesis research used four indicators for each factor. However, in the final overall model three indicator variables could have been used in the theoretical relationships with other factor(s) provided that the following requirements were met. Firstly, in the CFA based test of convergent validity, a factor with three indicator items must achieve a high proportion of variance explanation (see section 5.5.3.1). Secondly, when examining discriminant validity of the measurement models or constructs, there should be evidence of acceptable discriminant validity (section 5.5.3.2). Thirdly, the structural model (SEM) should exhibit positive degrees of freedom so that the fit can be assessed.

The following sub-section outlines the importance of positive degrees of freedom and hence of using an over-identified model.

#### ***5.3.4 Over-identified model***

Only this type of model can be used to test theory since it will have positive degrees of freedom. For example, a four-indicator unidimensional measurement model (four indicators and a factor) is an over-identified model with positive degrees of freedom for which fit values can be computed (e.g., see Herting & Costner, 1985).

All of the measurement (fraudulent behaviour) models used in this thesis research were over-identified (see section 6.8).

The following section outlines reflective measurement theory.

### 5.3.5 *Reflective measurement theory*

Reflective measurement theory means that in an association between a factor (construct) and its indicators, the measured indicator variables will be dependent variables and the factor will be the independent variable (e.g., see Nunnally, 1978). Bollen and Lennox (1991) have identified that this type of model is very commonly found in social science constructs such as (fraudulent) behavioural intentions, and hence are to be expected in the case of fraudulent behaviour.

Jarvis *et al.* (2003) have suggested that there are six characteristics that determine whether measures are reflective. Firstly, all measures (indicators or observed variables) should be dependent variables. In other words, the direction of causality needs to be from construct to measure. Secondly, measures are expected to be correlated. Thirdly, omitting an item from a reflective measure will not change its meaning. Fourthly, the measure will take into account measurement error. Fifthly, a measure should own “excess” meaning. Sixthly, a single scale does not adequately represent the measure.

In this thesis, it was decided that the fraud symptoms (indicators) did not cause their fraud risk factors; but rather, that the fraud factors caused their symptoms (indicators). For example, the latent construct of opportunity for fraud (F1) caused the effects that could be measured in the indicators (symptoms), such as lack of an audit, lack of physical controls, lack of transaction authorisation, or poor accounting record (see Appendix 2 [c]).

In reflective measurement model based theory, all the elements of construct validity including reliability are important. Therefore, convergent validity and measurement model discriminant validity should be assessed (see sub-section 5.5.3) before evaluating a final overall model (e.g., see Anderson & Gerbing, 1988; Medsker *et al.*, 1994) and this was therefore done in this thesis research (see sections of 6.8 and 6.9)

After the development of all over-identified measurement models, the next stage is the use of CFA and hence the next section will outline the fraud risk study that was designed to produce empirical results.

### ***5.4 Empirical study***

This section covers several aspects of examining the goodness of fit of a (fraud risk) model commencing with the aspect of measurement scale, respondents (cases) and response rate, estimation technique, model complexity, missing data, amount of average error variance among the reflective indicators, model specification, and (potential) problem avoidance including that of a Heywood case.

The following sub-section starts with measurement scales followed by the other aspects in the consecutive sub-sections.

#### ***5.4.1 Measurement scales***

As previously mentioned a numerical scale of disagree =1 to agree = 7 was used to measure the fraud risk indicators examined in this thesis.

The following sub-section firstly checks the minimum requirement for an acceptable sample size and hence the required number of respondents or cases.

#### ***5.4.2 Sample***

Opinions regarding minimum sample sizes have varied (e.g., see MacCallum *et al.*, 2001; MacCallum, 2003) and studies have been conducted with as few as 50 cases (e.g., see James & James, 1989; Ding *et al.*, 1995; Krambia-Kapardis, 2001).

CFA based tests of models require the use of multiple samples for cross-validation (e.g., see MacCallum *et al.*, 1992) and the number of cases that should be used in this form of analysis can be roughly estimated on the basis of at least 5 and preferably 10 cases per measure to be evaluated (e.g., see Everitt, 1975; Nunnally, 1978; Gorsuch, 1983).

Churchill (1979) recommended collecting additional (new) data to test construct validity (reliability) in another independent (second half) sample in order to rule out the possibility that the findings were due to “chance”. However the use of a split sample rather than a new sample has also been recommended (Cudeck & Browne, 1983) and was used in this thesis research (see sections 6.8 and 7.3).

The data set that was used in this thesis research was deemed to be of an acceptable size to be used in the form of two split-half samples. The total sample of 244 cases was randomly split into two equal half-samples (see sub-section 6.6.1), the first half was used for the preliminary test (section 6.7) and the second one for validation (sections 6.8 and 6.9).

#### ***5.4.3 Response rate***

In relation to the adequacy of response rate, Mangione (1995) identifies a response rate in the range of 70% to 85% as being very good.

This thesis research distributed 300 sets of anonymous questionnaire documents approved by the HREC and the response rate exceeded the desired minimum response rate of 70% (see sub-section 6.6.1).

#### ***5.4.4 Estimation technique***

Maximum likelihood estimation (MLE) has been found to provide valid results with sample sizes as small as 50 (see sub-section 5.4.2); however, the recommended minimum sample sizes to ensure stable solutions are 100 to 150 (e.g., see Medsker *et al.*, 1994; Ding, *et al.*, 1995).

In this thesis, since the data met the assumption of multivariate normality (see sub-section 6.6.2), MLFA was used as the estimation technique (see sub-section 5.2.6).

As previously outlined, the sample was randomly split into two equal subsets ( $N_1 = N_2 = 122$  respondents in each). Sample 1 ( $N_1=122$ ) was used for the pre-test step (the preliminary stage) and sample 2 ( $N_2=122$ ) was used for the validation of theoretical (hypothesised) SEM models.

#### ***5.4.5 Model complexity***

Models can be complex if the latent constructs (factors), have fewer than three observed (indicator) variables or if multi-group analyses are conducted and those types of analyses will require larger sample sizes. These potential difficulties did not arise in this thesis research and therefore, the use of the split samples of 122 cases each was deemed acceptable.

#### ***5.4.6 Missing data***

The investigator should plan for an increase in sample (case) size to offset any problems of missing data. In this thesis research, the author had only 5 anonymous participants who did not answer the questions completely and achieved a good response rate of more than 70% of the 300 questionnaires that were sent out (see sub-section 6.6.1).

#### ***5.4.7 Amount of average error variance among the reflective indicators***

Indicator communalities stand for the average amount of variation of the measured (indicator) variable that is explained by the measurement model (see sub-section 5.2.7). Studies show that larger sample sizes are required if communalities become smaller or (the two hypothesised) models contain multiple constructs (factors) with low communalities (e.g., see Enders & Bandalos, 2001). The variance extracted (VE) estimates should also be in excess of .5 (see sub-section 5.5.3.1.2).

In this thesis, the MLFA and CFA analyses indicated that the constructs that were used had acceptable communality values and VE estimates that exceeded 0.50 (see sub-sections of 6.7.2 and 6.8).

#### ***5.4.8 Model specification***

Since the latent construct (factor) to be estimated in a CFA evaluated model has no metric scale, one of the construct loading estimates or the construct variance is required to be fixed. Therefore, one of construct loadings was fixed at one in respect of each construct, and in the stage of tandem process (see section 6.8), CFA was used to test the measurement models and hence the (fraud risk) theory in this thesis research, using sample 2.

#### ***5.4.9 Identification problems avoidance***

Blalock (1964) said that the two most basic rules were the determination of the order and rank conditions for identification status of a CFA or SEM model.

In this thesis research, the author explored a wide range of possible indications of identification problems. These included large standard errors, an inability of the program to invert a matrix, negative error variances, extremely large parameter estimates and regression weights (factors loadings), correlations among the factors, or a model that produced different parameter estimates due to the use of different starting values. However, none of these potential problems were encountered in this research.

#### ***5.4.10 A Heywood case***

A Heywood case is a typical EFA problem (e.g., see Nasser & Wisenbaker, 2003). The existence of such a case can be identified by there being a situation where more than 100 percent of the variance of an indicator is explained. In the exploratory phase of construct development for this thesis research, when such a case was encountered, the author excluded the problematic measured variable (indicator).

After the CFA models have been tested satisfactorily, the investigator can move forward to the next stage namely the assessment of measurement validity using fit indices on the first half sample and construct validity on the second half sample of data. The following section starts with the measurement model validity assessments.

## ***5.5 Measurement model validity assessment***

This section provides the overall fit indices from the CFA based construct validity tests (e.g., see Anderson and Gerbing, 1988; Medsker *et al.*, 1994) and therefore will start firstly with multiple fit measures (e.g., see Wheaton, 1987), and fit assessment.

### ***5.5.1 Fit assessment***

This sub-section covers the basics of goodness-of-fit, absolute fit measures, incremental fit indices, and parsimony fit indices.

#### ***5.5.1.1 The basics of goodness-of-fit***

A chi-square statistical test of global fit is available for maximum likelihood estimation and it is the basic goodness-of-fit (GOF) measure that can be used to evaluate the fit of a model (theory) to the data (e.g., see Joreskog & Sorbom, 1984). The AMOS program used for the analysis carried out in this thesis research provided a chi-square value, the degrees of freedom, and the probability ( $p$ ) value that the chi-square value was significantly different from zero. Because this test was used to test for a model that did not differ from the data that had been collected, the  $p$ -value was required to be greater than 0.05 at the 95% level of significance.

However, the chi-square value test has been identified as being potentially inaccurate (e.g., see Bentler & Bonnett, 1980; Bearden, *et al.*, 1982; Marsh & Hocevar, 1985; LaDu & Tanaka, 1989; Mulaik *et al.*, 1989; Gerbing & Anderson, 1992).

Later, the work of Browne, as cited in Brannick (1995), opined that the test substantially evaluates the hypothesis that the model fits “approximately” to reality (the balance of statistical and practical views) in the population rather than the hypothesis that the model fits exactly in the population (a very highly statistical approach).

Nevertheless, Mulaik & Hayduk (2008) have argued that the investigator should seek explanations for the failure of the chi-square test (sub-section 8.14.2).

In this thesis research reliance for adequate evaluation of the goodness of fit of the proposed model was based on other goodness of fit measures (sub-section 5.5.2.2) and the explanations can be seen in Chapter 7.

#### ***5.5.1.2 Absolute fit measures***

Absolute fit indices are a direct measure of how well the model fits to the data (e.g., see Kenny & McCoach, 2003). These indices include the chi-square statistic, GFI, AGFI, RMSR, SRMR, RMSEA, normed chi-square, ECVI, CVI, and Gamma Hat. Therefore, the next sub-section will start with the chi-square statistic and the other measures will be covered in sequent sub-sections.

##### ***5.5.1.2.1 Chi-square statistic***

In SEM, the researcher should look for lower chi-square values to support his/her model being the same as the data that has been collected (e.g, see Savalei & Bentler, 2006). However, as identified, this measure is not necessarily one that can be relied upon and is one that varies in accordance with larger samples and increasing model complexity. Reliance was therefore placed on other measures.

#### ***5.5.1.2.2 Goodness-of-fit index (GFI)***

Even though the number of cases (N) is excluded from the determination of this measure, it is still indirectly sensitive to sample size due to the effect of N on sampling distribution (e.g., see Anderson & Gerbing, 1984; Marsh *et al.*, 1988a; Mulaik *et al.*, 1989; Bollen, 1990; McDonald & Marsh, 1990; Gerbing & Anderson, 1992; Sharma, *et al.*, 2005).

#### ***5.5.1.2.3 Adjusted goodness-of-fit index (AGFI)***

AGFI is used to take into account differing degrees of model complexity by adjusting the GFI (using a ratio of the degrees of freedom used in the model to the total degrees of freedom available). Like GFI, AGFI which was derived from GFI, is also known to have a problem (e.g., see Anderson & Gerbing, 1984; Marsh *et al.*, 1988a; Mulaik *et al.*, 1989; McDonald & Marsh, 1990; Gerbing & Anderson, 1992).

#### ***5.5.1.2.4 Root mean square residual (RMSR)***

This fit of a model measures how accurately each individual covariance and variance term is predicted; however, it is difficult to use as a measure of fit because the size of the value can vary and has no standard against which it can be assessed (e.g., see Anderson & Gerbing, 1984; Marsh *et al.*, 1988a; Gerbing & Anderson, 1992).

#### ***5.5.1.2.5 Standardized root mean square residual (SRMR)***

The SRMR is the standardised value of RMSR and has a known distribution. It can therefore be used to assess model fit on the basis of the normal level of error used in statistics. The investigator can assess the practical significance of the magnitude of the SRMR in light of the research objectives and the observed or actual covariances or correlation (e.g., see Bagozzi & Yi, 1988). Individual SRMRs enable the investigator to locate the problems with a measurement model and values of 0.05 or less signify a model that fits well.

“In an extensive simulation study, the SRMR was found by Hu & Bentler (1995) to discriminate between fitting and misspecified models substantially better than any other fit index” (Bentler, 1995, p.272)

#### ***5.5.1.2.6 Root mean square error of approximation (RMSEA)***

The RMSEA also has a known distribution (e.g., see Hu & Bentler, 1998, 1999). It represents how well a model fits a population and it tries to correct for both model complexity and sample size by including each in its computation. Like Hu & Bentler (1998, 1999), the use of RMSEA is also suggested by Sharma *et al.* (2005).

#### ***5.5.1.2.7 Normed chi-square***

This GOF measure is a simple ratio of chi-square to the degrees of freedom for a model and therefore is known to have a problem (e.g., see Marsh *et al.*, 1988a).

#### ***5.5.1.2.8 Expected cross-validation index (ECVI)***

The ECVI is an approximation of the goodness-of-fit the estimated model would achieve in another (validation) sample of the same size; therefore, it is most useful for comparing one model against another (e.g., Jöreskog & Sörbom, 1993; Kaplan, 2000).

#### ***5.5.1.2.9 Actual cross-validation index (CVI)***

The CVI can be formed by using the computed covariance matrix derived from a model in the first half sample to predict the observed covariance matrix taken from another half (validation) sample; therefore, the smallness of the CVI value is better for estimating the predictive validity of hypothesised models (Cudeck & Browne, 1983).

#### **5.5.1.2.10 Gamma hat**

Gamma Hat also attempts to correct for both sample size and model complexity by including each in its computation; therefore, the primary advantage is that it has a known distribution (Cudek & Browne, 1983).

#### **5.5.1.3 Incremental fit indices**

Unlike absolute fit indices, incremental fit indices assess how well a specified model fits relative to some alternative baseline (null) model (Schmuckle & Hardt, 2005). These were NFI, CFI, TLI, and RNI.

The following section begins with NFI, followed by CFI, TLI, and RNI in the sequential sub-sections.

##### **5.5.1.3.1 Normed fit index (NFI)**

The NFI proposed by Bentler & Bonnett (1980) is a ratio of the difference in the chi-square value for the fitted (target) model divided by the chi-square value for the base line model. However, the NFI is also influenced by sample size; therefore, is known to present a problem (e.g., Bearden, *et al.*, 1982; Marsh *et al.*, 1988a; LaDu & Tanaka, 1989; Mulaik *et al.*, 1989; Bollen, 1990; McDonald & Marsh, 1990).

##### **5.5.1.3.2 Tucker Lewis index (TLI)**

In order to remove the problem with NFI, Bentler & Bonnett (1980) refined the work by Tucker & Lewis (1973) and developed the Nonnormed Fit Index (NNFI) which is also known as the Tucker Lewis Index (TLI). Its value can fall below 0 or above 1. In their simulation studies, the use of TLI as a measure of fit was recommended by Marsh *et al.* (1988a), Hu & Bentler (1998), and Sharma *et al.* (2005).

#### **5.5.1.3.3 Comparative fit index (CFI)**

The CFI is also an improved version of the NFI (Bentler & Bonnett, 1980; Hu & Bentler, 1999) and it is normed so that values range between 0 and 1. Medsker *et al.* (1994) and Hu & Bentler (1998) suggested the use of CFI as a good measure of fit.

#### **5.5.1.3.4 Relative non-centrality index (RNI)**

McDonald & Marsh (1990) used the term “RNI” which is conceptually quite similar to CFI, except that the RNI is not-normed. It is due to the fact that negative values are not permitted in the numerator or denominator of the RNI. Therefore, when the the RNI is between 0 and 1 (inclusive), the CFI is exactly the RNI. However, when the RNI is smaller than 0, the CFI is larger than the RNI, and when the RNI is bigger than 1, the CFI is less than the RNI. Therefore, the RNI of McDonald & Marsh (1990) was also suggested for use as one of the measures of fit by Medsker (1994) and Sharma *et al.* (2005).

#### **5.5.1.4 Parsimony fit indices**

This class is only used to provide information about which model among a set of competing models is best, considering its fit relative to its complexity (e.g., see Marsh & Balla, 1994). This class included PGFI and PNFI and the next subsection will start with PNFI followed by PGFI

##### **5.5.1.4.1 Parsimony normed fit index (PNFI)**

The PNFI adjusts the NFI by multiplying it by the parsimony ratio (PR) (e.g., see James *et al.*, 1982).

##### **5.5.1.4.2 Parsimony goodness-of-fit index (PGFI)**

The PGFI is obtained by adjusting the GFI using the PR and the values will therefore always be less than 1 (e.g., see Mulaik, *et al.*, 1989).

Because there are many fit indices, tactically it may be more important to take into account firstly one of the leading fit indices derived from existing simulation studies followed by other supplemental indices. Therefore, the following sub-section will identify this need.

### ***5.5.2 Using fit indices***

This sub-section provides the reason for using some of the fit indices since the chi-square value use is known to present a problem and importantly to select one of the leading fit indices to evaluate the proposed model, supplemented by the other identified better indices.

The following sub-section begins with the problem with the chi-square test and explains the reason to move forward to the selected fit indices.

#### ***5.5.2.1 Problems with the chi-square test***

As previously identified, the chi-square can be unreliable and should therefore not be relied upon as a sole measure of model fit. For this reason, in this thesis research, the researcher relied upon several other fit indices.

#### ***5.5.2.2 Guideline for the cut-off values for fit indices***

No single value can be used to distinguish a good model from a bad model. Therefore, a researcher should be cautious. The use of multiple indices of different types and a range of criteria for acceptable model fit, have been recommended (e.g., Bentler & Bonnett, 1980; McDonald & Marsh, 1990; Browne & Cudeck, 1993; Joreskog & Sorbom, 1993; Hu & Bentler, 1998, 1999; Schermelleh-Engel & Moosbrugger, 2003; Sharma *et al.*, 2005; Brown, 2006).

In their simulation studies, Schermelleh-Engel & Moosbrugger (2003) and Sharma *et al.* (2005) suggested that for a model that fitted well, the values of CFI and TLI should be greater than 0.95 and 0.90 respectively. In regard to both SRMR and RMSEA, Browne & Cudeck (1993) and Schermelleh-Engel & Moosbrugger (2003) concluded that for a fitting model, the values should be less than 0.1.

It is the responsibility of each researcher to decide how to determine whether or not the hypothesised model reasonably fits the sample (Marsh *et al.*, 2004). This is because different models might require the consideration of different measures of fit due to possible variations in elements such as sample size, indicator variability or distribution (Hu & Bentler, 1998, 1999).

In this thesis, the author has used SRMR, RMSEA, CFI, and TLI values, as indicated by Hu & Bentler (1998, 1999). The choice of SRMR is also based on information provided by Bentler (1995) who reported the results of an unpublished report by Hu & Bentler (1995) that had identified SRMR as performing better than any other fit index (see sub-section 5.5.1.2.5).

Anderson & Gerbing (1988) said that each CFA model had to show evidence of the goodness of fit and construct validity; therefore, the next subsection will outline the CFA based test of construct validity.

### ***5.5.3 CFA test based construct validity***

CFA test based construct validity according to Anderson & Gerbing (1988) should also entail the assessment of the discriminant and convergent validities of the latent variables in the model. Therefore, the following sub-section begins with convergent validity.

### **5.5.3.1 Convergent validity**

Convergent validity means that the indicators of a specific construct should share a high proportion of variance in common (e.g., see Fornell & Larcker, 1981) as can be determined as follows:

#### **5.5.3.1.1 Regression weights**

At a minimum, all regression weights (factor loadings) should be statistically significantly different from zero (see Anderson & Gerbing, 1988) as was the case with the indicators evaluated in the SEM model examined in this thesis research.

In this thesis research, all regression weights of the final SEM (*post-hoc*) model were determined by using an independent sample, (sample 2 - see section 7.3)

#### **5.5.3.1.2 Variance extracted (VE)**

The VE value determined for a set of construct indicators is a summary indicator of convergence (e.g., see Fornell & Larcker, 1981). It can be calculated as the average value of the squared standardised regression weights (factor loadings). As previously mentioned, a VE of .5 or higher was used in this thesis as a measure of adequate convergence (Fornell & Larcker, 1981).

In this thesis research, VE was tested using the validation sample, (sample 2 - see section 6.8).

#### **5.5.3.1.3 Reliability**

There are several slightly different measures of construct reliability or internal consistency (e.g., see Bacon *et al.*, 1995). The measure that was used in this thesis was calculated from the squared sum of the standardised factor loadings (regression weights) for each construct (factor) and the sum of error variance terms for that construct. Reliability values equal to or greater than .6 indicate an acceptable level of construct reliability and Nunnally & Bernstein (1994) have said that "... increasing reliabilities much beyond 0.8 ... is often wasteful of time

...” (p.265). The reliability values that were determined for the constructs that were used in this thesis research all fell within an acceptable level.

In this thesis research, reliability was tested using the validation sample or sample 2 (see section 6.8).

#### **5.5.3.2 Discriminant validity**

CFA discriminant validity is the extent to which a factor is truly distinct from other constructs. Therefore, for discriminant validity to hold, each pair of constructs should not have a correlation of more than 0.5 in every possible case (Campbell & Fiske, 1959) or the variance extracted (VE) estimates should be larger than the squared correlation estimates (Fornell & Larcker, 1981).

This thesis assessed measurement model CFA discriminant validity by comparing the variance extracted (VE) estimates for any pair of factors with the square of the correlation between these two factors and by assessing the correlation of each pair of constructs using the second half sample after the tandem process had been completed (see section 6.9).

#### **5.5.3.3 Face validity**

Face validity has been always emphasised as the most important validity test. This is due to the fact that without correct incorporation of all relevant construct indicators it will be impossible to specify its measurement correctly (e.g., see James & James, 1989; Bentler & Chou, 1987; MacCallum *et al.*, 1992; Hurley *et al.*, 1997). Thus, face validity can assist an investigator to reject the opinion that a good fit of a (final) modified (*post-hoc*) model was greatly influenced by chance through the evidence of the theoretical and practical sense drawn from the literature (see sub-section 7.2.2).

In this thesis research, face validity was firstly established from the literature (Chapters 2 and 3) and through the initial stage of a sound definition of the fraud risk factors and their indicators (the sub-sections of 5.2.1 and 5.2.2) that made up the items listed in the theoretical questionnaire (Appendix 2[c]), which were also reviewed by the university human research ethics committee (sub-section 5.2.3) and by two Indonesian experts (sub-section 5.2.4).

#### ***5.5.4 Modifying the measurement model***

In addition to evaluating (better) goodness-of-fit statistics for CFA models, the diagnostic measures of path estimates, standardised residuals, and modification indices may be used to improve a construct or an SEM if the suggested modifications are considered to be supported by theory. In this thesis research, where such modifications were suggested, they were subjected to rigorous scrutiny against existing theory that was drawn from a range of disciplines, before they were accepted

The following section begins with the next stage of SEM.

### ***5.6 Structural model specification***

This section provides some importance aspects of structural model specifications. These were unit of analysis, model specification using a path diagram, and the development of the SEM. Therefore, the following sub-section outlines units of analysis.

#### ***5.6.1 Units of analysis***

Prior to commencing fieldwork the investigator should ensure that the (two hypothesised) model measures will be able to capture the appropriate unit of analysis, whether based on individual or organisational perceptions. In this thesis, the hypothesised models were based on independent individuals' opinions that resulted from their experiences in their Indonesian workplaces (see sub-section 6.6.1).

Data from individual opinions was used to calculate the estimate that informed a path diagram. Therefore, the next sub-section will outline the model specification using a path diagram.

### ***5.6.2 Model specification using a path diagram***

Path diagrams were used to show the inter-relationships between latent constructs (factors) and their observed variables (indicator items) and amongst the different factors. The free parameters referred to a relationship that would be estimated and they were depicted by a single headed arrow, with factors being shown as ovals and indicator items as rectangles.

The AMOS program that was used to evaluate the SEM, in this thesis research, has a graphical interface and requires that each path diagram (see the two hypothesised models in Chapter 1 and a post-hoc model in Chapter 7) be constructed as an input into the model development and assessment process.

The following section begins with the development of a SEM.

### ***5.6.3 Development of the SEM***

Once (a refinement of fraud risk) theory has been proposed, the SEM (fraud risk) model can be developed. Firstly, the measurement models should be clearly specified and examined using CFA. Then, the actual SEM which sets out the inter-relationships between the latent constructs (factors), can be evaluated.

Additionally, a recursive model will exist when the paths between latent constructs (factors) all proceed in a single direction and contain no feedback loops where a factor is employed both as an antecedent and as a consequence of the influence of another factor. Recursive models are easier to evaluate and the fraud risk models that were used in this thesis research were recursive.

The following stage is the final stage of SEM.

### ***5.7 Structural model assessment***

This section provides the assessment of the hypothesised structural model and its multiple relationships, the model development strategy, and the types of relationships. Therefore, the following sub-section begins with SEM fit assessment followed by the other aspects in the consecutive sub-sections.

#### ***5.7.1 SEM fit assessment***

The structural model (SEM) fit is evaluated on the basis of the goodness of fit measures outlined earlier. In this thesis research, as with CFA models (see sub-section 5.5.2.2), the fit measures that were used for the SEM assessment were the SRMR, supplemented by the RMSEA, CFI, and TLI. Other fit indices were also computed by the AMOS software and are provided in the appendices.

In this thesis, the author not only used the cut-off values for SRMR, RMSEA, CFI and TLI, but also considered the development of a wider inter-linkage of the fraud risk factors in order to better capture an unknown structure (Hayduk & Pazderka-Robinson, 2007). In other words, the author found a badness of fit index and decided to further develop the hypothesised models by expanding the hypothesised relationships (see section 6.10).

The following sub-section will outline the assessment of hypothesised dependence relationships.

#### ***5.7.2 Hypothesised dependence relationships examination***

In order to determine the outcome of the research the first requirement was that the model should have been found to be a satisfactory representation of the expected theory. Once this had occurred it was important that the investigator should examine the parameter values that had been determined, against the

corresponding path expectations, each of which represented a specific hypothesis in a model.

In this thesis, all such paths were found to be different from zero at the 90% level of significance (see section 7.4).

In addition, because the initial (hypothesised) model(s) failed to exhibit good values for the fit indices, the investigator sought an explanation and further developed the pre-model(s) so as to constitute a post-hoc (better) model. The next section will outline model development strategy.

### ***5.7.3 Model development strategy***

Model development strategy can be used to develop a post-hoc model since there is a diagnostic modification index that is available in the SEM (AMOS) software. It can be used to identify any potential re-specifications of a model, leading to the development of a potential new (post-hoc) model.

In this thesis, this process was carried out using the first split-half sample, sample 1. The suggested changes were subjected to rigorous scrutiny in order to determine if they accorded with logic and the altered model was then tested using sample 2 (section 7.2.2).

The post-hoc model developments lead to the introduction of some additional relationships. Therefore the last sub-section will outline the direct, indirect and total effects within a post-hoc model.

### ***5.7.4 Types of relationships within a model***

As can be interpreted from the writings of Cressey (1973), a post-hoc (fraud risk management) model that includes hypothesised mediating effect(s) can be used to evaluate significant direct, indirect and total effects as shown in the following three sub-sections.

#### ***5.7.4.1 Direct effects***

Direct effects are those where a variable or construct impacts directly on another variable or construct (factor).

#### ***5.7.4.2 Indirect effects***

Indirect effects are those relationships that involve a sequence of relationships with at least one intervening factor.

#### ***5.7.4.3 Total effects***

Total effects are the sum of the direct and indirect effects.

Such a model can provide a better understanding of the effects of different fraud symptoms (sub-section 1.5.1).

This thesis research finally developed a post-hoc (third) model by adding several additional paths to one of the two earlier hypothesised (pre-) models (sub-section 7.2.2). This model was evaluated and the path values that were determined were also evaluated (section 7.4) on the basis of their contribution to the further development of a theory of fraud risk (section 8.11) that had been initiated by Cressey (1950).

The following section summarises the fifth chapter of the thesis.

### ***5.8 Summary***

This chapter has firstly outlined an initial stage of data evaluation for skewness and kurtosis that was used in this thesis research. This evaluation was required in order to determine the normality of the data distribution and thereby its suitability for use in a maximum likelihood theory based two step processes of measurement model and structural model evaluation and modification.

The method of evaluation of construct validity and reliability that was used in this thesis research was identified and the process used to evaluate both the measurement models and the overall SEMs were explained.

Using a split-half sample approach, modification indices were utilised to provide guidelines as to what logically and theoretically correct modifications could be made to improve the SEM. Based on this input a post-hoc model was developed and evaluated.

The next chapter will detail the results of the analyses that were conducted.

## *Chapter 6*

### **Analysis of the data: construct development and testing of two initial theoretical models**

#### **6.1 Introduction**

The sixth chapter updates the paper by Sitorus & Scott (2008a).<sup>12</sup> This chapter is the first of two chapters describing the procedures followed in using structural equations modelling in accordance with the stages proposed by Anderson & Gerbing (1988) and Hair, Black *et al* (2006) to the point of evaluation of the SEM fit indices SRMR, RMSEA, CFI and TLI for the two hypothesised models.

It is found that, the two initial hypothesised models of integrated fraud risk identification, that were developed from the economics, psychology, law, organisational behaviour, criminology, and auditing literature, did not achieve an acceptable fit to the data, according to the SRMR measure (Bentler, 1995; Hu & Bentler, 1995, 1998; Schermelleh-Engel & Moosbrugger, 2003).

As a consequence, the author used a more complex modelling strategy with a *post hoc* model (Hair *et al.*, 2006; Hayduk & Pazderka-Robinson, 2007) not only to achieve acceptable fit indices but also to capture the complex structure of fraud risk factors and their indicators<sup>13</sup> (Hayduk & Pazderka-Robinson, 2007).

---

<sup>12</sup> Sitorus, T. & Scott, D. (2008a) 'The roles of collusion, organisational orientation, justice avoidance, and rationalisation on commission of fraud: a model based test', *Review of Business Research*, Vol. 8, No.1, pp. 132-147.

<sup>13</sup> Until now the International Federation of Accountants (IFAC) has only used findings and conclusions from the fraud risk factors proposed by Cressey (1950, 1973) and as is shown in its ISA 240 with the three risk factors of (non-shareable problem of financial) pressure, rationalisation and opportunity (for fraud). The International Federation therefore seems to have been reluctant to take into account other theory extensions including those from the descriptive model of Krambia-Kapardis (1999, 2001, 2002).

The procedure used to test two hypothesised models and the action following the testing of the two models are therefore identified.

The following section starts with the first stage of the Anderson & Gerbing (1988) and Hair, Black *et al.* (2006) recommended process and hence the preliminary step of examining the two hypothesised models.

## ***6.2 Defining the individual constructs***

This section provides definitions of the concepts that were examined in this research into fraud risk. These were fraud, opportunity for fraud, rationalisation, potential network of collusion and commission of fraud, organisational orientation vis a vis fraud, justice avoidance, and personal behaviour.

The next sub-section sets out the definition of fraud as examined in this research, followed by the other definitions in the following sub-sections.

### ***6.2.1 Fraud***

Fraud (risk) is not only about accounting fraud, but also about financial crime, corrupt practices and money laundering since all forms of fraud can lead to financial loss (section 1.4.1) and hence to commission of fraud (section 6.2.4). There are advantages in applying this broader definition. The first advantage is that the researcher was able to obtain more respondents, not only officials from audit and justice institutions and departments, but also other individuals from Indonesian Financial Transaction Reports and Analysis Centre (PPATK/INTRAC), non-government bodies for corruption and judiciary reform, and others who had ever encountered any forms of fraud. As a result, this thesis research was able to increase the number of total respondents (cases) from 176 to 244 (section 6.6.1). The second advantage is that incorporating a variety of respondents in the sample can enrich the knowledge of integrated fraud risk factors and auditing standards (section 1.3).

### **6.2.2 Opportunity for fraud**

A call to conceptualise opportunity (for fraud) also came from Krambia-Kapardis (2001). She said that: “all three authors (Cressey, 1950, 1973, 1986; Albrecht *et al.*, 1995; Loebbecke *et al.*, 1989) have also failed to conceptualise “opportunity” so as to include the broader socio-economic context in which fraud takes place and to locate it within a theoretical framework ...” (p. 66). In defining a situational approach for conceptualising opportunity, Hough *et al.* (1980) referred to the existence of opportunity that was not only material conditions and inducement but also (low) risk.

The indicators of the theoretical latent construct of opportunity for fraud were made up from the items listed in the anonymous questionnaire as can be seen in Appendix 2(c).

### **6.2.3 Rationalisation**

In conceptualising rationalisation, Cressey (1950, 1973) referred to prior studies in the years of the 1940s. The first was in the work of Noyes who defined rationalisation as an *ex post facto* justification which “has really been prompted by deeply hidden motives and unconscious tendencies (p. 49)” (Cressey, 1973, p. 94). The second was in the work of Richards, Young, and LaPiere & Farnsworth (as cited in Cressey, 1973) who referred to rationalisation as a process of finding out some reasonable excuse for thoughts and decisions to perpetrate fraud. The third was in the work of Lindesmith & Strauss who considered rationalisation as a verbalisation which was intended to make one’s behaviour more understandable. The fourth was in the work of Mills (1940) who defined rationalisation as one’s motivation.

The indicators of the theoretical latent construct of rationalisation were made up from the items listed in the questionnaire as shown in Appendix 2 (c).

#### ***6.2.4 Potential network of collusion and commission of fraud***

Collaborative fraudulent acts and cases, involving unintentional supporting roles or more than one party, have been identified in the literature (e.g., see Lafrentz, 1924; Davia *et al.*, 2000). Therefore, the two concepts firstly of collusion, and secondly fraud commission, can be operationalised by identifying each of these positions taken by fraudsters.

The indicators of the two theoretical latent constructs of collusion and fraud commission were made up from the items listed in the questionnaire and can be seen in Appendix 2 (c).

#### ***6.2.5 Organisational orientation vis a vis fraud***

In the study of Leonard & Weber (as cited in Needleman & Needleman, 1979), organisational orientation vis a vis a fraud could be viewed as “a predictable product of the individual’s membership in or contact with certain organizational systems that were said to be *criminogenic*” (p. 517) or to have various types of criminogenesis that encourage and facilitate fraud (for detail, see Needleman & Needleman (1979).

The indicators of the theoretical latent construct of organisational orientation vis a vis fraud were made up from the items listed in the questionnaire and can be seen in Appendix 2 (c).

#### ***6.2.6 Justice avoidance***

Sanchiro (2006) viewed justice avoidance as the fraudster’s attempts to avoid fraud prosecution.

The indicators of the theoretical latent construct of justice avoidance were made up from the items listed in the questionnaire and can be seen in Appendix 2 (c).

### ***6.2.7 Personal behaviour***

In conceptualising “personal behaviour” (the non-shareable problem), Cressey (1950, 1973) identified the various types of trust violators’ non-shareable problem of financial pressure (section 3.2). However, Krambia-Kapardis (2001, 2002) argued that “no attempt is made (by Cressey, 1950, 1973, 1986; Loebbecke *et al.*, 1989; Albrecht *et al.*, 1995) to account for individual differences” (Krambia-Kapardis, 2001, p. 66).

The indicators of the theoretical latent construct of personal behaviour were made up from the items listed in the questionnaire and can be seen in Appendix 2 (c).

After conceptualising all the latent constructs followed by operationalising the factors into their potential several indicator items drawn from the existing literature (see Chapters 2 and 3), the next stage was to develop new scales and measurement models for an Indonesian context. Therefore, the following section begins with the initial development of new multi-item scales.

## ***6.3 Scale development and measurement***

For a study in a different context to those previously evaluated such as Indonesia, the author was required to develop new multi-item scales and used a seven point numerical scale of disagree = 1 to agree = 7 that measured the responses to a number of statements. For the reasons for the choice of scale, see section 5.2.2.

The statements covered the indicators for seven latent constructs, which were as follows.

- personal behaviour (14 statements)

- rationalisation (13 statements)
- opportunity (19 statements)
- collusion (17 statements)
- organisational orientation vis a vis fraud (13 statements)
- commission of fraud (17 statements)
- justice avoidance ( 9 statements)

Before conducting questionnaire studies on Indonesian respondents, the author was required to submit “an expedited review” to the Southern Cross University Human Research Ethics Committee (HREC) for ethics clearance. Therefore, the next section starts with the ethics concern.

#### ***6.4. Ethics approval***

The Southern Cross University Human Research Ethics Committee (HREC) gave its ethics certification number (section 5.2.3) with the following agreed conditions based on the author’s responses to several queries.

##### ***6.4.1 In relation to further scholarly background***

The author earned his MSc in Finance at the University of Indonesia in 2003, had spent some eight years as auditor (section 1.1.4) and therefore had experience in this field. In addition, the questionnaire was based on the literature (Chapters 2 and 3).

##### ***6.4.2 In relation to the ethics complaints statement***

An ethics complaint statement was excluded from the cover letters because the research used a set of anonymous questionnaires, with voluntary participation (section 1.7.1).

##### ***6.4.3 In relation to contact details***

The cover letter to Indonesian respondents identified the researcher and the identity of the Southern Cross University Division of Research (formerly the

Graduate Research College). It was a requirement of the Indonesian institutions that the author, who holds an award from Australian Partnership Scholarship (APS), to undertake his master's degree by thesis research at Southern Cross University, was the (only) person to conduct the field research in Indonesia (see Appendix 2).

#### ***6.4.4 In relation to information on the last page of the questionnaire***

The questionnaire (see the demographic information in Appendix 2 [c]) only asked for information in regard to the respondents' places of work and experience. Because of the large numbers of (potential) respondents, this information did not make it possible for any respondents to be identified and their anonymity was therefore not threatened. The information was required in order to ensure that all respondents were Indonesian officials who had ever audited, investigated or encountered any forms of fraud. Answers from any respondent who did not comply with this requirement were treated as a non-response.

Knowledge of the respondents' place of work was essential in order to permit aggregate results to be reported back to the respective institutions.

After the HREC had given its approval number on May 15, 2007, the author conducted fieldwork research in Indonesia from June 1, 2007 to July 31, 2007 covering both a pre-test (using experts) and the distribution of the questionnaires in Indonesia.

The next section expands on the expert comment research stage relating to the theoretically based questionnaire.

### ***6.5 Experts***

This thesis research used two Indonesian experts. The first expert was from the Attorney General's office, which was one of the targeted institutions from which data was to be obtained. This expert considered that the observed variables were

comprehensive since they were intended to capture information that was relevant not only to a single aspect of fraud in the area of fraud risk factors and auditing standards, but also to other aspects such as the problem of fraud prosecutions in Indonesia – an aspect relating to the legal system. Furthermore, she recommended adding some potential respondents from Indonesia's Money Transaction Analytical and Reporting Centre (PPATK) as they worked in the area of money laundering (financial crime).

The second expert was from Partnership for Governance Reform in Indonesia and an Indonesian criminologist and criminology professor at the University of Indonesia. He assisted the author in seeking additional prospective Indonesian participants from non-government bodies (watchdogs) for corruption and judicial reform and suggested amending the time for prospective participants to answer all the questions, from 15 to 20 minutes (Appendix 2 [b]) and using an Indonesian translation of the set of questionnaire documents (Appendix 2 [d]). These recommendations were because all prospective respondents were Indonesians and some of them (for instance police interrogators) might need to use more time for careful reading of the questionnaire and also, so as to obtain good quality answers.

The use of experts allowed for the overall evaluation of the set of questionnaire documents for an Indonesian environment and hence of the new multi-item scales in order to obtain good quality data (section 5.2.4).

The next section describes the prospective Indonesian respondents.

## **6.6 Data**

### **6.6.1 Survey participants**

In June 2007, after ethics clearance had been obtained from the Southern Cross University Human Research Ethics Committee, 300 Questionnaires were sent out to the Indonesian audit and justice institutions and departments and several

companies and non-government institutions (see Table 6.1) with a request for support and participation. Data collection was initially concluded at the end of July 2007.

56 Questionnaire responses could not be included in the sample for the following two major reasons. Firstly, 5 anonymous participants who had provided responses failed to answer all of the questions and their completed questionnaires were therefore eliminated. The author was unable to trace these 5 respondents because of the anonymity of the participants. Secondly, 51 prospective respondents did not return the questionnaire.

The prospective respondents' workplace explained that because some prospective respondents were on a tour of duty around Indonesia, it might be difficult for them to respond before the deadline date given in the cover letter to prospective participants, and that some responses might be late.

Two additional questionnaires were e-mailed to the author after July 31st, 2007 and were included in the sample.

From table 6.1, it can be seen that the largest number of anonymous respondents was mainly from external government auditors and justice officials (176 cases, 78.6%). This number of respondents was increased by the participation of respondents from companies and non-government bodies for corruption and judiciary reform (69 cases, 21.4%). This brought the total number of acceptable responses to 244 and an overall response rate of 81.3%.

**Table 6.1**  
**Respondent composition**

| Respondent nature                                                               | Number |
|---------------------------------------------------------------------------------|--------|
| Auditors from the Audit Board of the Republic of Indonesia                      | 49     |
| investigating auditors from the Financial and Development Supervisory Board     | 47     |
| prosecuting attorneys for financial crime cases                                 | 38     |
| police interrogators for corruption and white collar crime                      | 22     |
| investigating officials from the Corruption Eradication Commission              | 7      |
| investigating auditors from the Capital Market Supervisory Agency               | 7      |
| prosecuting officials from the Corruption Eradication Commission                | 6      |
| Sub-total =                                                                     | 176    |
| Other respondents:                                                              |        |
| internal auditors from finance and nonfinance companies or institutions         | 24     |
| Financial trust officials (finance, banking and accounting positions)           | 9      |
| watchdogs from non-government bodies for corruption and judiciary reform        | 9      |
| legal officials from mining, property, asset management companies and law firms | 5      |
| compliance officials from Financial Transaction Reports and Analysis Centre     | 3      |
| legal and law officials from Financial Transaction Reports and Analysis Centre  | 2      |
| risk management officials from securities and banking companies                 | 2      |
| corporate secretaries from state-owned companies                                | 2      |
| Business consultants for management and tax services                            | 2      |
| fraud auditor from an insurance company                                         | 1      |
| investigating auditor from a private organisation                               | 1      |
| investigator from a private institution                                         | 1      |
| analyst from Financial Transaction Reports and Analysis Centre                  | 1      |
| good corporate governance associate                                             | 1      |
| human resource development official from a state-owned company                  | 1      |
| respondent from a state-owned company                                           | 1      |
| government official                                                             | 1      |
| Consultant                                                                      | 1      |
| anonymous respondent                                                            | 1      |
| Sub-total =                                                                     | 68     |
| Total =                                                                         | 244    |

Mangione (1995) identifies the response rate of 81.3% as being very good (see section 5.4.3) and this thesis research also achieved the personal interview

response rate of 80 to 90% suggested by Zikmund (1994, 2003) as being necessary for good research.

All of the prospective participants came from the same related job, unit and division and so both respondents and non-respondents were deemed to be similar.

The numerically coded questionnaire with 244 responses then was recorded in an SPSS dataset and the data was kept secure and confidential based on the guidance standards laid down by the HREC<sup>14</sup>.

The data was now ready for the assessment of normality using SPSS. Therefore, the next section describes the assessment of the skewness and kurtosis of all the indicator variables.

#### ***6.6.2 Requirement for multivariate normal data***

The skewness and kurtosis of all the observed variables in the sample was not more than 2 and 7 respectively (Appendix 4). Therefore, transformation of the data prior to using an MLFA process was not required (section 5.2.5).

The first data (sample 1) was now ready to be used in a MLFA structure evaluation.

The next section outlines the initial stage of more robust scientific research methodology and hence of MLFA.

### ***6.7 MLFA***

There were 14, 13, 19, 17, 13, 17, and 9 questionnaire items respectively that were considered to encompass all the potential indicators for the latent variables

---

<sup>14</sup> All of the anonymous questionnaire documents will be destroyed after the completion of this thesis.

measuring personal behaviour, rationalisation, opportunity, collusion, organisational orientation vis a vis fraud, commission of fraud, and justice avoidance.

The first half of the sample (sample 1) was used to examine these latent variables and their indicators using MLFA (section 5.2.7).

The following first sub-section outlines the preliminary factor exploration.

### ***6.7.1 Preliminary factor exploration***

In the preliminary MLFA exploration, indicators with low levels of explanation of the latent variables (communalities of 0.3 or less) were eliminated in order to produce latent variables with a reduced set of indicators. This process produced a set of latent variables, one of which (collusion) had 8 indicator variables, followed by fraud commission, opportunity, rationalisation, organisational orientation each with 5 indicator variables, and each of the rest with 4 indicator variables.

Overall, the preliminary factor exploration exhibited good levels of explanation (see all the tables in section 6.2) and the next sub-section therefore describes the identified MLFA based structures.

### ***6.7.2 MLFA structure***

The MLFA based structures for the latent variables with indicator items with communalities higher than 0.3 are shown in the following sections.

### 6.7.2.1 Collusion

Table 6.2 (a) shows the MLFA based structure for “collusion” with the 8 indicator variables (“i\_auditor\_1”<sup>15</sup>, “a\_committee\_1”, “director\_1”, “comm\_1”, “s\_holder\_1”, “s\_company\_1”, “p\_company\_1”, and “a\_company\_1”). The communalities were in a range of 0.55 to 0.81.

**Table 6.2 (a)**  
**MLFA framework for collusion with each variable’s communality**

| Indicator variables | Communalities |
|---------------------|---------------|
| I_AUDITOR_1         | .549          |
| A_COMMITTEE_1       | .619          |
| DIRECTOR_1          | .720          |
| COMM_1              | .763          |
| S HOLDER_1          | .663          |
| S_COMPANY_1         | .751          |
| P_COMPANY_1         | .751          |
| A_COMPANY_1         | .674          |

Extraction Method: Maximum Likelihood.

Because MLFA does not allow constraints to be imposed on the linkages between the indicator variables and the different latent variables (factors) this structure could not be considered to necessarily be the final version; therefore, an additional evaluation using confirmatory factor analysis (CFA) was first required (section 5.3.3), after which the construct could be tested for convergence validity using the second half sample (section 5.5.3.1).

---

<sup>15</sup> For more detailed information about the meanings of all the codes for the indicator variables, see Appendix 4.

### 6.7.2.2 *Commission of fraud*

Table 6.2 (b) shows that the MLFA based structure for “commission of fraud” with the 5 indicator variables (“director\_2”, “s\_holder\_2”, “p\_company\_2”, “s\_company\_2”, and “a\_company\_2”) had communalities in the range of 0.485 to 0.967.

**Table 6.2 (b)**  
**MLFA framework for commission of fraud with each variable’s communality**

| Indicator variables | Communalities |
|---------------------|---------------|
| DIRECTOR_2          | .485          |
| S_HOLDER_2          | .538          |
| P_COMPANY_2         | .967          |
| S_COMPANY_2         | .892          |
| A_COMPANY_2         | .734          |

Extraction Method: Maximum Likelihood.

### 6.7.2.3 *Rationalisation*

Table 6.2 (c) shows that the MLFA based structure for “rationalisation” with the five indicator variables (“no-hurt”, “deserve”, “good”, “no\_steal”, and “afford”) had communalities in the range of 0.5 to 0.7.

**Table 6.2 (c)**  
**MLFA framework for “rationalisation” with each variable’s communality**

| Indicator variables | Communalities |
|---------------------|---------------|
| NO_HURT             | .569          |
| DESERVE             | .683          |
| GOOD                | .573          |
| NO_STEAL            | .699          |
| AFFORD              | .576          |

Extraction Method: Maximum Likelihood.

#### 6.7.2.4 Opportunity for fraud

Table 6.2 (d) shows that the MLFA based structure for “opportunity” with the 5 indicator variables (“audit\_trial”, “supervision”, “authorisation”, “accounting”, and “p\_control”) had communalities in the range of 0.4 to 0.7.

**Table 6.2 (d)**  
**MLFA framework for opportunity with each variable’s communality**

| Indicator variables | Communalities |
|---------------------|---------------|
| AUDIT_TRIAL         | .731          |
| SUPERVISION         | .635          |
| AUTHORISATION       | .448          |
| ACCOUNTING          | .552          |
| P_CONTROL           | .465          |

Extraction Method: Maximum Likelihood.

#### 6.7.2.5 Organisational orientation vis a vis fraud

Table 6.2 (e) shows that the MLFA based structure for “organisational orientation” (organisation) with the 5 indicator variables (“tech”, “authoritarian”, “conflict”, “communication”, and “no\_reward”) had communalities in the range of 0.3 to 0.7.

**Table 6.2 (e)**  
**MLFA framework for organisation with each variable’s communality**

| Indicator variables | Communalities |
|---------------------|---------------|
| TECH                | .299          |
| AUTHORITARIAN       | .505          |
| CONFLICT            | .504          |
| COMMUNICATION       | .725          |
| NO_REWARD           | .534          |

Extraction Method: Maximum Likelihood.

### 6.7.2.6 Justice avoidance

Table 6.2 (f-1) shows that the MLFA based structure for “justice avoidance” with the 4 observed variables (“intimidate”, “bribe”, “long”, and “d-out”) had final communalities in the range of 0.306 to 0.634.

**Table 6.2 (f-1)**  
**MLFA framework for justice avoidance with each variable’s communality**

| Indicator variables | Communalities |
|---------------------|---------------|
| INTIMIDATE          | .438          |
| BRIBE               | .634          |
| LONG                | .306          |
| D_OUT               | .471          |

Extraction Method: Maximum Likelihood.

Because the communalities were marginally greater than 0.3 and the factor loadings were in an acceptable range of 0.553 to 0.796 as shown in Table 6.2 (f-2), a decision as to whether to eliminate the observed variable of “long” (with a communality of 0.306) was deferred until after the next CFA based test of convergence validity (section 5.5.3.1). Although the use of only three indicator variables for a CFA factor model would mean that the latent variable would be just identified, over identification might be achieved in an overall model (SEM) where there would be additional linkages (section 5.3.3).

**Table 6.2 (f-2)**  
**MLFA framework for justice avoidance with each factor loading**

| Observed variables | Factor loadings |
|--------------------|-----------------|
| INTIMIDATE         | .662            |
| BRIBE              | .796            |
| LONG               | .553            |
| D_OUT              | .687            |

Extraction Method: Maximum Likelihood.  
1 factor extracted. 4 iterations required.

### 6.7.2.7 Personal behaviour

Table 6.2 (g-1) showed the MLFA based structure for “personal behaviour” with the 4 observed variables.

**Table 6.2 (g-1)**  
**MLFA framework for personal behaviour with each variable’s communality**

| Indicator variables | Communalities |
|---------------------|---------------|
| M_TASK              | .444          |
| REWARD              | .353          |
| FEW_COMPLAINTS      | .453          |
| Record_space_new    | .310          |

Extraction Method: Maximum Likelihood.

As can be seen in Table Table 6.2 (g-1), the four items of “m-task”, “reward”, “few\_compliants”, and “record\_space\_new”<sup>16</sup> had communalities in the range of 0.310 to 0.444.

Because the communalities were still greater than 0.3 and the factor loadings were in the correct range of 0.557 to 0.666 as shown in Table 6.2 (g-2), the decision on how this factor might be structured was also deferred to the CFA based convergence validity testing stage.

**Table 6.2 (g-2)**  
**MLFA framework for personal behaviour with each factor loadings**

| Indicator variables | Factor loadings |
|---------------------|-----------------|
| M_TASK              | .666            |
| REWARD              | .594            |
| FEW_COMPLAINTS      | .673            |
| record_space_new    | .557            |

Extraction Method: Maximum Likelihood.  
1 factor extracted. 3 iterations required.

<sup>16</sup> This was a summated scale which was calculated from the average of the two observed variables of record and space (e.g., see Hair *et al.*, 2006).

The following section outlines the results of the tandem CFA process and CFA based convergent validity assessment.

### ***6.8 Tandem CFA process and CFA based convergent validity assessment***

The first half sample (sample 1) and a CFA evaluation, based on the MLFA identified structures, was used to further purify the constructs, followed by a test stage using the second half sample (sample 2) to assess the convergent validity of the purified constructs (section 5.2.8). The results of these assessments are shown in Table 6.3 and Table 6. 4.

This process was aimed at producing a more parsimonious set of latent variables each with four indicator variables and with good levels of convergent validity. The latent variables and their indicators that were developed by means of this process were as follows.

#### ***6.8.1 Collusion (F3)***

The four indicator variables identified as covering “collusion” were “comm\_1”, “s\_company\_1”, “p\_company\_1”, and “a\_company\_1”. This measurement model was over-identified with two degrees of freedom - see Table 6.4.

#### ***6.8.2 Commission of fraud (F4)***

The four indicator variables for “commission of fraud” were “director\_2”, “p\_company\_2”, “s\_company\_2”, and “a\_company\_2”. This measurement model was over-identified with two degrees of freedom - see Table 6.4.

#### ***6.8.3 Rationalisation (F2)***

The four indicator variables for the latent variable of “rationalisation” were “no\_hurt”, “good”, “no\_steal”, and “afford”. This measurement model was over-identified with two degrees of freedom - see Table 6.4.

#### **6.8.4 Opportunity (F1)**

The four indicator variables for “opportunity” were “audit\_trial”, “authorisation”, “accounting”, and “p\_control”. This measurement model was over-identified with two degrees of freedom - see Table 6.4.

#### **6.8.5 Organisational orientation (F5)**

The four indicator variables for “organisational orientation” were “tech”, “conflict”, “communication”, and “no\_reward”. This measurement model was over-identified with two degrees of freedom - see Table 6.4.

#### **6.8.6 Justice avoidance (F6)**

Three indicator variables were used for “justice avoidance”. These were “intimidate”, “bribe”, and “d-out”. The principle reason for only utilising three variables was because the variance extracted (VE) value that was then obtained, was precisely 0.49 or very close to 0.5 (see Table 6.3), the level of VE that is suggested (section 5.5.3.1.2). Inclusion of additional variables reduced the VE value to a level much below the value of 0.5.

**Table 6.3**  
**Construct variance extracted and reliability (sample 2)**

| Constructs                      | Variance<br>Extracted | Reliability |
|---------------------------------|-----------------------|-------------|
| Opportunity (F1)                | 0.7                   | 0.9         |
| Rationalisation (F2)            | 0.5                   | 0.8         |
| Collusion (F3)                  | 0.8                   | 0.9         |
| Commission of fraud (F4)        | 0.8                   | 0.9         |
| Organisational orientation (F5) | 0.5                   | 0.8         |
| Justice avoidance (F6)          | 0.5                   | 0.7         |
| Personal Behaviour              | 0.3                   | 0.7         |

From Table 6.3 it can be seen that the constructs of opportunity, rationalisation, collusion, commission of fraud, organisational orientation, and justice avoidance all exhibited a variance extracted level of at least 0.5. As previously noted, Fornell & Larcker (1981) have identified this level as being a satisfactory measure of convergent validity.

Apart from personal behaviour, the reliability values all exceeded a level of 0.7 which Nunnally & Bernstein (1994) have indicated to be indicative of a good level of reliability (section 5.5.3.1.3).

Because of the low VE level exhibited by the personal behaviour construct, which was such that the amount of unexplained variance exceeded the amount explained, it was decided not to include this construct in the theoretical models.

The goodness-of-fit indices shown in Table 6.4 reflected a good fit to the data for the remaining 6 constructs with SRMR values of below 0.030, RMSEA of less than 0.098, and CFI and TLI values greater than 0.973 and 0.922 respectively (section 5.5.2.2). For the complete fit indices for each CFA model, see all of the appendices of 5.

**Table 6.4**  
**CFA – fit indices (sample 1)**

| Fit Indices       | F1    | F2    | F3    | F4    | F5    | F6    |
|-------------------|-------|-------|-------|-------|-------|-------|
| Degree of freedom | 2     | 2     | 2     | 2     | 2     | 2     |
| Probability level | 0.117 | 0.449 | 0.401 | 0.158 | 0.206 | 0.317 |
| X2 (chi-square)   | 4.286 | 1.601 | 1.828 | 3.696 | 3.163 | 2.298 |
| SRMR              | 0.029 | 0.014 | 0.011 | 0.012 | 0.027 | 0.027 |
| RMSEA             | 0.097 | 0.000 | 0.000 | 0.084 | 0.069 | 0.035 |
| CFI               | 0.987 | 1.000 | 1.000 | 0.996 | 0.992 | 0.974 |
| TLI               | 0.961 | 1.005 | 1.001 | 0.989 | 0.977 | 0.923 |

The tandem process, identified parsimonious sets of indicators for the latent variables and the fit of the data to these latent variables, was validated through tests using the second half sample (sample 2).

As the flip side of convergent validity, discriminant validity of each acceptable construct (from F1 to F6) was also tested; therefore, the next section will outline the assessment of CFA discriminant validity.

### ***6.9 Measurement model CFA discriminant validity***

Using sample 2, discriminant validity of each acceptable construct (from F1 to F6) was also evaluated using AMOS (section 5.5.3.2).

**Table 6.5**  
**The correlation matrix (sample 2)**

|    | F1   | F2   | F3    | F4    | F5   | F6   |
|----|------|------|-------|-------|------|------|
| F1 |      |      |       |       |      |      |
| F2 | 0.51 |      |       |       |      |      |
| F3 | 0.3  | 0.4  |       |       |      |      |
| F4 | 0.4  | 0.3  | 0.777 |       |      |      |
| F5 | 0.47 | 0.2  | 0.2   | 0.3   |      |      |
| F6 | 0.3  | 0.3  | 0.46  | 0.51  | 0.4  |      |
| VE | 0.7  | 0.52 | 0.8   | 0.783 | 0.46 | 0.49 |

From the matrix of squared correlations displayed in table 6.5, it can be seen that not all inter-construct squared correlation values were smaller than both of their corresponding construct variance extracted (VE) estimates. There were two inter-construct squared correlation values that were marginally larger than both of their

corresponding construct variance extracted (VE) estimates. These were the VE values for F5 (0.46) and F6 (0.49) which were marginally lower than those of the correlation values of F1, F5 (0.47) and F4, F6 (0.51).

However, this difference was well within the margin of error to be expected from the data, which was collected using integer based scales and hence the VE values were deemed to be equal to the inter-construct squared correlations and to exhibit acceptable discriminant validity.

Overall, the VE estimates are larger than the squared correlation estimates or a construct does not have a correlation of more than 0.5 in every possible case so that it will explain its own indicator variables better than it explains another factor (construct). On this basis as well the constructs, were seen to be on the borderline of acceptable discriminant validity (section 5.5.3.2)

In this thesis research, the decision on how the identified constructs should be respecified in the final SEM model was deferred until after the testing of the two theoretical models.

The next section will examine the testing of the two initial theoretical SEM models using the first half sample (sample 1).

### ***6.10 Testing the two hypothesised model***

The constructs which had been tested were used to test the two possible theoretical models of the hypothesised relationships between the constructs that had been suggested (see Chapters 2 and 3). These models were shown in section 3.3 where the construct error terms and indicator variables were not included. The models differed in terms of their depiction of the possible role that might be played by rationalisation, with Figure 3 (a) including rationalisation as a mediating construct between “opportunity for fraud” (F1) and “commission of

fraud” (F4) and Figure 3 (b) reflecting rationalisation as being a side issue in terms of those effects that would lead to the commission of fraud.

The two theoretical models were tested using the first half of the data but failed to provide a satisfactory fit to the data largely due to the SRMR value of 0.13 for the two models, which failed to meet the acceptable fit level of between 0 and 0.10 (section 5.7.1). Additionally, the complete fit indices for the first pre-model indicated a poor fit:  $\chi^2$  (225) = 414.258,  $p$  = 0.000, SRMR = .1255, RMSEA = .083 (90% CI = 0.071 – 0.096), CFI = .896 and TLI = .883. The second pre-model also indicated a poor fit:  $\chi^2$  (225) = 413.808,  $p$  = 0.000, SRMR = .1246, RMSEA = .083 (90% CI = 0.071 – 0.096), CFI = .896 and TLI = .883. For the complete fit indices, see Appendix 6.

Conceptually, these results indicated a poor fit of the data to the theoretical models with there being too large a discrepancy between the covariances observed in the input matrix and the covariances determined for the model. In other words, the residual correlation matrix squared elements were too large (Appendix 7 [a] and Appendix 7 [b]).

Since the path between rationalisation and commission was non-significant in the first theoretical model, in an exploratory research (*post hoc*) phase, the second theoretical model, that excluded that path, was now chosen for modification. This *post hoc* model was examined, to see whether the addition of paths between the latent variables (construct) and their indicator variable would better capture the model structure that was represented by the data. The results of this evaluation are reported in Chapter 6.

The following section summarises this chapter.

### ***6.11 Summary***

This chapter has outlined the results that were obtained by using MLFA followed by CFA in order to create a parsimonious set of identified latent variables measuring six latent variables involved in the commission of fraud. The measurement models for each construct were purified and then tested for convergent validity using the fit indices of SRMR, RMSEA, CFI and TLI. The SRMR was then used to evaluate the fit of two hypothesised models. This process incorporated the following stages.

Firstly, a questionnaire covering theoretically derived aspects of the influences on the commission of fraud was developed to provide data that could be used to examine the proposed constructs and their indicator variables. This questionnaire used seven point numerical scales of disagree = 1 to agree = 7 and were vetted and approved by the Southern Cross University Human Research Ethics Committee (HREC) and two Indonesian experts.

After obtaining ethical clearance, data was collected in Indonesia. The total number of acceptable respondents was 244 with a response rate of 81.3%. This rate, according to Mangione (1995) and Zikmund (1994, 2003), can be classified as a very good. All of the prospective respondents were drawn from similar areas in order to minimise any area related potential for respondent bias.

Additionally, the skewness and kurtosis of all the observed variables was less than 2 and 7 respectively. Therefore the sample was ready to be analysed using MLFA, CFA, and SEM.

It was found that the SRMR fit indices for the two theoretical models indicated a poor fit to the data and the author therefore determined that it would be necessary to make modifications to produce a better fitting model.

The next chapter will explain and justify the introduction of the additional introduced paths amongst latent constructs and their indicator variables and will provide the results of the final test of the overall SEM (*post hoc*) model.

## *Chapter 7*

### **Analysis of the Data: testing of the post hoc model**

#### ***7.1 Introduction***

This seventh chapter updates the paper by Sitorus & Scott (2008a).<sup>17</sup> The chapter is the last of two chapters describing the final procedures in using structural equations modelling. It incorporates the development and testing of a post hoc model as suggested by a number of writers (see section 6.1).

The chapter describes the modifications that were carried out based on the suggestions from the AMOS modification (sub-section 5.7.3) indices and which were considered on the basis of their logical appropriateness by adding appropriate paths between the latent constructs (fraud risk factors) in the structural model as well as additional paths to the measurement models variables (fraud risk indicators), as suggested by researchers (for example, see Byrne, 2001), and to learn where the weaknesses of Cressey's (1950, 1973) trust violation theory, Krambia-Kapardis' (2001, 2002) aetiology of fraud, and two hypothesised (pre-) model lie (Michael & Adler, 1971; Kelloway, 1995).

This chapter also identifies theoretical and practical reasons as to why some of the components of the identified post-hoc structural (fraud risk) model have been ignored by the accounting profession (the Public Oversight Board Panel [POB] on

---

<sup>17</sup> Sitorus, T. & Scott, D. (2008a) 'The roles of collusion, organisational orientation, justice avoidance, and rationalisation on commission of fraud: a model based test', *Review of Business Research*, Vol. 8, No.1, pp. 132-147. Available at: [http://findarticles.com/p/articles/mi\\_6776/is\\_1\\_8/ai\\_n28552092](http://findarticles.com/p/articles/mi_6776/is_1_8/ai_n28552092), <http://ssrn.com/abstract=1297948>, and [http://epubs.scu.edu.au/comm\\_pubs/44](http://epubs.scu.edu.au/comm_pubs/44).

Audit Effectiveness, 2000) even though they could affect the contractual relationships between an auditor's client and stakeholders (Williamson, 1988).

It was found that, the post-hoc (modified) fraud risk management model had more multiple-relationships amongst the latent factors and between the measurement model variables and consequently, more direct and indirect effects. The modified model, which has been developed for an Indonesian environment, had a wider range of fraud risk factors, than have previously been considered and its acceptable fit indices, provided a number of implications that could be drawn from these research findings. Arising from these findings, the author has also put forward a number of strategies that can be used to reduce all forms of fraud and corrupt practices especially in an Indonesian situation (Chapter 8).

The appropriate procedures to test and to interpret the post-hoc fraud risk management model are outlined in this chapter and the following section starts with the final procedures to be used in employing structural equations modelling.

## ***7.2 Model modification***

This section provides the procedures to modify pre- (two hypothesised) models starting with identifying the badness of SRMR before describing the addition of causal paths in the next sub-section.

### ***7.2.1 Locating the badness of SRMR***

Brown (2006) and Savelei & Bentler (2006) said that looking at the standardised residual covariances was useful to unmask any false impressions that the population covariance matrix was a significant approximation to the sample covariance matrix. As can be seen in section 6.10, it was found that the SRMR values for the two theoretically derived models when evaluated using the first half sample (sample 1) were greater than the permissible range of 0.0 to 0.1 (Schermelleh-Engel & Moosbrugger, 2003). It was also noted that, as shown in

Appendix 7, some of the standardised residual covariance elements of the two theoretical models were too large as reflected by the greatest value of 3.57, rather than being in the ideal range of less than 0.05 (Schermele-Engel & Moosbrugger, 2003).

In order to solve this problematic standardised residual covariance the author will add some appropriate causal paths in the following sub-section.

### ***7.2.2 Adding causal paths amongst latent constructs and indicator variables***

When the two theoretical models failed to fit the data the author explored the possibility of making some appropriate modifications by adding several additional paths amongst the latent constructs and the indicator variables.

Since the path between rationalisation and commission was non-significant ( $p = 0.6$ ) as shown in Table 7, the modified model was based on the second theoretical model.

**Table 7.1**  
**The path between rationalisation and commission**

| Relationship        |      |                 | Estimate | S.E. | C.R. | P    |
|---------------------|------|-----------------|----------|------|------|------|
| Commission of Fraud | <--- | Rationalisation | 0.037    | 0.07 | 0.55 | 0.58 |

*Maximum Likelihood Estimates, Regression Weights (the first half sample)*

The modification indices provided by the AMOS program were then used to identify suggested modifications that would improve the fit of the model. The suggested paths were considered from a logical standpoint and when it was considered that their addition to the model would be logical and sensible, they were added and the model fit was determined. An improved (reduced) chi-square value would be expected to result from this procedure as well as a reduction in the

value of the SRMR (for example, see Savalei & Bentler, 2006). In other words, it was expected that the chi-square value for the post-hoc model would be smaller than the value of 413.81 shown in Table 8.

**Table 7.2**  
**Result of the 1st and 2nd models**

| <b>Result (Sample 1)</b> | <b>The 1st model</b> | <b>The 2nd model</b> |
|--------------------------|----------------------|----------------------|
| Chi-square               | 414.26               | 413.81               |
| Degrees of freedom       | 225                  | 225                  |
| Probability level        | 0.0                  | 0.0                  |

As identified, it was important that the modifications which were incorporated into the model would make theoretical sense (e.g., Joreskog, 1993; Savalei & Bentler, 2006), and practical sense (Sanchiro, 2006). They could possibly, however, suggest a previously unknown structure (Hayduk & Pazderka-Robinson, 2007).

The second theoretical model, that excluded the path from rationalisation to fraud commission, was now modified by adding twelve additional paths comprised of the following three new paths in the structural model plus nine new measurement model paths as suggested by the AMOS modification indices.

The following sub-section begins with the appropriate addition of three causal paths to the structural model.

### 7.2.2.1 *The three new paths in the structural model*

Three new paths, shown in Table 7.3, were added to the structural model.

**Table 7.3**  
**The new three paths in the structural model**

| The direction of new additional paths |      |                            | References               |
|---------------------------------------|------|----------------------------|--------------------------|
| Collusion                             | <--- | Opportunity for fraud      | Nardo (2008)             |
| Justice avoidance                     | <--- | Collusion                  | Chapman & Denniss (2005) |
| Justice avoidance                     | <--- | Organisational orientation | Wooten & White (1999)    |

From Table 7.3 it can be seen that the first additional structural component path was from the latent construct of “opportunity for fraud” to the latent construct of “collusion”. Most recently, Nardo (2008) said that opportunity may foster collusion. Consequently, it is possible that there could be a significant link from the latent construct of opportunity to the latent construct of collusion.

The second additional path was from “organisational orientation vis a vis fraud” to “justice avoidance”. In relation to organisational justice, Wooten & White (1999) said that procedural justice dealt with the fairness of the procedures. Thus, if rules and regulations were to be able to fail to treat an individual fairly, there should be a link from organisational orientation to justice avoidance.

The final path was from “collusion” to “justice avoidance”. Chapman & Denniss (2005) opined that the absence of identifiable victims in collusive fraud made detection difficult. Therefore, if the likely victim were to prefer to avoid justice, it is to be expected that there should be a link from collusion to justice avoidance.

The other appropriate addition of paths from the measurement model is outlined in the following sub-section.

### 7.2.2.2 The nine new paths from the measurement model

There were now also 9 new paths between the measurement model variables and the latent variables as shown in Table 7.4.

From Table 7.4 it can be seen that the first additional path was from the latent construct of “commission of fraud” to the observed variable of “it is for a good purpose”. Hillison *et al.* (1999) said that everybody is able to justify the commission of fraud such as “It is for a good purpose” and hence this link was sensible and logical.

**Table 7.4**  
**The new nine measurement model paths**

| <b>The direction of the new additional paths</b> |      |                            |                                                                   |
|--------------------------------------------------|------|----------------------------|-------------------------------------------------------------------|
| <b>Measured Variable</b>                         |      | <b>Latent variable</b>     | <b>Reference</b>                                                  |
| “It is for a good purpose”                       | <--- | Commission of fraud        | Hillison <i>et al.</i> (1999)                                     |
| Offenders collude with commissioners             | <--- | Commission of fraud        | Macmullen (1999)                                                  |
| Offenders collude with parent company            | <--- | Justice avoidance          | Hayes & Prenzler (2003)                                           |
| Lack of transaction authorisations               | <--- | Rationalisation            | Richards, Young, and LaPiere & Farnsworth cited in Cressey (1973) |
| The defendant leaves the jurisdiction ....       | <--- | Rationalisation            | Richards, Young, and LaPiere & Farnsworth cited in Cressey (1973) |
| Lack in use of technologies of fraud prevention  | <--- | Rationalisation            | Richards, Young, and LaPiere & Farnsworth cited in Cressey (1973) |
| Commission involves parent company               | <--- | Organisational orientation | Humphrey (1997)                                                   |
| The defendant leaves the jurisdiction ....       | <--- | Organisational orientation | Needleman & Needleman (1979)                                      |
| Lack in use of technologies of fraud prevention  | <--- | Opportunity for fraud      | McNamar (2003); Sacks (2004)                                      |

The second additional path was from “commission of fraud” to “fraudsters who can collude with commissioners”. Even though the principles of individual and collective responsibility of commissioners have been implemented, collusion can still involve commissioners (Macmullen, 1999) and the inclusion of this path was therefore accepted.

The third additional path was from “justice avoidance” to “fraudsters who collude with parent company”. In their writings, Hayes & Prenzler (2003) reported a diet pills swindle in Fiji that might also involve a parent company. The case showed that the victim (businessman) preferred to resolve the problem rather than to bring it to the court and therefore the inclusion of this path was also logical.

The fourth, fifth, and sixth paths were from “rationalisation” to “lack of transaction authorisations”, “the defendant leaves the jurisdiction”, and “lack in use of technologies of fraud prevention”. In the work of Richards, Young, and LaPiere & Farnsworth cited in Cressey (1973), rationalisation was a process of finding an acceptable excuse. The process of finding excuses can be expected to cause effects that would also be measured in the three indicator items of lack of transaction authorisations, lack in use of technologies of fraud prevention, and big chance to move out from Indonesia to another country (to avoid the Indonesian justice system). The addition of these paths was therefore also accepted

The seventh path was from “organisational orientation vis a vis fraud” to “the fraud commission that involves parent company”. Humphrey (1997) reported a (consumer) fraud allegation in tobacco industry that could be committed by a company and its parent company. Therefore, the orientation of the organisation might cause an effect that would be measured in the other indicator of fraud commission namely the involvement of the parent company.

The eight path was from “organisational orientation vis a vis fraud” to “the fraudster who can leave the jurisdiction”. Needleman & Needleman (1979) said that a person could have a membership in, or contact with, certain organisational systems which had a form of criminogenesis. Thus, if the fraudster were to be part of this kind of organisation, it can be expected that he or she could decide to leave the jurisdiction.

The final path was from “opportunity for fraud” to “lack in use of technologies of fraud prevention”. McNamar (2003) and Sacks (2004) opined that technology can be a tool for both avoiding and perpetrating fraud. Thus, opportunity for fraud might cause an effect that would be measured in the other observed variable of lack in use of technologies of fraud prevention.

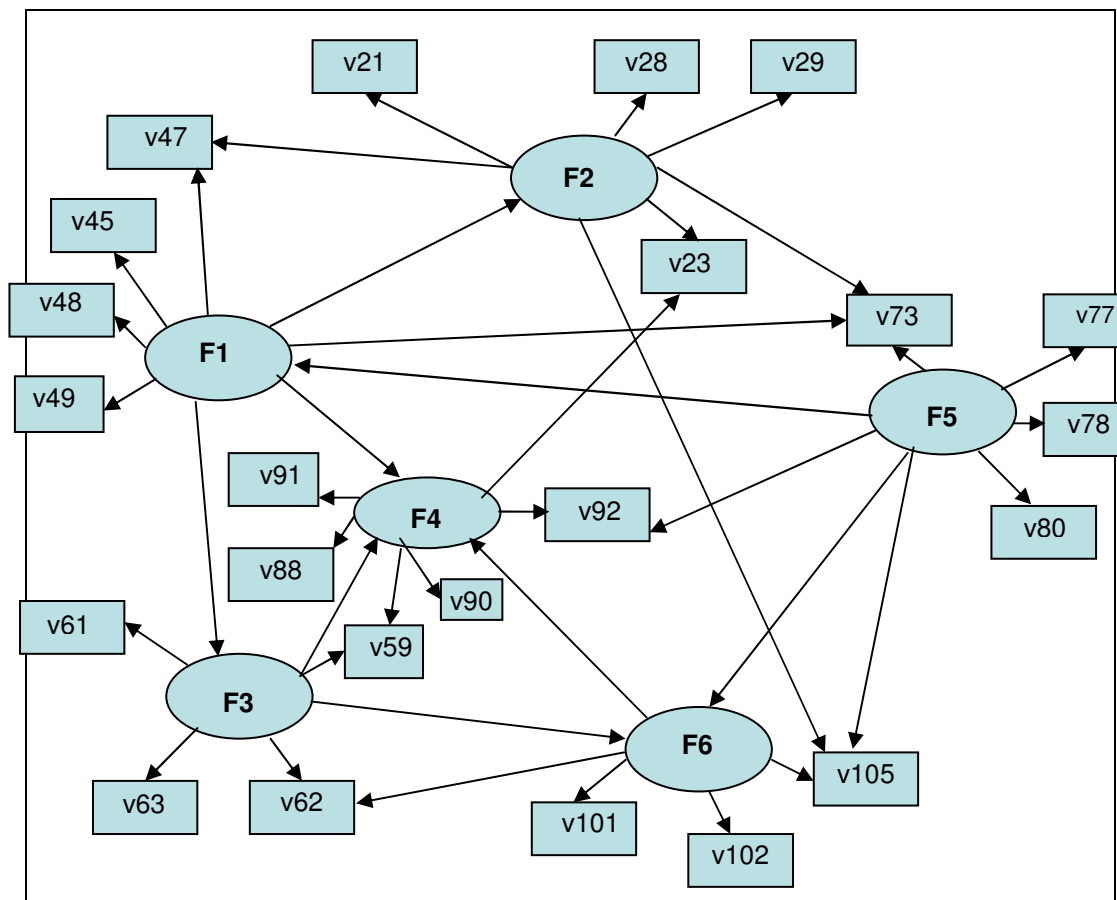
The addition of these paths yielded the model shown in Figure 7.1 (for the sake of clarity, the names of the latent variables or factors have not been included in the diagram and they can be seen in Table 3.2, while the error terms have also been omitted).

From Figure 7.1 it can be seen that there are eight paths for the structural components element of the model and 32 paths for the measurement models (23 paths from the initial ones plus 9 additional ones).

The model posited the following relationships:

- a. F1 (opportunity for fraud) depended on F5 (organisational orientation) as shown in the theoretical models, and had an additional indicator in common with F5 namely v73 (lack of use of technologies of crime prevention).
- b. F2 (rationalisation) depended on F1 (opportunity) and had indicators in common with F1, namely v47 (lack of transaction authorisations) and with F5, namely v73 (lack in use of technologies of crime prevention), and with F6 namely v105 (the defendant who left Indonesia before the trial starts or during the course of the trial).

- c. F3 (collusion) depended on F1 (opportunity).
- d. F4 (commission of fraud) depended on F1 (opportunity), F6 (justice avoidance), and F3 (collusion) and had an indicator in common with F3 namely v59 (collusion with commissioners) and with F2 namely v23 (the rationalisation used by fraudsters: “It’s for a good purpose”).



**Figure 7.1**  
**Model with additional introduced paths**

- e. F5 (organisational orientation) had indicators in common with F4 namely v92 (commission of fraud with parent companies) and with F6 namely v105 (the defendant who left Indonesia before the trial starts or during the course of the trial).
- f. F6 (justice avoidance) depended on F5 (organisational orientation) and F3 (collusion) and had a common indicator with F3 namely v62 (collusion with parent companies).

### ***7.3 Cross-validation***

In the ideal situation, the post-hoc (explorative) model should be cross-validated on an independent sample (e.g., Bentler, 1980; Brannick, 1995; Kelloway, 1995; Savalei & Bentler, 2006). However, such an approach is not always practical and Cudeck & Browne (1983) recommended the following two classical approaches based on a split sample. Firstly, cross-validation was used to refer to an approach in which parameter estimates were initially formed from a calibration sample (sample 1). Secondly, the resulting model was fitted to a validation sample (sample 2).

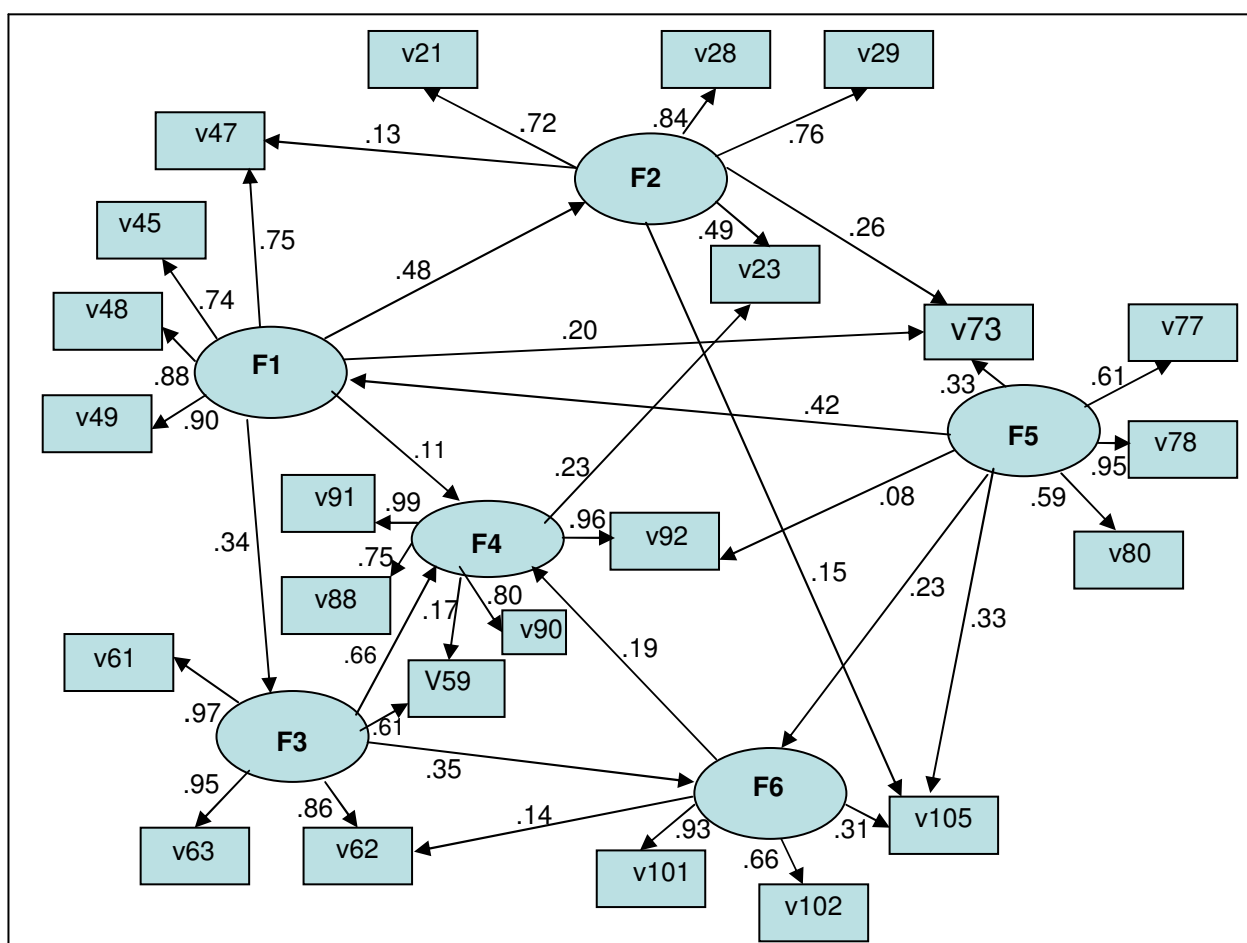
In this thesis research, since the MLFA framework and the two previous SEM models were examined by using sample 1, the second sample (sample 2) was used in order to cross-validate the third (post hoc) model.

### ***7.4 Final results***

The newly developed (post-hoc) model was tested using the second half of the data and was found to exhibit a good fit:  $\chi^2(213) = 279.876$ ,  $p = 0.001$ , SRMR = 0.0543, RMSEA = 0.051 (90% CI = 0.033 – 0.067), CFI = 0.967 and TLI = 0.960. For the complete fit indices, see Appendix 8 (a).

Additionally, the values of standardized residual covariances obtained for the post-hoc model, which were now in the range of -1.48 to 2.09 (see Appendix 8 [b]), were less than those of the first two hypothesised models (from -2.45 to 3.57). Moreover, the chi-square (279.9) of the post hoc model was now much lower than the values acquired for the first two models (414.3 and 413.8).

The post hoc model excluding error terms but including the path values is shown in Figure 7.2. The results of the tests of significance of the path values for the structural components of the model are shown in Table 7.5 and for the measurement models, in Appendix 8 (c).



**Figure 7.2**  
Tested model showing path values  
(error terms omitted)

From Table 7.5 it can be seen that all the links were significant at the 90% level with the majority being significant at the 95% level. Both levels are included in the quantitative analysis because of there being "...no absolute rule by which one would select the alpha familywise. However, it should be larger than the usual (level) of .05" (pp. 110-111) as espoused by Mulaik cited in Cribbie (2007). In these results, if one were to set the level at only 95%, one might rule out some effects that were actually valid.

**Table 7.5**  
**Regression weights for structural model**  
**(maximum likelihood estimation)**

| Regression Weights         |      |                                 | Estimate | S.E. | C.R. | P      |
|----------------------------|------|---------------------------------|----------|------|------|--------|
| Opportunity for fraud (F1) | <--- | Organisational orientation (F5) | 1.143    | 0.4  | 2.87 | .004** |
| Collusion (F3)             | <--- | Opportunity for fraud (F1)      | 0.379    | 0.1  | 3.66 | .000** |
| Justice avoidance (F6)     | <--- | Collusion (F3)                  | 0.123    | 0.06 | 2.23 | .026** |
| Justice avoidance (F6)     | <--- | Organisational orientation (F5) | 0.246    | 0.14 | 1.73 | .084 * |
| Rationalisation (F2)       | <--- | Opportunity for fraud (F1)      | 0.475    | 0.11 | 4.42 | .000** |
| Commission of fraud (F4)   | <--- | Justice avoidance (F6)          | 0.602    | 0.28 | 2.15 | .031** |
| Commission of fraud (F4)   | <--- | Collusion (F3)                  | 0.741    | 0.08 | 8.78 | .000** |
| Commission of fraud (F4)   | <--- | Opportunity for fraud (F1)      | 0.139    | 0.08 | 1.69 | .091 * |

\* = significant at 90% level    \*\* = significant at 95% level

The standardised path values for significant direct, indirect, and total effects for the structural model are shown in Table 7.6 and for the measurement model are shown in Appendix 8 (d).

**Table 7.6**  
**Standardised significant direct, indirect, and total effects**

| <b>Effects</b>                                             | <b>Estimate</b> |
|------------------------------------------------------------|-----------------|
| Effects of "collusion" (F3) on "commission" (F4)           |                 |
| Direct                                                     | 0.655           |
| Indirect (through "justice avoidance")                     | 0.065           |
| Total                                                      | 0.720           |
| Effects of "opportunity" (F1) on "rationalisation" (F2)    |                 |
| Direct                                                     | 0.481           |
| Effects of "organisation" (F5) on "opportunity" (F1)       |                 |
| Direct                                                     | 0.418           |
| Effects of "collusion" (F3) on "justice avoidance" (F6)    |                 |
| Direct                                                     | 0.349           |
| Effects of "opportunity" (F1) on "collusion" (F3)          |                 |
| Direct                                                     | 0.344           |
| Effects of "organisation" (F5) on "justice avoidance" (F6) |                 |
| Direct                                                     | 0.231           |
| Indirect (through "opportunity" and "collusion")           | 0.050           |
| Total                                                      | 0.281           |
| Effects of "justice avoidance" (F6) on "commission" (F4)   |                 |
| Direct                                                     | 0.187           |
| Effects of "opportunity" (F1) on "commission" (F4)         |                 |
| Direct                                                     | 0.111           |
| Indirect (through "collusion")                             | 0.248           |
| Total                                                      | 0.359           |
| Effects of "organisation" (F5) on "rationalisation" (F2)   |                 |
| Indirect (through opportunity)                             | 0.201           |
| Effects of "organisation" (F5) on "commission" (F4)        |                 |
| Indirect (all linked paths combined)                       | 0.193           |
| Effects of "opportunity" (F1) on "justice avoidance" (F6)  |                 |
| Indirect (through collusion)                               | 0.120           |

From Table 7.6 it can be seen that the strongest direct influence on F4 (commission of fraud) arose from F3 (collusion) (0.720) with F1 (opportunity) (0.359) providing another less strong direct influence and with a final direct influence arising from F6 (justice avoidance) with a path value of 0.187. Several

variables also exerted an indirect influence on “commission of fraud”. F1 (opportunity) also influenced F4 (commission of fraud) indirectly through a mediating measure of F3 (collusion) (0.248) with this influence being more than twice as strong as the direct effect (0.111) of F1 (opportunity) on F4 (commission of fraud). F5 (organisational orientation) provided another indirect influence through several linked paths with a total effect value of 0.193 which was greater than that of F6.

F2 (rationalisation) did not have any direct influence on F4 (commission of fraud) but was influenced directly by F1 (opportunity) (0.481) and indirectly by F2 (organisational orientation) (0.201) through the mediating measure F1 (opportunity).

F5 (organisational orientation) (0.418) exerted a direct influence on F1 (opportunity).

The strongest influence on F6 (justice avoidance) arose directly from F3 (collusion) (0.349) and from F2 (organisational orientation) (0.281). There were two other indirect influences on F6 (justice avoidance) that arose from F1 (opportunity) through the mediation of F3 (collusion) (0.120) and from F5 (organisational orientation) through the mediation of both F1 (opportunity) and F3 (collusion) (0.050).

There was only one direct influence on F3 (collusion) and that arose from F1 (opportunity) (0.344).

The following section is the summary.

## **7.5 Summary**

Following the unacceptable fit values that were determined for the two hypothesised (*pre-*) models; this chapter has outlined the procedure that was used in developing and testing a post hoc model.

Once the fit of the initial models had been identified as being poor, the AMOS modification indices were used to guide the consideration of the addition of logical and sensible additional paths. This procedure resulted in the addition of 3 appropriate causal paths to the structural model and 9 appropriate causal paths to the measurement models.

The modified model was cross-validated using a second half of the (independent) data (sample 2) since the MLFA framework and the two previous SEM models had used sample 1. It was found that this post hoc model overall exhibited a good fit to the data:  $\chi^2 (213) = 279.876$ ,  $p = 0.001$ , SRMR = 0.0543, RMSEA = 0.051 (90% CI = 0.033 – 0.067), CFI = 0.967 and TLI = 0.960.

All the paths were significant at the 90% level with the majority being significant at the 95% level. The strongest (direct) influence on “commission of fraud” and hence of fraud risk was from “collusion” with a total value of 0.720 followed by “opportunity for fraud” (0.359) which provided another less strong (direct) influence. “Organisational orientation vis a vis fraud” provided another indirect influence on “commission of fraud” through several linked paths with a total effect value of 0.193. Finally, a direct influence arose from “justice avoidance” with a path value of 0.187.

Therefore, the weakness of “simple” fraud risk theories (trust violation), hence the fraud risk factors consideration used by IFAC, and the aetiology of fraud (Cressey, 1950, 1973; Krambia-Kapardis, 2001, 2002) and the two *pre*-models are identified.

The final chapter will discuss the implications of the results obtained from this research in regard to the research questions, and the post hoc model. Recommendations, conclusions, limitations, and future research are also included in the last chapter.

## ***Chapter 8***

### **Discussion and conclusions**

This thesis has included published and unpublished materials developed during candidature (see the statement of original authorship) as a consequence of the research activity undertaken towards the completion of this thesis. It has examined an alternative consideration of fraud risk factors and the interactions amongst the risk factors and their indicators.

The thesis research was approved by the Southern Cross University Human Research Ethics Committee. It has involved the use of several supportive key experts and a wide range of participants from the Audit Board of the Republic of Indonesia, the Indonesian Attorney General's Office, Partnership for Governance Reform in Indonesia, Indonesian Corruption Eradication Commission, Indonesian National Police, the Indonesian Financial and Development Supervisory Board, the Indonesian Capital Market Supervisory Agency – Financial Institute, Indonesian Financial Transaction Reports and Analysis Centre and other anonymous Indonesian companies and non-government institutions.

The aim of this study was to investigate how fraudsters can perpetrate and cover-up fraudulent acts and what factors directly or indirectly affect the commission of fraud and hence, fraud risk.

In this thesis research, 8 research questions, 3 theoretical fraud risk management models comprised of 2 hypothesised (*pre-*) models and 1 final (post-hoc) fraud risk model were examined that addressed the following issues with regard to fraud risk factors and auditing standards:

- all forms of fraud
- personal behaviour
- rationalisation
- opportunity of fraud
- collusion
- organisational orientation
- justice avoidance
- commission of fraud

Chapters 1, 2, 3, 4 and 7 reviewed the literature in regard to the subjects of auditing, criminology, economics, finance, psychology, law, and organisational behaviour.

The research originated from a concept of using a more holistic sample as outlined in Chapter 1, to address a set of research questions (Chapter 2), to develop two initial theoretical fraud risk management models (Chapter 3), to employ more robust research scientific methodologies (Chapter 4) before using MLFA (exploratory factor analysis, the first quantitative methodology), CFA (the second quantitative methodology), and SEM (the third quantitative methodology) including a final approach of modifying one of the two theoretical models (Chapter 5), followed by its test.

The two theoretical models were found not to fit the data and the path from rationalisation to fraud commission was insignificant. Chapters 6 and 7 identified the procedure used to develop a post-hoc model from the second model and to evaluate it using a second sample of data. This model was then used to explore the implications of the additional paths (Chapter 7).

Chapter 2 examined the set of research questions in order to move beyond the theory of trust violation, comprised of non-shareable problem of financial pressure, rationalisation, and opportunity for fraud, proposed by Cressey (1950, 1973), that has been used by the accounting profession (e.g., IFAC) when

considering fraud risk factors for its auditing standards. It was found that there was a necessity to not only refine the previous theories but to also consider both “cooperation” between the auditor and management and “mechanism design (an integrated audit and justice system)” that could permit both auditors and justice officials to resolve fraud findings, reports, and cases.

Chapter 3 covered the initial development of possible theoretical fraud risk models. This involved integrating the roles of seven latent constructs (factors or latent variables) comprised of the three factors proposed by Cressey (1950, 1973) namely the factors of non-shareable problem of financial pressure as a result of personal behaviour, rationalisation, and opportunity (for fraud). The other four factors consisted of collusion, organisational orientation vis a vis fraud, justice avoidance, and commission of fraud. Two scenarios (models) of fraudulent behaviour were formulated. In the first model, the latent variable “commission of fraud” depended directly on “rationalisation” and in the second model rationalisation was included only as a side effect of fraud commission.

Chapter 4 examined the use of alternative more robust scientific research methodologies.

Chapter 5 reviewed the procedures for using MLFA, CFA and SEM that were used to explore and to test the two hypothesised fraudulent behaviour (fraud risk management) models.

Randomly split half samples termed sample 1 and sample 2 (each containing data obtained from 122 Indonesian respondents) were used to test the measurement models for each of the 7 latent variables. In a preliminary step, sample 1 and MLFA was used to identify a factor structure. Then, sample 2 was used to validate the measurement models using CFA in a tandem process. The construct validity for the construct of “personal behaviour” was not found to be acceptable and this latent variable was therefore omitted from the two hypothesised SEM models. However, the two theoretical models did not provide an acceptable fit to the data.

Because the two hypothesised models did not fit the data, and the path from rationalisation to fraud commission was insignificant, a post hoc model was developed guided by the AMOS software modification indices and a rational examination of proposed additional paths against existing fraud studies. Based on this assessment, more paths were incorporated into a post-hoc model and this process was outlined in Chapter 7.

The results shown in Chapter 2 using qualitative methodology and in Chapters 6 and 7 using quantitative methodology (SEM and its modification indices) provide the basis for the discussions in this conclusive chapter. The main research objective (Chapter 1) comprised of 8 research questions (Chapter 2) and three fraud risk management models (Chapters 3, 7) is discussed to consolidate theoretical and practical implications arising from the extension of fraud theories based on this research that has used robust scientific research methodologies. The chapter finishes by setting out recommendations, limitations and directions for future research.

The following section begins with the first research question and each next question and theoretical model will be addressed in these serial sub-sections.

### ***8.1 Research question 1***

The first research question was as follows.

*Were the examples of fraud risk factors provided by the auditing standard of value to the independent auditor?*

It was found that the integrated fraud risk factors identified in this research should replace those of Cressey (1950, 1973) that have been used by the accounting profession (ISA 240). The Cressey's (1950, 1973) fraud theory was only comprised of (non-shareable problem) of financial pressure, rationalisation, and opportunity (for fraud). However, other fraud risk factors such as collusion and

justice avoidance have been mentioned in the literature (Apostolou & Crumbley, 2005; Sanchirico, 2006). In the 1994, 1998, and 2003 KPMG (cited in Apostolou & Crumbley, 2005), the major contribution to fraud was collusion which was not taken into account by Cressey (1950, 1973).

In relation to law enforcement, Sanchirico (2006) pointed out both the problem of justice (detection) avoidance and the lack of any study of this type of problem. Cressey (1950, 1973) and the accounting profession have also avoided consideration of this issue.

Additionally, from the examination of the integrated fraud risk factors in the first hypothesised model and the post-hoc model, it was found that collusion is a major direct influence on the commission of fraud and therefore is a key fraud risk factor. Rationalisation, one of the risk factors used by accounting profession, was found not to have any influence on the commission of fraud but to be a side issue.

Overall, the findings indicated that the set of fraud risk factors provided by the international auditing standard should be re-evaluated.

## **8.2 Research questions 2**

The second research question was as follows.

*Were there other significant fraud risk factors?*

From the research, it was found that collusion (Lafrentz, 1924; Dohr, 1941; Johnson, 1980; Koffman & Lawarree, 1993; Anderson, *et al.*, 1998; Davia *et al.*, 2000; Riahi-Belkaoui & Picur, 2000; Krambia-Kapardis, 2001; Katyal, 2003; Duggar & Duggar, 2004; Tillman & Indergaard, 2007), justice avoidance (Lanham, 1997; Graycar, 2000; Wright, 2006; Sanchirico, 2006), and organisational orientation vis a vis fraud (Needleman & Needleman, 1979; Hooks *et al.*, 1994; Grabosky & Smith, 1996; Bardhan, 1997; Cordeiro, 1997; Graycar, 2000; Crowfoot, 2004) were other significant fraud risk factors.

### **8.3 Research questions 3**

The third research question was as follows.

*Under what circumstances would the auditor not be independent?*

It was found that practical problems with law enforcement could hide fraud cases (Sanchirico, 2006) and that it might be difficult for some auditors to maintain their professional standards if management were to ask them to collude so that they could avoid justice (Bamber & Iyer, 2007). However, cooperation by an auditor and management could be used to resolve a problem if this were not illegal and the action was “proper” (Dutton & Dukerich, 1991; Bamber & Iyer, 2007).

### **8.4 Research questions 4**

The fourth research question was as follows.

*Should a system be developed to allow auditors to work in a judicial environment to ensure that any case that is referred for prosecution is properly handled?*

It was found that “cooperation” and not collusion could firstly be used to resolve potential findings of fraud (material financial misstatement, for instance), to produce positive results from the work of auditors and management. This procedure would be especially applicable if the actions by an auditor and management were “proper” (Dutton & Dukerich, 1991; Haslam, 2004; Bamber & Iyer, 2007). Alternatively, a “mechanism design” (an integrated audit and justice system) should be considered that permits the investigating auditor and the justice official to work together to produce the best outcomes (Coase, 1937; Haslam, 2004).

### **8.5 Research questions 5**

The fifth research question was as follows.

*Is conspiracy that is identified during an audit, always found to have a harmful influence? In other words, how do the management and its auditor identify positive results of cooperation?*

It was found that conspiracy can not only be viewed as collusion (the negative side), but can also be viewed as cooperation (the positive side). Thus, cooperation in relation to resolving any fraud findings or material financial misstatements can provide positive outcomes for the work of both the management and its auditor.

### **8.6 Research questions 6**

The sixth research question was as follows.

*During an audit, is the influence of collusion on the commission of fraud more difficult to detect than the influences of (non-shareable problem of financial) pressure, rationalisation, and opportunity?*

It was found that there are both positive and negative collusive aspects that need to be detected by an auditor. However, in 1940 the Securities and Exchange Commission cited in Dohr (1941), Johnson (1980), and Davia *et al.* (2000) have indicated that an auditor can be expected to detect collusive fraud (including pseudo-collusion) through normal audit procedures.

### **8.7 Research questions 7**

The fifth research question was as follows.

*When an audit is being conducted, what types of collusive actions need to be tested?*

It was found that collusion could involve many parties. Thus, a physical inspection based audit procedure might be a good way to detect collusive fraud because the auditor may then be able to uncover concrete evidence. If the management were to be in collusion with its external parties, obtaining evidence from the external sources might not be the soundest approach to detecting fraud.

Under certain circumstances, evidence from a physical inspection may be omitted if the auditor fails to maintain his or her professional integrity (Bamber & Iyer, 2007). For instance, the management might ask its auditor to help them to avoid fraud detection and hence to avoid justice (Dutton & Dukerich, 1991). With regard to this situation, the alternative best action suggested by the literature is to build a cooperative relationship with the management to produce a positive result by resolving (fraud findings) rather than omitting the key problem (Katyal, 2003).

### **8.8 Research questions 8**

The fifth research question was as follows.

*Why is the possibility of the existence of the other specific fraud risk factors not identified by the International Auditing and Assurance Standards Board (IAASB)?*

It was found that the Public Oversight Board Panel (POB) on Audit Effectiveness (2000) believed that collusive fraud was a difficult task for the auditor to uncover. Therefore, it is not surprising that the Cressey (1950, 1973) theory has been preferred as the “best” system of fraud risk factors and was therefore accepted for consideration by the International Federation of Accountants (ISA 240). It is also not surprising that it was opined that the management rather than its auditor should have a greater responsibility for managing fraud risk.

The exploration of the literature, which was driven by this set of research questions, provided an insight that was then used to develop the initial two theoretical (*pre-*) models, hence two hypothesised models.

The following section covers the first and second hypothesised models.

### ***8.9 The first and second hypothesised models***

It was found that the two theoretical models which were tested using the first half of the data failed to provide a satisfactory fit to the data and that the path from the latent variable (factor) of “rationalisation” to the latent variable of “commission of fraud” was not significant.

The author consequently decided to develop a post-hoc model based on the second theoretical model and to examine its fit to the data. Therefore, the following section discusses this third model.

### ***8.10 The post hoc model***

In the post-hoc model, the second theoretical (*pre-*) model, that excluded the path from rationalisation to fraud commission, was modified by adding three causal paths between the latent variables and nine paths between the indicator variables and latent variables.

When tested using the second half of the data, the post-hoc model produced a good fit to the data:  $\chi^2(213) = 279.876$ ,  $p = 0.001$ , SRMR = 0.0543, RMSEA = 0.051 (90% CI = 0.033 – 0.067), CFI = 0.967 and TLI = 0.960.

This causal model needs to be interpreted through the existing literature (Joreskog, 1993; Savalei & Bentler, 2006; Hair *et. al.*, 2006) and the following section is

about the previous fraud theory and its extension because of these research findings.

### ***8.11 The extension of fraud theory***

The following five significant findings extend existing theory. Firstly, fraudsters who can also collude within an organisation and with third parties have been only briefly mentioned in descriptions of fraud aetiology and in the international auditing standards (ISA 240). Collusion was therefore considered not to be a major influence on the commission of fraud. However, this research shows that collusion can be a major influence on the commission of fraud. It is therefore not surprising that Wells (1993) should have pointed out the failure of independent auditors to detect fraud and white-collar crime since the effects of collusion could have been to mask the commission of fraudulent activities.

Cressey (1973) said that violators often ignored “rationalisation” and this study finds that it does not have a direct influence on “fraud commission”. However, prior studies in the areas of fraud risk and auditing standards have still referred to this factor as one of the main influences on the commission of fraud. From this research it is evident that while perpetrators of fraudulent activities may also engage in rationalisation of their actions, such rationalisation is not a necessary precursor to fraud being committed and in some instances, perpetrators do not engage in any rationalisation.

Secondly, as the likely victim of fraudulent activities is an organisation and since the role for detecting collusive fraud seems to be avoided by the auditor (the Public Oversight Board Panel [POB] on Audit Effectiveness, 2000), as has been suggested by Steane & Cockerell (2005), management needs to take greater responsibility for managing such risk and for establishing fraud prevention measures. This research has identified a number of factors that influence the commission of fraud and that have not previously been identified. It is therefore evident that in future, when carrying out their responsibilities, management needs

to consider a wider range of factors and to introduce measures that lie outside the current (fraud) auditing standard (ISA 240).

Thirdly, this research has identified three direct drivers of “commission of fraud” and hence of fraud risk. In order of strength of influence, these are “collusion”, “opportunity for fraud” and “justice avoidance”. However there are a number of other indirect influences on the commission of fraud namely “organisational orientation vis a vis fraud” that affects “commission of fraud” via the mediation of “justice avoidance”, and “opportunity for fraud” that influences “commission of fraud” via both “collusion” and “justice avoidance”. The measure that evidenced the greatest overall influence on “commission of fraud”, when taking into account both direct and indirect effects, was “collusion” with a path value of 0.72 and it is therefore this influence that requires the most immediate attention in terms of developing fraud prevention measures.

Fourthly, systemic and legal initiatives for fraud prevention and control were identified by Graycar (2000). However, the initiatives were still encompassed by the three ingredients of fraud comprised of likely offenders, suitable targets, and the absence of capable guardians (Cohen & Felson, 1979). Some of the influences that are identified in this research have been outside the attention of the global audit standard. Nevertheless, the (global) government auditing standard has stated the need for a fraud report and Sarbanes-Oxley has called for enacting standards regarding corporate governance and responsibility (Wirsky, 2003; Riotto, 2008; Canada *et al.*, 2008). These calls effectively embrace some of the necessary areas of attention identified in this research and emphasize the need for governments and auditing standard setters to take into account the drivers of fraud risk identified in this research.

Fifthly, some prescriptions aimed at addressing fraud symptoms have been being introduced. The first of these was to focus on eliminating non-shareable problems (Cressey, 1950, 1973). The next was to embrace opportunities to design out fraud (Hough *et al.*, 1980). The most current was to improve corporate governance,

professional regulatory procedures, the technologies of fraud prevention and building an ethical culture, leadership and better institutional governance (e.g., see Graycar, 2000; Steane & Cockerell, 2005). This research has shown that collusion was the strongest influence on fraud commission of all the factors tested. It is therefore evident that limiting collusion is a required further prescription that needs to be taken to reduce or prevent the commission of fraud as a result of using a more robust scientific methodology.

The following section will strengthen the discussion of scientific research methodology.

### ***8.12 A more robust scientific research methodology***

As previously said in sub-section 1.5.1, there have been calls for the use of more robust research methods (Michael & Adler, 1933, 1971; Cressey, 1950, 1973; Steane & Cockerell, 2005). Previously Cressey (1950) argued that “...studies of selective factors, even if properly carried out, do not solve the problem of etiology” (p.743). Further research then aimed at consolidating the identified fraud risk factors. Krambia-Kapardis (2001, 2002) for instance incorporated opportunity for fraud, crime-prone personality, and rationalisation into a descriptive model of fraud aetiology. In order to assist management, Steane & Cockerell (2005) then aimed at finding out all of the fraud factors and their indicators.

Structural equations modelling (Chapter 5), enables a researcher to examine the strengths of influences of a number of factors upon one another. Its use in this study has allowed for the development of a number of measures for a range of possible influences on the commission of fraud and for the use of these measures to investigate the significant relationships between the fraud risk factors.

Importantly, the use of SEM that permits some additional appropriate paths derived from theoretical and practical senses to be incorporated into a

chronological causal relationships model may represent one of the advanced statistical methodologies (Chapter 4), that can response some ongoing calls (sub-section 1.5.1), with a great potential refinement of existing (fraud risk) theory (Jöreskog, 1978; Bentler, 1980, 1983; Browne, 1984; Anderson & Gerbing, 1988).

In this thesis research, these refinements of fraud risk factors (IFAC IAASB), theory of trust violation (Cressey, 1950, 1973), the descriptive model of aetiology of fraud (Krambia-Kapardis, 1999, 2001, 2002), and the two pre-fraud risk and post-hoc models are opened to be further developed, discussed, and examined in a different context and/or implemented in an Indonesian environment (sub-sections 1.7.2 and section 8.15).

Some recommendations that were derived from these findings are formulated into a number of perspectives in this following section, followed by further potential limitations of this thesis research in the subsequent section.

### ***8.13 Recommendations***

The results of this research indicate a necessity for multiple anti-collusion policies to be used to decrease the chances of the build-up of associations and hence the opportunity for collusion. Actions to be considered could be as follows.

#### ***8.13.1 In relation to an organisational culture perspective***

From an organisational culture perspective, Duggar & Duggar (2004) have introduced "behaving honestly" as a required aspect of a "competitive" culture. Practically, however, this can be difficult to achieve and requires an organisational capacity to make such a change (Judge & Elenkov, 2005). A related aspect of this would be building "open internal communications" since these can also assist in deterring fraud (Hooks *et. al.*, 1994).

### ***8.13.2 In relation to a business ethics perspective***

From a business ethics perspective, the introduction of ethical conduct as a “way of life” (Somers, 2001). To achieve this, a mechanism to report and to respond to wrongdoers should be used daily (Cordeiro, 2003).

### ***8.13.3 In relation to an auditing perspective***

From an auditing perspective, the introduction of another source of information such as a second supervisor (in an equal work-relationship with the first) can be used to constrain collusion (Kofman & Lawarree, 1993).

### ***8.13.4 In relation to a fraud auditing perspective***

From a fraud auditing perspective, the introduction of reporting of fraud findings to investigatory or related authorities before completion of an audit and for auditors to then possibly be required to withdraw from the audit in order not to impede an investigation (Dye, 2007a,b). With this in mind, it would seem to be better to create a (fraud) audit standard, in relation to communications with management and reporting (Dye, 2007a,b), and the integration of fraud risk factors and auditing standards shown by this research that will assist any parties to detect (allegations of) fraud, for instance, from internal audit departments to the audit and justice institutions such as independent auditors, investigating auditors, police interrogators, and prosecuting attorneys, as well as identifying how to adequately support any allegations of fraud.

### ***8.13.5 In relation to an institutional arrangements perspective***

From an institutional arrangements perspective, to introduce a role for incorruptible external inspectors who are able to manage fraud risk and impose optimal penalties for fraudsters and incompetent supervisors (Bac & Bag, 2000).

#### ***8.13.6 In relation to fraud risk factor considerations***

From fraud risk factor considerations, to introduce the use of this causal relationship based fraud risk model, developed in this research and tested by using structural equations modelling.

#### ***8.13.7 In relation to a cooperation and mechanism design perspective***

From a cooperation and mechanism design perspective, to introduce the practical benefits of cooperation to resolve fraud findings through collaborative work by auditors and management (Dutton & Dukerich, 1991; Haslam, 2004; Bamber & Iyer, 2007). To introduce such a “mechanism design” (an integrated audit and justice system) that can allow the investigating auditor and the justice official to form a “dream team” to achieve better fraud prosecution results (Coase, 1937; Haslam, 2004).

#### ***8.13.8 In relation to a curriculum and knowledge perspective***

Because this thesis research has expanded the knowledge of fraud studies using more robust scientific research methodologies, it has, from an educational standpoint, provided an enriched knowledge base covering a topical issue of the fraud symptoms that should be considered as part of a study of fraud risk detection and deterrence (the accounting and auditing discipline), trust violations (criminology discipline), and structural equations modelling (statistical research methodology) by educators and universities (Kranacher & Stern, 2004; Arens & Elder, 2006; Maservy *et al.*, 2006).

Judge & Elenkov (2005) have suggested that change takes time but it is hoped that this research will enable an expanded and integrated curriculum to be introduced into training institutions so as to accelerate a change to a future generation.

As previously indicated in section 1.7, the following section will further discuss other potential limitations that can be learnt from an Indonesian context and statistical analysis.

### ***8.14 Study limitation***

This section provides two potential limitations of this thesis research as follows.

#### ***8.14.1 Content, context, and other manifest features***

In agreement with Michael & Adler (1971), Mulaik (2008) identified a need to pay close attention to the content, context, and other manifest features of variables when developing a theory to test. The research that was conducted for this thesis was carried out in an Indonesian context and should therefore be viewed from that perspective.

However, this does not rule out its possible applicability in other contexts and this is something that needs to be explored through additional research.

#### ***8.14.2 Chi-square test***

Mulaik & Hayduk (2008) also opined that a researcher should not ignore the results of chi-square tests when assessing the fit of a structural model. This final complex (post hoc) model in this study showed:  $\chi^2 (213) = 279.876$ ;  $p = 0.001$ . Thus,  $\chi^2/df = 1.3$  which was still in the range of good fit (Schermelleh-Engel & Moosbrugger, 2003), but the chi-square  $p$  value did not indicate a good fit (less than 0.05).

However, Bollen & Long (1993), Mueller (1996), Schermelleh-Engel & Moosbrugger (2003), and Brown (2006) said that there is general acceptance that there is no single measure of fit that should be used to assess the fit of a structural model (sub-section 5.5.2.2). Because chi-square tests are sensitive to sample size and to a violation of the assumption of multivariate normality (Hu *et al.*, 1992, West *et al.*, 1995, Curran, *et al.*, 1996), they have recommended simultaneously

evaluating several indices that represent different classes of goodness-of-fit criteria.

With respect to evaluating several indices, Bentler (1995) and Hu & Bentler (1998) suggested employing SRMR, supported by TLI, CFI, or RMSEA (subsection 5.5.1.2.5). This approach was adopted in this thesis research and it was found that the post-hoc model showed a good fit to the data: SRMR = 0.0543, RMSEA = 0.051 (90% CI = 0.033 – 0.067), CFI = 0.967 and TLI=0.960.

In relation to the adequacy of fit indices, the work of Maiti & Mukherjee cited in Hu & Bentler (1998) said that it is important to look at "... the main practical point for the use of fit indices, namely, the ability to discriminate well-fitting (the post-hoc model) from badly fitting models (the two hypothesised models)" (p.424). Therefore, it is important to differentiate the post-hoc model from the two hypothesised models, for the following reasons. Firstly, in relation to the SRMR, it is clear which the better model is. Secondly, from the standpoint of theoretical and practical sense, it is clear which the better model is. The post hoc-model can be clearly distinguished from the two previous models and illustrates practical relationships.

As previously identified in section 5.5.1.2.1, Savalei & Bentler (2006) also recommended using a comparison of the chi-square values to identify better fitting models. The chi-square of 279.88 for the post hoc model was much lower than those of the two previous models which were 414.26 and 413.81 respectively and therefore indicated that it was a better fitting model.

Suggestions for future research aimed at fraud risk theory framework development and based on this *post hoc* fraud risk management model, are provided in the following section of this thesis.

### ***8.15 Suggestions for future research***

This thesis research developed and tested a new fraud risk management model in an Indonesian context using two randomly split half-samples each of 122 cases. The use of more cases has been always recommended (Mulaik, 2008) and therefore additional research in other contexts that uses larger samples<sup>18</sup>, multi-group SEM analysis<sup>19</sup> and a longitudinal study<sup>20</sup>, is suggested.

The thesis author also recommends that other researchers around the globe should re-evaluate the fraud risk factors used by the international accounting profession (IFAC) and should use different contexts to explore the additional fraud risk factors identified and examined in this research.

The following section summarises the final chapter of the thesis.

### ***8.16 Summary***

This last chapter has drawn conclusions in regard to the eight research questions and the three theoretical fraud risk management models identified for evaluation in this thesis. Conclusions in respect of each research question and the theoretical models were presented along with the overall thesis research conclusions.

---

<sup>18</sup> A research note to call for collaborative research and the replication of empirical research in different contexts was resubmitted to the Arabian Journal of Accounting (see the statement of original authorship).

<sup>19</sup> A multi-group SEM analysis for a fraudulent behaviour model using groups of auditor and non-auditor participants is also examined in the further study (see the statement of original authorship).

<sup>20</sup> The need for a longitudinal study also suggests a need for collaborative research (see foot-note 1) in order to consolidate data from several years. The two groups of data (see foot-note 2) that were collected in 2007 can be used as a basis for a large longitudinal dataset that can be collected by means of this research instrument in order to examine any potential variation in fraud measures over the years following on from and including the year 2007.

The contribution of the thesis to the extension of theory in regard to fraud risk was identified and the implications for theory and practice were presented along with limitations and opportunities for future research.

This thesis research has provided answers to number of research questions and has provided a quantified evaluation of the influence of a number of fraud risk factors on the commission of fraud. The risk factors that were evaluated were drawn from a range of literature covering auditing, criminology, economics, finance, psychology, law, and organisational behaviour. The research has provided an enhanced empirically based view of the influence of fraud risk factors in an Indonesian context through the use of more robust scientific research methodologies and a more holistic sample.

The findings in regard to the research questions and the results from the evaluation of the post-hoc fraud risk model have provided guidance for the expansion of the consideration of fraud risk factors and for the formulation of strategies to manage the integrated fraud symptoms. These should be taken into consideration by the accounting profession and audit organisations, auditing self-regulators, fraud researchers, auditing researchers, practitioners, fraud experts, criminologist, academia, and regulators or authorities.

## References

Ajzen, I. & Fishbein, M. (1980), *Understanding Attitudes and Predicting Social Behavior*, Englewood Cliffs, N.J.: Prentice-Hall.

Ajzen, I. (1991), 'The theory of planned behavior', *Organizational Behavior and Human Decision Processes*, Vol. 50, Vol. 2, pp. 179- 213.

Akerlof, G. A. (1970), 'The market for "lemons": Quality uncertainty and the market mechanism', *The Quarterly Journal of Economics*, Vol. 84, No. 3, pp. 488-500.

Albrecht, W. S., Wernz, G. W. & Williams, T. L. (1995) *Fraud: Bringing Light to the Dark Side of Business*, New York: McGraw-Hill Publishing.

Akers, M. D. & Bellovary, J. D. (2006), 'What is fraud and who is responsible?', *Journal of Forensic Accounting*, Vol. 7, No. 1, pp. 247-256.

Alchian, A. A. & Demsetz, H. (1972), 'Production, information costs, and economic organization', *The American Economic Review*, Vol. 62, No. 5, pp. 777-795.

American Institute of Certified Public Accountants (AICPA) (2002) *Statement on Auditing Standards (SAS) No. 99: Consideration of Fraud in a Financial Statement Audit*.

Anderson, B., Maletta, M. & Wright, A. (1998), 'Perceptions of auditor responsibility: Views of the judiciary and the profession', *International Journal of Auditing*, Vol. 2, No. 3, pp. 215-232.

Anderson, B. R. O'G. (1972), 'The idea of power in Javanese culture', in Holt, C (ed.) *Culture and politics in Indonesia*. Ithaca N.Y.: Cornell University Press.

Anderson, J. C. & Gerbing, D. W. (1984), 'The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis', *Psychometrika*, Vol. 49, No.2, pp. 155-173.

Anderson, J. C. & Gerbing, D. W. (1988), 'Structural equation modelling in practice: A review and recommended two-step approach', *Psychological Bulletin*, Vol. 103, No.3, pp. 411-423.

Anderson, J. C., Gerbing, D. W. & Hunter, J. E. (1987), 'On the assessment of unidimensional measurement: Internal and external consistency and overall consistency criteria', *Journal of Marketing Research*, Vol. 24, No. 4, pp. 432-437.

Apostolou, B. A., Hassell, J. M., Webber, S. A. & Sumners, G. E. (2001), 'The relative importance of management fraud risk factors', *Behavioral Research in Accounting*, Vol. 13, No. , pp. 1-24.

Apostolou, N. & Crumbley, D. L. (2005), 'Fraud survey: Lessons for forensic accountants', *Journal of Forensic Accounting*, Vol. 6, No. 1, pp. 103-118.

Arens, A. A. & Elder, R. J. (2006), 'Perspectives on auditing education after Sarbanes Oxley', *Issues in Accounting Education*, Vol.21, No.4, pp. 345-362.

Australian Accounting Research Foundation [AARF] (2002), *Auditing Standard (AUS) 210 The Auditor's Responsibility to Consider Fraud and Error in an Audit of a Financial Report*.

Australian Government. National Health and Medical Research Council, Australian Research Council and Australian Vice-Chancellors' Committee (2007) *National statement on ethical conduct in human research*. Australia: The Commonwealth Copyright Administration.

Bac, M. & Bag, P. K. (2000), 'Cost-effective control of corruption in public offices'. Available at SSRN: <http://ssrn.com/abstract=240994> or DOI: 10.2139/ssrn.240994.

Bacon, D. R., Sauer, P. L., & Young, M. (1995), 'Composite reliability in structural equations modelling', *Educational and Psychological Measurement*, Vol. 55, No.3, pp. 394-406.

Bagozzi, R. P. & Yi, Y. (1988) 'On the evaluation of structural equation models'. *Journal of the Academy of Marketing Science*, Vol. 16, No. 1, pp. 74-94.

Bamber, E. M. & Iyer, V. M. (2007), 'Auditors' identification with their clients and its effect on auditors' objectivity', *Auditing: A Journal of Practice & Theory*, Vol. 26, No. 2, pp. 1-24.

Bardhan, P. (1997), 'Corruption and development: A review of issues', *Journal of Economic Literature*, Vol. 35, No. 3, pp. 1320-1346.

Barr, A. & Galpeer, I. (1987), 'McKesson & Robbins', *Journal of Accountancy*, Vol. 163, No. 5, pp. 159-161.

Bearden, W. O., Netemeyer, R. G. & Mobley, M. (1993), *Handbook of Marketing Scales: Multi-Item Measures for Marketing and Consumer Behaviour*, Newbury Park, CA: Sage.

Bentler, P. M. (1980), 'Multivariate analysis with latent variables: Causal modelling', *Annual Review of Psychology*, Vol. 31, pp. 419-456.

Bentler, P. M. (1983), 'Some contributions to efficient statistics in structural models: Specification and estimation of moment structures', *Psychometrika*, Vol. 48, No. 4, pp. 493-517.

Bentler, P.M. (1995) *EQS Structural Equations Program Manual*, Encino, CA: Multivariate Software Inc., p. 272.

Bentler, P. M. & Bonett, D. G. (1980). 'Significance tests and goodness-of-fit in the analysis of covariance structures', *Psychological Bulletin*, Vol. 88, No. 3, pp. 588-606.

Bentler, P. M. & Chou, C. P. (1987), 'Practical issues in structural modeling', *Sociological Methods & Research*, Vol. 16, No. 1, pp. 78-117.

Bezanis, C. Z. (2002), 'Fraud 101: What should I be looking for?', *Practice Advantage Newsletter Illinois CPA Society*, Vol.1, No.12. Retrieved May 31, 2007, from <http://www.icpas.org/icpas/sia/practice/fraud101.pdf>.

Bernardi, R. A. (1994), 'Fraud detection: the effect of client integrity and competence and auditor cognitive style', *Auditing*, Vol. 13, pp. 68-84.

Blalock, H. M. (1964), 'Four-variable causal models and partial correlations', *American Journal of Sociology*, Vol. 68, No. 2, pp. 182-194.

Black's Law Dictionary (1990) *Legal Definitions*. Available at: <http://www.trufax.org/reports/legal.html>.

Blackburn, R. (1993) *The Psychology of Criminal Conduct: Theory, Research, and Practice*, Chichester: John Wiley & Sons.

Bloomfield, R. J. (1997), 'Strategic dependence and the assessment of fraud risk: A laboratory study'. *The Accounting Review*, Vol. 72, No. 4, pp. 517-538.

Bollen, K. A. (1989) *Structural Equations with Latent Variables*. New York: Wiley.

Bollen, K. A. (1990), 'Overall fit in covariance structure models: Two types of sample size effects', *Psychological Bulletin*, Vol. 107, No. 2, pp. 256-259.

Bollen, K. & Lennox, R. (1991), 'Conventional wisdom on measurement: A structural equation perspective', *Psychological Bulletin*, Vol. 110, No. 2, pp. 305-314.

Bollen, K. & Long, J. S. (eds.) (1993) *Testing Structural Equation Models*. Newbury Park., CA: Sage.

Bolton, R.J. & Hand, D.J. (2002), 'Statistical fraud detection: A review', *Statistical Science*, Vol. 17, No. 3, pp. 235-249.

Boomsma, A. (1985), 'Nonconvergence, improper solutions, and starting values in LISREL maximum likelihood estimation', *Psychometrika*, Vol. 52, No. 2, pp. 345-370.

Brannick, M. T. (1995), 'Critical comments on applying covariance structure modeling', *Journal of Organizational Behavior*, Vol. 16, No. 3, pp. 201-213.

Braun, R. L. (2000) 'The effect of time pressure on auditor attention to qualitative aspects of misstatements indicative of potential fraudulent financial reporting', *Accounting, Organizations and Society*, Vol. 25, No. 3, pp. 243-259.

Brockett, P. L., Derrig, R. A., Golden, L. L., Levine, A. & Alpert, M. (2002), 'Fraud classification using principal component analysis of RIDITs', *Journal of Risk and Insurance*, Vol. 69, No. 3, pp. 341-371.

Brown, R. A. (2006), 'Indonesian corporations, cronyism, and corruption', *Modern Asian Studies*, Vol. 40, No. 4, pp. 953-992.

Brown, T. A. (2006), *Confirmatory Factor Analysis for Applied Research*, New York: the Guilford Press.

Browne, M. W. (1984), 'Asymptotically distribution-free methods for the analysis of covariance structures', *British Journal of Mathematical and Statistical Psychology*, Vol. 37, pp. 62-83.

Browne, M. W. & Cudeck, R. (1993), 'Alternative ways of assessing model fit', in Bollen, K. A. & Long, J. S. (eds.) *Testing Structural Equation Models*. Newbury Park, CA: Sage.

Burt, R. S. (1973), 'Confirmatory factor-analytic structures and the theory construction process', *Sociological Methods and Research*, Vol. 2, No. 2, pp. 131-190.

Burt, R. S. (1976), 'Interpretational confounding of unobserved variables in structural equation models', *Sociological Methods and Research*, Vol. 5, No. 1, pp. 3-52.

Byrne, B. M. (2001), *Structural Equation Modeling with AMOS: Basic Concepts, Applications and Programming*, New Jersey: Lawrence Erlbaum Associates, Inc.

Campbell, D.T. & Fiske, D.W. (1959), 'Convergent and discriminant validation by the multitrait-multimethod matrix', *Psychological Bulletin*, Vol. 56, No. 2, pp. 81-105.

Carmines, E. G. & McIver, J. P. (1981), 'Analyzing models with unobservable variables', in Bohrnstedt, G. W. & Borgatta, E. F. (eds.) *Social Measurement: Current Issues*. Beverly Hills: Sage.

Carpenter, T. D. & Reimers, J. L. (2005), 'Unethical and fraudulent financial reporting: applying the theory of planned behavior', *Journal of Business Ethics*, Vol. 60, No. 2, pp. 115-129.

Chapman, B. & Denniss, R. (2005), 'Using financial incentives and income contingent penalties to detect and punish collusion and insider trading', *The Australian and New Zealand Journal of Criminology*, Vol. 38, No. 1, pp. 122-140.

Chen, C. C., Chen, X. & Meindl, J.R. (1998), 'How can cooperation be fostered? The cultural effects of individualism-collectivism', *Academy of Management Review*, Vol. 23, No. 2, pp. 285-304.

Chen, Y., Yasar, M. & Rejesus, R.M. (2008), 'Factors influencing the incidence of bribery payouts by firms: A cross-country analysis', *Journal of Business Ethics*, Vol. 77, No. 2, pp. 231-244.

Churchill, G. A. (1979), 'A paradigm for developing better measures of marketing constructs', *Journal of Marketing Research*, Vol. 16, No. 1, pp. 64-73.

Cliff, N. & Hamburger, C. D. (1967), 'The study of sampling errors in factor analysis by means of artificial experiments', *Psychological Bulletin*, Vol. 68, No. 6, pp. 430-445.

Coase, R. H. (1937), 'The nature of the firm', *Economica*, Vol. 4, No. 16, pp. 386-405.

Cohen, L. E. & Felson, M. (1979), 'Social change and crime rate trends: A routine activity approach', *American Sociological Review*, Vol. 44, No. 4, pp. 588-608.

Conner, M. & Armitage, C. J. (1998), 'Extending the theory of planned behavior: A review and avenues for further research', *Journal of Applied Social Psychology*, Vol. 28, No. 15, pp. 1429-1464.

Cordeiro, W. P. (1997), 'Suggested management responses to ethical issues raised by technological change', *Journal of Business Ethics*, Vol. 16, No. 12/13, pp. 1393-1400.

Cressey, D. R. (1950), 'The criminal violation of financial trust', *American Sociological Review*, Vol. 15, No. 6, pp. 738-743.

Cressey, D. R. (1973), *Other People's Money*, (reprinted) New Jersey: Patterson Smith Publishing.

Cribbie, R. A. (2007), 'Multiplicity control in structural equation modelling', *Structural Equation Modeling*, Vol. 14, No. 1, pp. 98-112.

Crow, P. (1999), 'Indonesian reforms', *Oil & Gas Journal*, Vol. 97, No. 30, pp. 30.

Crowfoot, P. (2004) 'Fraud in the Workplace', issue December/January; *NSW Business Chamber*, Available at: [http://www.abdefence.com.au/?content=/channels/Building\\_and\\_sustaining\\_business/Finance/Theft\\_and\\_fraud/fraud\\_in\\_the\\_workplace.xml](http://www.abdefence.com.au/?content=/channels/Building_and_sustaining_business/Finance/Theft_and_fraud/fraud_in_the_workplace.xml).

Cudeck, R. & Browne, M. W. (1983), 'Cross-validation of covariance structures', *Multivariate Behavioral Research*, Vol 18, No. 2, pp. 147-167.

Cunningham, G. M. & Harris, J. E. (2006), 'Enron and Arthur Andersen: the case of the crooked E and the fallen A', *Global Perspectives on Accounting Education*, Vol. 3, pp. 27-48.

Curran, P. J., West, S. G & Finch, J. F. (1996), 'The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis'. *Psychological Methods*, Vol.1, No.1, pp. 16-29.

Darby, M. R. (1973) 'Entrepreneurship, the Firm, and the General Market Information Problem', *IDEAS: UCLA Economics Working Papers, UCLA Department of Economics*. Available at: <http://www.econ.ucla.edu/workingpapers/wp033.pdf>.

Darby, M. R. & Karni, E. (1973), 'Free competition and the optimal amount of fraud', *Journal of Law and Economics*, Vol. 16, No. 1, pp. 67-88.

Davia, H. R., Coggins, P. C., Wideman, J. C. & Kastantin, J. T. (2000), *Accountant's Guide to Fraud Discovery and Control*, (2nd edn.) New York: John Wiley & Sons, p.79.

David, K. (2003), 'Following the money: the Enron failure and the state of corporate disclosure', *Perspectives on Political Science*, Vol. 32, No. 3, p. 168.

Davidson, S., Juwono, V. & Timberman, D. G. (2006) *Curbing corruption in Indonesia*. Available at:  
[http://www.usindo.org/publications/reports/pdf/korupsi\\_web.pdf](http://www.usindo.org/publications/reports/pdf/korupsi_web.pdf).

Demsetz, H. & Lehn, K. (1985), 'The structure of corporate ownership: causes and consequences', *The Journal of Political Economy*, Vol. 93, No. 6, pp. 1155-1177.

Deshmukh, A., Romine, J. & Siegel, P. H. (1997), 'Measurement and combination of red flags to assess the risk of management fraud: a fuzzy set approach', *Managerial Finance*, Vol. 23, No. 6, pp. 35-48.

Deshmukh, A., Karim, K. E. & Siegel, P. H. (1998), 'An analysis of efficiency and effectiveness of auditing to detect management fraud: A signal detection theory approach', *International Journal of Auditing*, Vol. 2, No. 2, pp. 127-138.

DeVellis, R. F. (1991) *Scale Development: Theory and Applications*, Newbury Park, Calif: Sage.

Ding, L., Velicer, W. F., & Harlow, L. L. (1995). Effects of estimation methods, number of indicators per factor and improper solutions on structural equation modeling fit indices. *Structural Equation Modeling*, Vol. 2, No. 2, pp. 119-143.

Dohr, J. L. (1941), 'Findings and opinions: McKesson and Robbins, Inc.', *Journal of Accountancy*, Vol. 71, No. 1, pp. 90-95.

Doost, R. K. (2003), 'Enron, Arthur Anderson and the Catholic Church: Are these symptoms of a more chronic problem?', *Managerial Auditing Journal*, Vol. 18, No. 8, pp. 673-681.

Doost, R. K. (2004), 'Bigger than any code of ethics and rules of audit: Civilization - from divisive barbarity to the birth of a new age', *Managerial Auditing Journal*, Vol. 19, No. 8/9, pp. 1173-1186.

Duggar, E. & Duggar, M. (2004), 'Corruption, culture and organizational form'. Available at SSRN: <http://ssrn.com/abstract=770889>.

Duska, R. (2005), 'The good auditor - skeptic or wealth accumulator? Ethical lessons learned from the Arthur Andersen debacle', *Journal of Business Ethics*, Vol. 57, No.1, pp. 17-29.

Dutton, J. E. & Dukerich, J. M (1991), 'Keeping an eye on the mirror: Image and identity in organizational adaptation', *Academy of Management Journal*, Vol. 34, No. 3, pp. 517-554.

Dutton, J. E., Dukerich, J. M. & Harquail, C. V (1994), 'Organizational images and member identification', *Administrative Science Quarterly*, Vol. 39, No. 2, pp. 239-263.

Dutton, J. E. & Duncan, R. B. (1987), 'The creation of momentum for change through the process of strategic issue diagnosis', *Strategic Management Journal*, Vol. 8, No. 3, pp. 279-295.

Dye, K. M. (2007a), 'Corruption and fraud detection by public sector auditors', *EDPACS*, Vol. No. 5/6, pp. 6-15.

Dye, K. M. (2007b), 'Corruption and fraud detection by supreme audit institutions', in Shah, Anwar (ed.) *Performance Accountability and Combating Corruption*, Washington: The World Bank. Available at The World Bank : [siteresources.worldbank.org/PSGLP/Resources/PerformanceAccountabilityandCombatingCorruption.pdf](http://siteresources.worldbank.org/PSGLP/Resources/PerformanceAccountabilityandCombatingCorruption.pdf).

Elliot, R. (2007), 'The language of deception', *Security Management*, Vol. 51, No. 4, p. 41.

Enders, C. K. & Bandalos, D. L. (2001), 'The relative performance of full information maximum likelihood estimation for missing data in structural equation models', *Structural Equation Modeling*, Vol. 8, No. 3, pp. 430-459.

Everitt, B. S., (1975), 'Multivariate analysis: the need for data and other problems', *British Journal of Psychiatry*, Vol. 126, No. 3, pp. 237-240.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C. & Strahan, E. J. (1999), 'Evaluating the use of exploratory factor analysis in Psychological Research', *Psychological Methods*, Vol. 4, No. 3, pp. 272-299.

Fama, E. F. (1970), 'Efficient capital market: a review of theory and empirical work', *The Journal of Finance*, Vol. 25, No. 2, pp. 383-417.

Feroz, E. H., Kwon, T. M., Pastena, V. S. & Park, K. (2000), 'The efficacy of red flags in predicting the SEC's targets: An artificial neural networks approach', *International Journal of Intelligent Systems in Accounting, Finance and Management*, Vol. 9, No. 3, pp. 145-157.

Fornell, C. & Larcker, D. F. (1981), 'Evaluating structural equations model with unobservable variables and measurement error', *Journal of Marketing Research*, Vol. 18, No. 1, pp. 39-50.

*Fraud examiners manual* (2003) [CD-ROM]. Association of Certified Fraud Examiners. Available: Association of Certified Fraud Examiners, Inc.

George, W. W. (2002), 'Restoring governance to our corporations: Crisis in the corporate world', *Vital Speeches of the Day*, Vol. 68, No. 24, pp. 791-796.

George, G. (2007), 'Accounting, auditing and auditor – what is to be done?', *Australian Journal of Corporate Law*, Vol.20, No. 3, pp. 51-56.

Gerbing, D. W. & Anderson, J. C. (1992), 'Monte Carlo evaluations of goodness of fit indices for structural equation models. *Sociological Methods and Research*, Vol. 21, No. 2, pp. 132-160.

Gerety, M. & Lehn, K. (1997), 'The causes and consequences of accounting fraud' *Managerial and Decision Economics*, Vol. 18, No. 7/8, pp. 587-599.

Gersten, A. (1999), 'Eastern exposure', *Journal of Accountancy*, Vol. 188, No. 2, pp. 53-57.

Gillett, P. R. & Uddin, N. (2005), 'CFO intentions of fraudulent financial reporting' *Auditing*, Vol. 24, No.1, pp. 55-75.

Goldberg, L. R. (1970), 'Man versus model of man: A rationale, plus some evidence, for a method of improving on clinical', *Psychological Bulletin*, Vol. 73, No. 6, pp. 422-432.

Gordon, D. I. (2006), 'Constructing a bid protest process: The choices that every procurement challenge system must make', *Public Contract Law Journal*, Vol. 35, No. 3, pp. 427-445.

Gorsuch, R. L. (1983) *Factor Analysis*. Hillsdale, New Jersey: Erlbaum.

Grabosky, P. N. & Smith, R. G. (1996), 'Fraud: An Overview of Current and Emerging Risks' *Trends & Issues in Crime and Criminal Justice* No. 62. Available at the NCJRS Library collection: <http://www.ncjrs.gov/App/Publications/abstract.aspx?ID=169673>.

Graham, L. & Bedard, J.C. (2003), 'Fraud risk and audit planning', *International Journal of Auditing*, Vol. 7, No. 1, pp. 55–70.

Graycar, A. (2000), 'Fraud prevention and control in Australia'. *The Fraud Prevention and Control Conference*. The Australian Institute of Criminology in association with the Commonwealth Attorney-General's Department, Surfers Paradise, Queensland, 24-25 August. Available at: [www.aic.gov.au/conferences/fraud/graycar.pdf](http://www.aic.gov.au/conferences/fraud/graycar.pdf).

Green, B. P. & Choi, J. H. (1997), 'Assessing the risk of management fraud through neural network technology', *Auditing*, Vol. 16, No. 1, pp. 14-28.

Haig, B. D. (2005), 'Exploratory factor analysis, theory generation, and scientific method', *Multivariate Behavioral Research*, Vol. 40, No. 3, pp. 303-329.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E. & Tatham, R.L. (eds.) (2006), *Multivariate Data Analysis* (6th edn.) New Jersey: Pearson Education.

Hall, R. (1993), 'A framework linking intangible resources and capabilities to sustainable competitive advantage', *Strategic Management Journal*, Vol. 14, No. 8, pp. 607-618.

Hambrick, D. C. & Mason, P. A. (1984), 'Upper echelons: The organization as a reflection of its top managers', *Academy of Management Review*, Vol. 9, No. 2, pp. 193-206.

Haslam, S. A. (2004), *Psychology in Organizations: The Social Identity Approach* (2nd edn.) California: Sage Publications, Inc., p.17.

Hattie, J. (1985), 'Methodology review: Assessing unidimensionality of tests and items'. *Applied Psychological Measurement*, Vol. 9, No. 2, pp. 139-164.

Hayduk, L. (2008, January 16), 'Cut-off values for robust fit indices', message posted to [semnet@bama.ua.edu](mailto:semnet@bama.ua.edu).

Hayduk, L. & Glaser, D. N. (2000a), 'Jiving the four-step, waltzing around factor analysis, and other serious fun' *Structural Equation Modeling*, Vol. 7, No. 1, pp. 1 – 35.

Hayduk, L. & Glaser, D. N. (2000b), 'Doing the four step, right 2-3, wrong 2-3: A brief reply to Mulaik and Millsap; Bollen; Bentler; and Herting and Costner', *Structural Equation Modeling*, Vol. 7, No. 1, pp. 111 – 123.

Hayduk, L. & Pazderka-Robinson, H. (2007), 'Fighting to understand the world causally: three battles connected to the causal implications of structural equation models, in Outhwaite, W. & Turner, S. P. (eds.) *The SAGE handbook of social science methodology*. Los Angeles, London: SAGE.

Hayes, H. & Prenzler, T. (2003), 'Profiling Fraudsters: A Queensland Case Study in Fraudster Crime; final report to Crime Prevention Queensland' issue February. Available at Australian Institute of Criminology: <http://www.aic.gov.au/research/fraud/ProfilingFraudsters.html>

Heeler, R. M., Whipple, T. W. & Hustad, T. P. (1977), 'Maximum likelihood factor analysis of attitude data', *Journal of Marketing Research*, Vol. 14, No. 1, pp. 42-51.

Herting, J.R., & Costner, H.L. (1985). Respecification in Multiple Indicator Models. In H.M. Blalock (Ed.) *Causal Models in the Social Sciences* (2nd ed., pp. 321-393). New York: Aldine.

Hillison, W., Pacini, C. & Sinason, D. (1999), 'The internal auditor as fraud-buster', *Managerial Auditing Journal*, Vol. 14, No. 7, pp. 351-362.

Holmes, S. A., Langford, M., Welch, O. J. & Welch, S. T. (2002), 'Associations between internal controls and organizational citizenship behavior', *Journal of Managerial Issues*, Vol. 14, No.1, pp. 85-99.

Hogg, M. A., Terry, D. J. & White, K.M. (1995), 'A Tale of two theories: A critical comparison of identity theory with social identity theory', *Social Psychology Quarterly*, Vol. 58, No. 4, pp. 255-269.

Hooks, K. L., Kaplan, S. E., Schultz, J. J. & Ponemon, L. A., (1994), 'Enhancing communication to assist in fraud prevention and detection', *Auditing*, Vol. 13, No. 2, pp. 86-130.

Hough, J. M, Clarke, R.V.G. and Mayhew, P. (1980), 'Introduction', in Clarke, R.V.G. & Mayhew, P. (eds.) *Designing out Crime*, London: Her Majesty's Stationery Office.

Hu, L., Bentler, P. M. & Kano, Y. (1992), 'Can test statistics in covariance structure analysis be trusted? *Psychological Bulletin*, Vol. 112, pp. 351-362.

Hu, L. & Bentler, P. M. (1995), 'Evaluating model fit', in Hoyle, R. H. (Ed.), *Structural equation modelling: Issues, concepts, and applications*. Newbury Park, CA: Sage.

Hu, L. & Bentler, P. M. (1998), 'Fit indices in covariance structure modelling: sensitivity to underparameterized model misspecification', *Psychological Methods*, Vol.3, No.4, pp. 424-453.

Hu, L. & Bentler, P. M. (1999), 'Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives', *Structural Equation Modeling*, Vol. 6, No. 1, pp. 1-55.

Humphrey, H. H., (1997), 'Let's take the time to get it right', *Public Health Reports*, Vol.112, No. 5, pp. 378-385.

Hurley, A. E., Scandura, T.A., Schriesheim, C. A., Brannick, M. T., Seers, A., Vanderberg, R. J. & Williams, L. J. (1997), 'Exploratory and confirmatory factor analysis: guidelines, issues, and alternatives', *Journal of Organizational Behavior*, Vol. 18, No. 6, pp. 667-683.

Ilgen, D. R., Fisher, C. D. & Taylor, M.S. (1979), 'Consequences of individual feedback on behavior in organizations', *Journal of Applied Psychology*, Vol. 64, No. 4; pp. 349-371.

International Federation of Accountants (IFAC) (2007), *International Standards on Auditing (ISA) No. 240 (Redrafted), The Auditor's Responsibilities Relating to Fraud in an Audit of Financial Statements*.

International Federation of Accountants (IFAC) (2008), *International Standards on Auditing (ISA) No. 505 (Revised and Redrafted), External Confirmations*.

Jackson, S. E. & Dutton, J. E. (1988), 'Discerning threats and opportunities', *Administrative Science Quarterly*, Vol.33, No. 3, pp. 370-387.

Jacob, N. L. & Page, A. N. (1980), 'Production, information costs, and economic organization: the buyer monitoring case', *The American Economic Review*, Vol. 70, No. 3, pp. 476-478.

James, L. R. & James, L. A. (1989), 'Causal modelling in organizational research, in Cooper, C. L. & Robertson, I. (eds.) *International Review of Industrial and Organizational Psychology*', New York: John Wiley.

James, L. R., Mulaik, S. S., Brett, J. M. (1982), *Causal Analysis: Assumptions, Models and Data*, Sage, Beverly Hills, CA.

Jarell, G. A. & Bradley, M. (1980), 'The economic effects of federal and state regulations of cash tender offers', *Journal of Law and Economics*, Vol. 23, No. 2, pp. 371-407.

Jarvis, C. B., Mackenzie, S. B. & Podsakoff, P. M. (2003), 'A critical review of construct indicators and measurement model misspecification in marketing and consumer research', *Journal of Consumer Research*, Vol. 30, No. 2, pp. 199-218.

Jensen, M. C. & Meckling, W.H. (1976), 'Theory of firm: managerial behavior, agency costs and ownership structure', *Journal of Financial Economics*, Vol. 3, No. 4, pp. 305-360.

Johnson, K. P. (1980), 'The auditor's responsibility to detect fraud-I', *The CPA Journal*, Vol. 50, No.12, pp. 10-19.

Jones, J. M. (2002), 'Americans decidedly negative toward Arthur Andersen, Enron', *GALLUP*, issue May 1, Available at: <http://www.gallup.com/poll/5929/Americans-Decidedly-Negative-Toward-Arthur-Andersen-Enron.aspx>.

Jordan, E. (1935), 'Crime, law, and social science', *International Journal of Ethics*, Vol. 6, No. 1, pp. 109-114.

Jöreskog, K. G. (1978), 'Structural analysis of covariance and correlation matrices', *Psychometrika*, Vol. 43, No. 4, pp. 443-477.

Jöreskog, K. G. (1993), 'Testing structural equations models', in Bollen, K. A. & Long, J. S. (eds.) *Testing Structural Equations Models*, Newbury Park, CA: Sage.

Jöreskog, K. G. & Sörbom, D. (1984) *LISREL VI: Analysis of Linear Structural Relationships by the Method of Maximum Likelihood*, Mooresville IN: Scientific Software, Inc.

Jöreskog, K. G. & Sörbom, D. (1993). *Structural Equation Modeling with the SIMPLIS Command Language*. Chicago: Scientific Software.

Judge, W. Q. & Elenkov, D. (2005), 'Organizational capacity for change and environmental performance: an empirical assessment of Bulgarian firms', *Journal of Business Research*, Vol. 58, No. 7, pp. 893-901.

Kammen, D. A. (1997) *A time to strike: Industrial strikes and changing class relations in new order Indonesia*. PhD thesis. Cornell University.

Kantor, M. (2002), 'The limitations of arbitration', *Journal of Structured and Project Finance*, Vol. 8, No. 3, p. 42

Kaplan, D. (2000) *Structural Equation Modeling: Foundation and Extensions*. Thousand Oaks, CA: Sage Publications.

Kaplan, S. E., Roush, P. B. & Thorne, L. (2007), 'Andersen and the Market for Lemons in Audit Reports', *Journal of Business Ethics*, Vol. 70, No. 4, pp. 363-373.

Katsoris, C. N. (2002), 'Panel discussion: Enron: What went wrong?', *Fordham Journal of Corporate & Financial Law*, Vol. 8, pp. S1-S46.

Katyal, N. K. (2003), 'Conspiracy theory', *The Yale Law Journal*, Vol. 112, No. 6, pp. 1307-1398.

Kelloway, E. K. (1995), 'Structural equation modelling in perspective', *Journal of Organizational Behavior*, Vol. 16, No. 3, pp. 215-224.

Kenny, D. A. & McCoach, D. B. (2003), 'Effect of the number of variables on measures of fit in structural equations modeling', *Structural Equations Modeling*, Vol. 10, No. 3, pp. 333-351.

Khalil, F. & Lawarre, J. (2006), 'Incentives for corruptible auditors in the absence of commitment', *Journal of Industrial Economics*, Vol. 54, No. 2, pp. 269-291.

Kleinmuntz, B. (1990), 'Why we still use our heads instead of formulas: toward an integrative approach', *Psychological Bulletin*, Vol. 107, No. 3, pp. 296-310.

Kofman, F. & Lawarree, J. (1993), 'Collusion in hierarchical agency', *Econometrica*, Vol. 61, No. 3, pp. 629-656.

Komorita, S. S. & Park, C.D. (1995), 'Interpersonal relations: mixed-motive interaction', *Annual Review of Psychology*, Vol. 46, pp. 183-207.

Koskivaara, E. (2004), 'Artificial neural networks in analytical review procedures', *Managerial Auditing Journal*, Vol. 19, No. 2, pp. 191-223.

Krambia-Kapardis, M. (1999) *Enhancing the auditor's fraud detection ability: An interdisciplinary approach*. PhD thesis. Edith Cowan University, Australia.

Krambia-Kapardis, M. (2001), *Enhancing the Auditor's Fraud Detection Ability: An Interdisciplinary Approach*, Frankfurt am Main: Peter Lang.

Krambia-Kapardis, M. (2002), 'A fraud detection model: a must for auditors', *Journal of Financial Regulation*, Vol. 10, No. 3, pp. 266-278.

Kranacher, M. & Stern, L. (2004) 'Enhancing Fraud Detection Through Education' issue November; *The CPA Journal*, Available at: <http://www.nyscpa.org/cpajournal/2004/1104/essentials/p66.htm>.

Kuncoro, A. (2004), 'Bribery in Indonesia: some evidence from micro-level data', *Bulletin of Indonesian Economic Studies*, Vol. 40, No. 3, pp. 329-354.

Kuncoro, A. (2006), 'Corruption and business uncertainty in Indonesia', *ASEAN Economic Bulletin*, Vol. 23, No. 1, pp. 11-30.

Kurland, N. B. (1996), 'Sales agents and clients: ethics, incentives, and a modified theory of planned behavior', *Human Relations*, Vol. 49, No. 1, pp. 51-74.

LaDu, T. J. & Tanaka, J. S. (1989), 'Influence of sample size, estimation method, and model specification on goodness-of-fit assessments in structural equation models', *Journal of Applied Psychology*, Vol. 74, No. 4, pp. 625-635.

Lafrentz, F. W. (1924), 'Defalcations', *Journal of Accountancy*, Vol. 37, No. 4, pp. 254-261.

Lanham, D. (1997), *Cross-Border Criminal Law*, Sydney: John Libbey & Co.

Lewis, B. R., Templeton, G. F. & Byrd, T. A. (2005), 'A methodology for construct development in MIS research', *European Journal of Information Systems*, Vol. 14, No. 4, pp. 388-400.

Libby, R. & Libby, P.A. (1989), 'Expert measurement and mechanical combination in control reliance decisions', *The Accounting Review*, Vol. 64, No. 4, pp. 729-747.

Loebbecke, J. K., Eining, M. M. & Willingham, J. J. (1989), 'Auditors' experience with material irregularities: frequency, nature, and detectability', *Auditing*, Vol. 9, No.1, pp. 1-28.

Loft, A., Humphrey, C. & Turley, S. (2006), 'In pursuit of global regulation: changing governance and accountability structures at the International Federation of Accountants (IFAC)', *Accounting, Auditing & Accountability Journal*, Vol. 19, No. 3, pp. 428-451.

Louis, K. (1995), 'How corrupt is Asia?', *Fortune*, Vol. 132, No. 4, p. 26.

MacCallum, R. C. (2003), 'Working with imperfect models', *Multivariate Behaviour Research*, Vol. 38, No. 1, pp. 113- 139.

MacCallum, R. C., Roznowski, M. & Necowitz, L. B. (1992), 'Model modification in covariance structure analysis: The problem of capitalization on chance', *Psychological Bulletin*, Vol. 111, No. 3. pp. 490–504.

MacCallum, R. C., Widiman, K. F., Zhang, S. & Hong, S. (1999), 'Sample size in factor analysis', *Psychological Methods*, Vol. 4, No. 1, pp. 84-99.

Macmullen, A. (1999), 'Fraud, mismanagement and nepotism: the committee of independent experts and the fall of the European Commission 1999', *Crime, Law and Social Change*, Vol. 31, No. 3, pp. 193-208.

Malhotra, N. K. (2004) *Marketing research: an applied orientation* (4th ed.) Upper Saddle River, N.J.: Pearson Prentice-Hall.

Marsh, H. W. & Balla, J. (1994), 'Goodness-of-fit in CFA: The effects of sample size and model parsimony. *Quality & Quantity: International Journal of Methodology*, Vol. 28, No. 2, pp. 185-217.

Marsh, H. W., Balla, J. R. & McDonald, R. P. (1988a), 'Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size, *Psychological Bulletin*, Vol. 103, No. 3, pp. 391-410.

Marsh, H. W., Hau, K.-T., Balla, J. R., & Grayson, D. (1988b), 'Is more ever too much? The number of indicators per factors in confirmatory factor analysis', *Multivariate Behavioural Research*, Vol. 33, No. 2, pp. 181-222.

Marsh, H. W., Hau, K.-T., & Wen, Z. (2004), 'In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings', *Structural Equation Modeling*, Vol. 11, No.3, pp. 320-341.

Marsh, H. W. & Hocevar, D. (1985), 'Applications of confirmatory factor analysis to the study of self-concept: first and higher order factor models and their invariance across groups. *Psychological Bulletin*, Vol. 97, No. 3, pp. 562-582.

Mangione, T. (1995), *Mail surveys: Improving the Quality*, California: Sage Publications.

Maservy, R. D., Romney, M. & Zimbelman, M.F. (2006), 'Certified fraud examiners: a survey of their training, experience and curriculum recommendations', *Journal of Forensic Accounting*, Vol. 7, No. 1, pp. 163-184.

Matsumura, E. M. & Tucker, R. R. (1992), 'Fraud detection: A theoretical foundation, *The Accounting Review*, Vol. 67, No. 4, pp. 753-782.

McCormick, J. T. & Paterson, N. (2006), "The Threat Posed by Transnational Political Corruption to Global Commercial and Development Banking", *Journal of Financial Crime*, Vol. 13, No. 2, pp. 183-194.

McDonald, R. P. (1981), 'The dimensionality of tests and items', *British Journal of Mathematical and Social Psychology*, Vol. 34, No. 1, pp. 100-117.

McDonald, R. P. & Marsh, H. W. (1990), 'Choosing a multivariate model: Noncentrality and goodness-of-fit', *Psychological Bulletin*, Vol.107, No. 2, pp. 247-255.

McNamar, R. T. (2003), 'New technology can help avoid a second Enron', *Regulation*, Vol. 26, No. 3, pp. 62-67.

Mead, M. (1976), *Cooperation and Competition among Primitive People*, (reprinted) Boston: Beacon, p.8.

Medsker, G. J, Williams, L. J. & Holahan, P. J. (1994) 'A review of current practices for evaluating causal models in organizational behavior and human resources management research', *Journal of Management*, Vol. 20, No. 2, pp. 439-464.

Michael, J. & Adler, M. J. (1971), *Crime, Law and Social Science*, (reprinted) New Jersey: Patterson Smith Publishing.

Mills, C. W. (1940), 'Situating actions and vocabularies of motive', *American Sociological Review*, Vol. 5, No. 6, pp. 904-913.

Mock, T. J. & Turner, J. L. (2005), 'Auditor identification of fraud risk factors and their impact on audit programs', *International Journal of Auditing*, Vol. 9, No. 1, pp. 59-77.

Mueller, R. O. (1996), 'Basic Principles of Structural Equation Modelling: An Introduction to LISREL and EQS. New York: Springer.

Mulaik, S. A. (2008, July 7), 'Points of agreement', message posted to semnet@bama.ua.edu.

Mulaik, S. A., James, L. R., Van Alstine, J., Bennett, N., Lind, S., & Stilwell, C. D. (1989), 'Evaluation of goodness-of-fit indices for structural equation models', *Psychological Bulletin*, Vol. 105, No. 3, pp. 430-445.

Mulaik, S. A. & Millsap, R. E. (2000), 'Doing the four step right', *Structural Equation Modeling*, Vol. 7, No. 1, pp. 36-73.

Nardo, M. (2008), 'Organised crime and network economy: Models, features, dynamics and related approaches', *Journal of Money Laundering*, Vol.11, No. 2, pp. 172-178.

Nasser, F. & Wisenbaker, J. (2003), 'A monte-carlo study investigating the impact of item parcelling on measures of fit in confirmatory factor analysis', *Educational and Psychological Measurement*, Vol. 63, No. 5, pp. 729-757.

Nelson, P. (1970), 'Information and consumer behavior', *The Journal of Political Economy*, Vol. 78, No. 2, pp. 311-329.

Needleman, M. L. & Needleman, C. (1979), 'Organizational crime: Two models of criminogenesis', *The Sociological Quarterly*, Vol. 20, No. 4, pp. 517-528.

Nieschwietz, R. J., Schultz, J. J. Jr & Zimbelman, M. F. (2000), 'Empirical research on external auditors' detection of financial statement fraud', *Journal of Accounting Literature*, Vol. 19, p. 190-245.

Nunnally, J. C. (1978) *Psychometric Theory* (2nd ed.) New York: Mc Graw-Hill.

Nunnally, J. C. & Bernstein, I. H. (1994) *Psychometric Theory* (3rd ed.) New York: McGraw-Hill Publishing.

Olken, B. A. (2007), 'Monitoring corruption: Evidence from a field experiment in Indonesia', *The Journal of Political Economy*, Vol. 115, No. 2; pp. 200-249.

Outhwaite, W. & Turner, S. P. (eds.) *The SAGE Handbook of Social Science Methodology*. Los Angeles; London: SAGE, 2007.

Pinquet, J., Ayuso, M. & Guillen, M. (2007), 'Selection bias and auditing policies for insurance claims', *Journal of Risk and Insurance*, Vol. 74, No. 2, pp. 425-430.

Pompe, S. (2005) 'Judicial reforms in Indonesia: Transparency, accountability and fighting corruption' *the International Conference and Showcase on Judicial Reforms*, Makati City, Philippines 28-30 November. Available at: [jrn21.supremecourt.gov.ph/forum\\_icsjr/ICSJR\\_Indonesia%20\(S%20Pompe\).pdf](http://jrn21.supremecourt.gov.ph/forum_icsjr/ICSJR_Indonesia%20(S%20Pompe).pdf).

Public Company Accounting Oversight Board (PCAOB) Standing Advisory Group Meeting (2004) *Financial Fraud*. Available at: [http://www.pcaobus.org/Standards/Standing\\_Advisory\\_Group/Meetings/2004/09-08/Fraud.pdf](http://www.pcaobus.org/Standards/Standing_Advisory_Group/Meetings/2004/09-08/Fraud.pdf).

Public Oversight Board Panel on Audit Effectiveness (2000), 'Earnings Management and Fraud' *Report and Recommendations*. Available at: <http://www.pobauditpanel.org/download.html>.

Purbasari, D. P. (2006) *Political connection, trade protection and multinational corporations: Firm-level evidence of patronage in Indonesia*. PhD thesis. University of Colorado at Boulder.

Rabe-Hesketh, S., Skrondal, A. & Pickles, A. (2004), 'Generalized multilevel structural equation modeling', *Psychometrika*, Vol. 69, No. 2, pp. 167-190.

Reed, R. M. & Pence, D. K. (2005), 'Detecting fraud in financial statements: The use of digital analysis as an analytical review procedure', *Journal of Forensic Accounting*, Vol. 6, No. 1, pp. 135-146.

Riahi-Belkaoui, A. & Picur, R. D. (2000), 'Understanding fraud in the accounting environment', *Managerial Finance*, Vol. 26, No. 11, pp. 33-41.

Richardson, J. (2005), 'What price corruption?', *ACN: Asian Chemical News*, Vol. 11, No. 507, p.4.

Robinson, W. S. (1951), 'The logical structure of analytic induction', *American Sociological Review*, Vol. 16, No. 6, pp. 812-818.

Romney, M. B., Albrecht, W. S. & Cherrington, D. J. (1980a), 'Auditors and the detection of fraud' *Journal of Accountancy*, Vol. 149, No. 5, pp. 63-66, 68-69.

Romney, M. B., Albrecht, W. S. & Cherrington, D. J. (1980b), 'Red-flagging the white collar criminal', *Management Accounting*, Vol. 61, No. 9, p. 51-54.

Sacks, S. E. (2004), 'Fraud risk: Are you prepared?', *Journal of Accountancy*, Vol. 198, No. 3, pp. 57-62.

Sanchirico, C. W. (2006), 'Detection avoidance', *New York University Law Review*. Vol. 81, No. 4, pp. 1331-1399.

Savalei, V. & Bentler, P. M. (2006), 'Structural equation modelling, in Grover, R., & Vriens, M. (eds.) *The Handbook of Marketing Research: Uses, Misuses, and Future Advances*. California: Sage Publications.

Schermelleh-Engel, K. & Moosbrugger, H. (2003) 'Evaluating the fit of structural equation models: Test of significance and descriptive goodness-of-fit measures', *Methods of Psychological Research Online*, Vol. 8, No. 2, pp. 23-74.

Schmuckle, S. C. & Hardt, J. (2005), 'A cautionary note on incremental fit indices reported by LISREL', *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences*, Vol 1, No. 2, pp. 81-85.

Sethi V. & King, W. R. (1991), 'Construct measurement in information systems research: An illustration in strategic systems', *Decision Sciences*, Vol. 22, No. 3, pp. 455-472.

Shapiro, S. P. (1990), 'Collaring the crime, not the criminal: reconsidering the concept of white-collar crime', *American Sociological Review*, Vol. 55, No. 3, pp. 346-365.

Sharma, S., Mukherjee, S., Kumar, A. & Dillon, W. R. (2005), 'A simulation study to investigate the use of cutoff values for assessing model fit in covariance structure models', *Journal of Business Research*, Vol. 58, No. 7, pp. 935-943.

Shen, C. & Chih, H. (2007), 'Earnings management and corporate governance in Asia's Emerging Markets', *Corporate Governance: An International Review*, Vol. 15, No. 5, pp. 999–1021.

Smidts, A., Pruyn, A. T. H. & Van Riel, C. B. M. (2001), 'The impact of employee communication and perceived external prestige on organizational identification', *Academy of Management Journal*, Vol. 49, No. 5, pp. 1051-1062.

Smith, T. R. (2004), 'Low self-control, staged opportunity, and subsequent fraudulent behavior'. *Criminal Justice and Behavior*. Thousand Oaks: Oct 2004. Vol. 31, No. 5, pp. 542-563.

Smitherman, H. O. & Brodsky, S. L. (1983), *Handbook of Scales for Research in Crime and Delinquency*, New York: Plenum Press.

Somers, M. J. (2001), 'Ethical codes of conduct and organizational context: a study of the relationship between codes of conduct, employee behavior and organizational values', *Journal of Business Ethics*, Vol. 30, No. 2, pp. 185-195.

Spearman, C. (1904), 'General Intelligence Objectively Determined and Measured', *American Journal of Psychology*, Vol. 15, No. 2, pp. 201 -293.

Spearman, C. (1927) *The abilities of man*. New York: Mac-millan.

Steane, P. & Cockerell, R. (2005) 'Developing a fraud profile method: A step in building institutional governance', *Ethics and Integrity of Governance Conference: A Transatlantic Dialogue*, the Public Management Institute Katholieke Universiteit, Leuven, 2nd-5th June. Available at: [soc.kuleuven.be/io/ethics/paper/Paper%20WS3\\_pdf/Peter%20Steane.pdf](http://soc.kuleuven.be/io/ethics/paper/Paper%20WS3_pdf/Peter%20Steane.pdf).

Stewart, J. & Kringas, P. (2003), 'Change management - strategy and values in six agencies from the Australian Public Service', *Public Administration Review*, Vol. 63, No. 6, pp. 675-688.

Stigler, G. J. (1961), 'The economics of information', *The Journal of Political Economy*, Vol. 69, No. 3, pp. 213-225.

Sudman, S. & Bradburn, N. M. (1986) *Asking Questions: A Practical Guide to Questionnaire Design*, San Fransisco, CA: Jossey-Bass Publishers.

Sutherland, E. H. (1941), 'Crime and Business', *The ANNALS of the American Academy of Political and Social Science*, Vol. 217, No. 1, pp. 112-118.

Sutton, R. I. & Callahan, A.L. (1987), 'The stigma of bankruptcy: spoiled organizational image and its management', *Academy of Management Journal*, Vol.30, No.3, pp. 405-436.

Sykes, G. M. & Matza, D. (1957), 'Techniques of neutralization: a theory of delinquency', *American Sociological Review*, Vol. 22, No. 6, pp. 664-670.

Tabachnick, B. G. & Fidell, L. S. (2001), *Using Multivariate Statistics* (4th edn.) Boston: Allyn and Bacon.

Teh, Y. K. (1997), 'The Future fraud and corruption scenario in developing and developed Countries', *Journal of Financial Crime*, Vol. 5, No. 1, pp. 58 – 65.

Tillman, R. & Indergaard, M. (2007), 'Control overrides in financial statement fraud'. Available at the Institute for Fraud Prevention (IFP): [www.theifp.org/research%20grants/control%20overrides\\_final.pdf](http://www.theifp.org/research%20grants/control%20overrides_final.pdf).

Transparency International (2008) *Corruption perceptions index (CPI)*. [http://www.transparency.org/policy\\_research/surveys\\_indices/cpi/2008](http://www.transparency.org/policy_research/surveys_indices/cpi/2008).

Transparency International (2008) *Persistency high corruption in low-income countries amounts to an “ongoing humanitarian disaster”*.  
<http://www.transparency.org/content/download/36589/575262>.

Transparency International (2007) *Corruption perceptions index (CPI)*.  
[http://www.transparency.org/policy\\_research/surveys\\_indices/cpi/2007](http://www.transparency.org/policy_research/surveys_indices/cpi/2007).

Tucker, L. R., & Lewis, C. (1973), ‘A reliability coefficient for maximum likelihood factor analysis’, *Psychometrika*, Vol. 38, pp. 1-10.

Turner, R. H. (1953), ‘The quest for universals in sociological research’, *American Sociological Review*, Vol. 18, No. 6, pp. 604-611.

Uddin, N. & Gillett, P. R. (2002), ‘The effects of moral reasoning and self-monitoring on CFO intentions to report fraudulently on financial statements’, *Journal of Business Ethics*, Vol. 40, No. 1, pp. 15-32.

US House of Representative (2002). The Sarbanes-Oxley Act of 2002. Public Law 107-204 [H. R. 3763]. Wahington, D.C.: Government Printing Office.

Weick, K. E. (1988), ‘Enacted sensemaking in crisis situations’, *The Journal of Management Studies*, Vol. 25, No. 4, pp. 305-317.

Weigelt, K. & Camerer, C. (1988), ‘Reputation and corporate strategy: a review of recent theory and applications’, *Strategic Management Journal*, Vol. 9, No. 5, pp. 443-454.

Welch, S. T., Holmes, S. A. & Strawser, R. H. (1996), ‘Fraud in the oil and gas industry’, *Petroleum Accounting and Financial Management Journal*, Vol. 15, No.1, pp. 61-80.

Wells, J. T. (1993), 'Accountancy and white-collar crime', *The ANNALS of the American Academy of Political and Social Science*, Vol. 525, No. 1, pp. 83-94.

Wells, J. T. (1997), *Occupational Fraud and Abuse*, Texas: Obsidian Publishing, p. 2.

Wells, J. T. (2005), *Principles of Fraud Examination*, New Jersey: John Wiley & Sons, Inc.

Wells, J. T. (2007), *Corporate Fraud Handbook: Prevention and Detection* (2nd edn.) New Jersey: John Wiley & Sons, Inc.

West, S. G., Finch, J. F. & Curran, P. J. (1995), 'Structural equation models with nonnormal variables: Problems and remedies', in Hoyle, R. H. (ed.) *Structural Equation Modelling: Concepts, Issues, and Applications*. California: Sage Publications.

Wheaton, B. (1987), 'Assessment of fit in overidentified models with latent variables'. *Sociological Methods and Research*, Vol. 16, No. 1, pp. 118-154.

Williams, K. (2007), 'Fraud remains pervasive, PWC study shows', *Strategic Finance*, Vol. 89, No. 5, pp.13-14.

Williamson, O. E. (1988), 'Corporate finance and corporate governance', *The Journal of Finance*, Vol. 43 No.3, pp. 567-591.

Wirsky, S. Q. (2003), 'Sarbanes-Oxley: The new corporate standards', *Petroleum Accounting and Financial Management Journal*, Vol. 22, No. 2, pp. 1-36.

Wolfe, D. T. & Hermanson, D. R. (2004), 'The fraud diamond: Considering the four elements of fraud'. Available at the New York State Society of Certified

Public

Accountants:

<http://www.nysscpa.org/cpajournal/2004/1204/essentials/p38.htm>.

Wooten, K. C. & White, L. P. (1999), 'Linking OD's philosophy with justice theory: postmodern implications', *Journal of Organizational Change Management*, Vol. 12 No. 1, pp. 7-20.

World Bank (2003), *Combating corruption in Indonesia: enhancing accountability for development*. Available at: <http://siteresources.worldbank.org/INTINDONESIA/Resources/Publication/03-Publication/Combating+Corruption+in+Indonesia-Oct15.pdf>.

World Bank (2008) 'World Bank Listing of Ineligible Firms: Fraud and Corruption' *Debarred Firms*. Available at: <http://web.worldbank.org/external/default/main?theSitePK=84266&contentMDK=64069844&menuPK=116730&pagePK=64148989&piPK=64148984>.

World Bank's Department of Institutional Integrity (2007) 'Annual integrity report - fiscal year 2007', *Complete Report*. Available at: <http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/ORGANIZATION/ORGUNITS/EXTDOII/0,,menuPK:588927~pagePK:64168427~piPK:64168435~theSitePK:588921,00.html>.

Worthington, R. L. & Whittaker, T. A. (2006), "Scale Development Research: A Content Analysis and Recommendations for Best Practices", *The Counseling Psychologist*, Vol. 34, No. 6, pp. 806-838.

Wright, R. (2006), 'Why (some) fraud prosecutions fail', *Journal of Financial Crime*, Vol.13, No. 2, pp. 177-182.

Zahra, S. A., Priem, R. L. & Rasheed, A. A. (2005), 'The antecedents and consequences of top management fraud', *Journal of Management*, Vol. 31, No. 6, pp. 803-828.

Zikmund, W. G. (1994), *Business Research Methods*, Orlando: The Dryden Press.

Zikmund, W. G. (2003), *Business Research Methods*, Ohio: Thomson Learning.

**Appendix 1 (a)**  
**The types of samples drawn by 136 prior fraud (risk factors) studies**

| Authors                       | Year | Samples  |        |                                   |     |
|-------------------------------|------|----------|--------|-----------------------------------|-----|
|                               |      | Auditors | Police | Prosecutors, Others<br>and judges |     |
| 1 Bamber <i>et al.</i>        | 2008 | Yes      |        |                                   |     |
| 2 Coram <i>et al.</i>         | 2008 | Yes      |        |                                   |     |
| 3 Gold-Nöteberg <i>et al.</i> | 2008 | Yes      |        |                                   |     |
| 4 Holtfreter <i>et al.</i>    | 2008 |          |        |                                   | Yes |
| 5 Rae & Subramaniam           | 2008 |          |        |                                   | Yes |
| 6 Blay <i>et al.</i>          | 2007 | Yes      |        |                                   |     |
| 7 Brazel <i>et al.</i>        | 2007 | Yes      |        |                                   |     |
| 8 Carpenter                   | 2007 | Yes      |        |                                   |     |
| 9 Carpenter & Reimers         | 2008 | Yes      |        |                                   |     |
| 10 Carpenter <i>et al.</i>    | 2007 | Yes      |        |                                   |     |
| 11 Chen <i>et al.</i>         | 2007 |          |        |                                   | Yes |
| 12 Cuganesan & Lacey          | 2007 | Yes      |        |                                   |     |
| 13 Hoffman & Zimbelman        | 2008 | Yes      |        |                                   |     |
| 14 Lockwood                   | 2007 |          |        |                                   | Yes |
| 15 Tillman & Indergaard       | 2007 | Yes      |        |                                   | Yes |
| 16 Berry & Merritt            | 2006 | Yes      |        |                                   |     |
| 17 Bierstaker <i>et al.</i>   | 2006 | Yes      |        |                                   |     |
| 18 Brazel <i>et al.</i>       | 2007 |          |        |                                   | Yes |
| 19 Coburn                     | 2006 |          |        |                                   | Yes |
| 20 Cormier & Lapointe-Antunes | 2006 | Yes      |        |                                   |     |
| 21 Erickson <i>et al.</i>     | 2006 |          |        |                                   | Yes |
| 22 Fukukawa <i>et al.</i>     | 2006 | Yes      |        |                                   |     |
| 23 Kranacher                  | 2006 | Yes      |        |                                   |     |
| 24 Mustafa & Meier            | 2006 |          |        |                                   | Yes |
| 25 Skousen & Wright           | 2006 |          |        |                                   | Yes |
| 26 Stack & Kposowa            | 2006 |          |        |                                   | Yes |
| 27 Webber <i>et al.</i>       | 2006 | Yes      |        |                                   |     |
| 28 Wright <i>et al.</i>       | 2006 | Yes      |        |                                   |     |
| 29 Agrawal & Chadha           | 2005 |          |        |                                   | Yes |
| 30 Alleyne & Howard           | 2005 | Yes      |        |                                   |     |
| 31 Bedard <i>et al.</i>       | 2005 | Yes      |        |                                   |     |
| 32 Carpenter & Reimers        | 2005 |          |        |                                   | Yes |
| 33 Marczewski & Akers         | 2005 | Yes      |        |                                   |     |
| 34 Mock & Turner              | 2005 | Yes      |        |                                   |     |
| 35 Payne & Ramsay             | 2005 | Yes      |        |                                   |     |

**Appendix 1 (a)**  
**The types of samples drawn by 136 prior fraud (risk factors) studies**

| Authors                    | Year   | Auditors | Samples |                         |        |
|----------------------------|--------|----------|---------|-------------------------|--------|
|                            |        |          | Police  | Prosecutors, and judges | Others |
| 36 Pillsbury               | 2005   |          |         |                         | Yes    |
| 37 Reed & Pence            | 2005   |          |         |                         | Yes    |
| 38 Smith <i>et al.</i>     | 2005   | Yes      |         |                         |        |
| 39 ACFE                    | 2008   |          |         |                         | Yes    |
| 40 Asare & Wright          | 2004   |          |         |                         | Yes    |
| 41 Choo & Tan              | 2004   | Yes      |         |                         |        |
| 42 D'Aquila                | 2004   | Yes      |         |                         |        |
| 43 Durtschi <i>et al.</i>  | 2004   |          |         |                         | Yes    |
| 44 Fraser & Lin            | 2004   |          |         |                         | Yes    |
| 45 Kaminski <i>et al.</i>  | 2004   |          |         |                         | Yes    |
| 46 Sacks                   | 2004   | Yes      |         |                         |        |
| 47 Sanches & Trewin        | 2004   | Yes      |         | Yes                     | Yes    |
| 48 Wilk & Zimbelman        | 2004   | Yes      |         |                         |        |
| 49 Glover <i>et al.</i>    | 2003   | Yes      |         |                         |        |
| 50 Graham & Bedard         | 2003   | Yes      |         |                         |        |
| 51 Gramling & Myers        | 2003   | Yes      |         |                         |        |
| 52 KPMG                    | 2008   |          |         |                         | Yes    |
| 53 Makkawi & Schick        | 2003   | Yes      |         |                         |        |
| 54 Moyes & Baker           | 2003   | Yes      |         |                         |        |
| 55 PricewaterhouseCoopers  | 2007   |          |         |                         | Yes    |
| 56 Rose & Rose             | 2003   | Yes      |         |                         |        |
| 57 Smith                   | 2003   |          | Yes     | Yes                     | Yes    |
| 58 Specht & Sandlin        | 2003   | Yes      |         |                         |        |
| 59 Burn & Stanley          | 2002   | Yes      |         |                         |        |
| 60 Crawford & Stein        | 2004   | Yes      |         |                         |        |
| 61 Derrig & Zicko          | 2002   |          |         |                         | Yes    |
| 62 Holmes <i>et al.</i>    | 2002   | Yes      |         |                         |        |
| 63 Krambia-Kapardis        | 2002 a | Yes      | Yes     |                         | Yes    |
| 64 Krambia-Kapardis        | 2002 b | Yes      |         |                         | Yes    |
| 65 Viaene <i>et al.</i>    | 2002   |          |         |                         | Yes    |
| 66 Wu <i>et al.</i>        | 2002   | Yes      |         |                         |        |
| 67 Apostolou <i>et al.</i> | 2001 a | Yes      |         |                         |        |
| 68 Apostolou <i>et al.</i> | 2001 b | Yes      |         |                         |        |
| 69 Burgess & Pacini        | 2001   |          |         |                         | Yes    |
| 70 Majid <i>et al.</i>     | 2001   | Yes      |         |                         |        |

**Appendix 1 (a)**  
**The types of samples drawn by 136 prior fraud (risk factors) studies**

| Authors                    | Year | Samples  |        |                                |
|----------------------------|------|----------|--------|--------------------------------|
|                            |      | Auditors | Police | Prosecutors, Others and judges |
| 71 Saksena                 | 2001 |          |        | Yes                            |
| 72 Shailer <i>et al.</i>   | 2001 | Yes      |        |                                |
| 73 Shelton <i>et al.</i>   | 2001 | Yes      |        |                                |
| 74 Ziegenfuss              | 2001 | Yes      |        |                                |
| 75 Apostolou <i>et al.</i> | 2000 | Yes      |        |                                |
| 76 Bell & Carcello         | 2000 | Yes      |        | Yes                            |
| 77 Braun                   | 2000 | Yes      |        |                                |
| 78 Erickson <i>et al.</i>  | 2006 |          |        | Yes                            |
| 79 Knapp & Knapp           | 2001 | Yes      |        | Yes                            |
| 80 Koornhof & Plessis      | 2000 |          |        | Yes                            |
| 81 Strand <i>et al.</i>    | 2000 |          |        | Yes                            |
| 82 Agrawal <i>et al.</i>   | 1999 |          |        | Yes                            |
| 83 Beneish                 | 1999 |          |        | Yes                            |
| 84 COSO                    | 1999 |          |        | Yes                            |
| 85 Karpoff <i>et al.</i>   | 1999 |          |        | Yes                            |
| 86 Pincus <i>et al.</i>    | 1999 | Yes      |        |                                |
| 87 Spurlock & Ehlen        | 1999 |          |        | Yes                            |
| 88 Wiedman                 | 1999 |          |        | Yes                            |
| 89 Zimbelman & Waller      | 1999 |          |        | Yes                            |
| 90 Anderson <i>et al.</i>  | 1998 | Yes      |        |                                |
| 91 DeZoort & Lee           | 1998 | Yes      |        |                                |
| 92 Schultz & Hooks         | 1998 |          |        | Yes                            |
| 93 Summers & Sweeney       | 1998 |          |        | Yes                            |
| 94 Basu & Wright           | 1997 | Yes      |        |                                |
| 95 Bernardi                | 1997 | Yes      |        |                                |
| 96 Bloomfield              | 1997 |          |        | Yes                            |
| 97 Boatsman <i>et al.</i>  | 1997 | Yes      |        |                                |
| 98 Eining <i>et al.</i>    | 1997 | Yes      |        |                                |
| 99 Gerety & Lehn           | 1997 |          |        | Yes                            |
| 100 Hoffman & Patton       | 1997 | Yes      |        |                                |
| 101 Zimbelman              | 1997 | Yes      |        |                                |
| 102 Zimbelman & Hoffman    | 1997 | Yes      |        |                                |
| 103 Beasley                | 1996 |          |        | Yes                            |
| 104 Bernardi & Pincus      | 1996 | Yes      |        |                                |
| 105 Dechow, <i>et al.</i>  | 1996 |          |        | Yes                            |

**Appendix 1 (a)**  
**The types of samples drawn by 136 prior fraud (risk factors) studies**

| Authors                          | Year   | Auditors | Samples |                         |        |
|----------------------------------|--------|----------|---------|-------------------------|--------|
|                                  |        |          | Police  | Prosecutors, and judges | Others |
| 106 Hansen <i>et al</i>          | 1996   | Yes      |         |                         | Yes    |
| 107 Buckhoff & Hansen            | 2002   | Yes      |         |                         | Yes    |
| 108 Heiman-Hoffman <i>et al.</i> | 1996   | Yes      |         |                         |        |
| 109 McMullen & Raghunandan       | 1996   |          |         |                         | Yes    |
| 110 Moyes & Hasan                | 1996   | Yes      |         |                         |        |
| 111 Welch, <i>et al.</i>         | 1996   | Yes      |         |                         |        |
| 112 Zimbelman                    | 1996   | Yes      |         |                         |        |
| 113 Heiman-Hoffman <i>et al.</i> | 1996   | Yes      |         |                         |        |
| 114 Jamal <i>et al.</i>          | 1995   | Yes      |         |                         |        |
| 115 Persons                      | 1995   |          |         |                         | Yes    |
| 116 Bernardi                     | 1994   | Yes      |         |                         |        |
| 117 Calderon & Green             | 1994   |          |         |                         | Yes    |
| 118 Hackenbrack                  | 1993   | Yes      |         |                         |        |
| 119 Ponemon                      | 1993   | Yes      |         |                         |        |
| 120 Hackenbrack                  | 1992   | Yes      |         |                         |        |
| 121 Matsumura & Tucker           | 1992   |          |         |                         | Yes    |
| 122 Baucus & Near                | 1991   |          |         |                         | Yes    |
| 123 McKeown <i>at al.</i>        | 1991   | Yes      |         |                         | Yes    |
| 124 Johnson <i>et al.</i>        | 1991   | Yes      |         |                         |        |
| 125 Mercer                       | 1990   |          |         |                         | Yes    |
| 126 Pincus                       | 1990   | Yes      |         |                         |        |
| 127 Loebbecke <i>et al.</i>      | 1989   | Yes      |         |                         | Yes    |
| 128 Pincus                       | 1989   | Yes      |         |                         |        |
| 129 Dalton & Kesner              | 1988   |          |         |                         | Yes    |
| 130 Holt                         | 1987   | Yes      |         |                         | Yes    |
| 131 Albrecht & Romney            | 1986   | Yes      |         |                         | Yes    |
| 132 Wheeler & Rothman            | 1982   |          |         | Yes                     | Yes    |
| 133 Joyce & Biddle               | 1981 a | Yes      |         |                         |        |
| 134 Joyce & Biddle               | 1981 b | Yes      |         |                         |        |
| 135 Romney <i>et al.</i>         | 1980 b | Yes      |         |                         | Yes    |
| 136 Cressey                      | 1950   |          |         |                         | Yes    |

**Appendix 1 (b)**  
**Complete reference details for the third thesis justification**  
**(section 1.3 paragraph 4)**

One of the thesis justifications (section 1.3 paragraph 4) includes the following list of written material to identify the 136 studies that were analysed in appendix 1 (a). All of the referencing details are not provided in the thesis chapter text. The complete references for appendix 1 (a) can thus be obtained from the thesis list of references.

1. Bamber, E. Michael, Carpenter, Tina and Hammersley, Jacqueline S., The Influence of Documentation Specificity and Priming on Auditors' Fraud Risk Assessments and Evidence Evaluation (February 4, 2008). Available at SSRN: <http://ssrn.com/abstract=1090608>.
2. Coram, P., Glavovic, A., Ng, J. & Woodliff, D. R. (2008), 'The moral intensity of reduced audit quality acts', *Auditing: A Journal of Practice & Theory*, Vol. 27, No. 1, pp. 127 – 149.
3. Gold, Anna, Knechel, W. Robert and Wallage, Philip. Sole versus Shared Responsibility: Fraud Consultation and Auditor Judgment (October 20, 2008). ERIM Report Series Reference No. ERS-2008-010-F&A. Available at SSRN: <http://ssrn.com/abstract=1117787>.
4. Holtfreter, K., Reisig, M. D. & Pratt, T. C. (2008), 'Low self-control, routine activities, and fraud victimization', *Criminology*, Vol. 46, No. 1, pp. 189-220.
5. Rae, K. & Subramaniam, N. (2008), 'Quality of internal control procedures: antecedents and moderating effect on organisational justice and employee fraud', *Managerial Auditing Journal*, Vol. 23, No. 2, pp. 104-124.

6. Blay, Allen D., Kizirian, Tim and Sneathen, L. Dwight, The Effects of Fraud and Going-Concern Risk on Auditors' Assessments of the Risk of Material Misstatement and Resulting Audit Procedures (June 2007). Available at SSRN: <http://ssrn.com/abstract=1010676>.
7. Brazel, Joseph F., Jones, Keith L. and Zimbelman, Mark F., Using Nonfinancial Measures to Assess Fraud Risk (June 1, 2007). Available at SSRN: <http://ssrn.com/abstract=886545>.
8. Carpenter, T. D. (2007), 'Audit team brainstorming, fraud risk identification and fraud risk assessment: Implications of SAS No. 99', *The Accounting Review*, Vol. 82, No. 5, pp. 1119 – 1140.
9. Carpenter, Tina and Reimers, Jane L., The Effects of Tone at the Top and the Presence of Fraud on Auditors' Fraud Risk Assessments, on Identified Audit Procedures, and on Professional Skepticism (June 1, 2008). Available at SSRN: <http://ssrn.com/abstract=1068942>.
10. Carpenter, Tina, Reimers, Jane L. and Fretwell, Phillip Z., Improving Internal Auditors' Fraud Risk Assessments: The Benefits of Brainstorming in Groups (December 2007). Available at SSRN: <http://ssrn.com/abstract=961032>.
11. Chen, H. J., Huang, S. Y. & Lin, C-S. (2007), 'An internal control approach to the construction of a litigation warning model: an application of logistic regression', *International Journal of Management*, Vol. 24, No. 1, pp. 164 – 173.
12. Cuganesan, Suresh and Lacey, David, New Challenges for Performance Management: Exploratory Evidence on Organisational Responses to Identity Fraud (2007). Available at SSRN: <http://ssrn.com/abstract=960157>.
13. Hoffman, Vicky B. and Zimbelman, Mark F., Do Strategic Reasoning and Brainstorming Help Auditors Change Their Standard Audit Procedures in Response to Fraud Risk (July 31, 2008). Available at SSRN: <http://ssrn.com/abstract=970347>.

14. Lockwood, F. S. (2007), 'The fraud investigation detective agency: note to instructors', *Entrepreneurship Theory and Practice*, Vol. 31, No. 2, pp. 319-321.
15. See the list of references.
16. Berry, T. W. D. & Martha E Merritt, M. E. (2006), 'A study of the abilities of accounting and auditing professionals in recognizing red flags of fraud', *Journal of Forensic Accounting*, Vol. 7, No. 1, pp. 89 – 108.
17. Bierstaker, J. L., Brody, R. G. & Pacini, C. (2006), 'Accountants' perceptions regarding fraud detection and prevention methods', *Managerial Auditing Journal*, Vol. 21, No. 5, pp. 520 – 535.
18. Brazel, Joseph F., Jones, Keith L. and Zimbelman, Mark F., Using Nonfinancial Measures to Assess Fraud Risk (June 1, 2007). Available at SSRN: <http://ssrn.com/abstract=886545>.
19. Coburn, N. F. (2006), 'Corporate investigations', *Journal of Financial Crime*, Vol. 13, No. 3, pp. 348-368.
20. Cormier, D. & Lapointe-Antunes, P. (2006), 'The auditor's assessment and detection of corporate fraud: some Canadian evidence', *International Journal of Accounting, Auditing and Performance Evaluation*, Vol. 3, No. 2, pp. 133-165.
21. Erickson, M., Hanlon, M. & Maydew, E. L. (2006), 'Is there a link between executive equity incentives and accounting fraud?', *Journal of Accounting Research*, Vol. 44, No. 1, pp. 113-143.
22. Fukukawa, H., Mock, T. J. & Wright, A. (2006), 'Audit programs and audit risk: a study of Japanese practice', *International Journal of Auditing*, Vol. 10, No. 1, pp. 41-65.
23. Kranacher, M.-J. (2006), 'The battle against fraud: seeking the accounting profession's support', *The CPA Journal*, Vol. 76, No. 9; pp. 16-21.

24. Mustafa, Sameer T. and Meier, Heidi H., Audit Committees and Misappropriation of Assets: Publicly Held Companies in the United States. *Canadian Accounting Perspectives*, Vol. 5, No. 2, Autumn 2006. Available at SSRN: <http://ssrn.com/abstract=913366>.
25. Skousen, Christopher J. and Wright, Charlotte J., Contemporaneous Risk Factors and the Prediction of Financial Statement Fraud (August 24, 2006). Available at SSRN: <http://ssrn.com/abstract=938736>.
26. Stack, S. & Kposowa, A. (2006), 'The effect of religiosity on tax fraud acceptability: a cross-national analysis', *Journal for the Scientific Study of Religion*, Vol. 45, No. 3, pp. 325-351.
27. Webber, S. A., Sinason, D., Apostolou, B. & Hassell, J. M. (2006), 'An investigation of auditor assessment of fraud risk', *Journal of Forensic Accounting*, Vol.7, No. 2, pp. 411-438.
28. Wright, C. J., Johnson, C. B. & Dorr, P. B. (2006), 'Employee recognition and assessment of fraud schemes: An international perspective', *Petroleum Accounting and Financial Management Journal*, Vol. 25, No. 1, pp. 17-40.
29. Agrawal, A. & Chadha, S. (2005), 'Corporate governance and accounting scandals', *Journal of Law and Economics*, Vol. 48, No. 2, pp. 371-406.
30. Alleyne, P. & Howard, M. (2005), 'An exploratory study of auditors' responsibility for fraud detection in Barbados', *Managerial Auditing Journal*, Vol. 20, No. 3, pp. 284-303.
31. Bedard, J. C., Graham, L. & Jackson, C. (2005), 'Information systems risk and audit planning', *International Journal of Auditing*, Vol. 9, No. 2, pp. 147-163.
32. See the list of references.
33. Marczewski, D. C. & Akers, M. D. (2005), 'CPAs' perceptions of the impact of SAS 99', *The CPA Journal*, Vol. 75, No. 6, pp. 38 – 40.
34. See the list of references.

35. Payne, E. A. & Ramsay, R. J. (2005), 'Fraud risk assessments and auditors' professional skepticism', *Managerial Auditing Journal*, Vol. 20, No. 3, pp. 321 – 330.
36. Pillsbury, C. (2005), 'Megafrauds: should the auditors have known? Lessons for the auditing classroom', *Journal of Forensic Accounting*, Vol. 6, No. 2, pp. 441-454.
37. See the list of references.
38. Smith, M., Omar, N. H., Idris, S. I. Z. S. & Baharuddin, I. (2005), 'Auditors' perception of fraud risk indicators: Malaysian evidence', *Managerial Auditing Journal*; Vol. 20, No. 1, pp. 73 – 85.
39. Association of Certified Fraud Examiners (ACFE) (2008), *Report to the Nation on Occupational Fraud and Abuse*. Available at: [www.acfe.com/documents/2008-rttn.pdf](http://www.acfe.com/documents/2008-rttn.pdf).
40. Asare, S. K. & Wright, A. M. (2004), 'The effectiveness of alternative risk assessment and program planning tools in a fraud setting', *Contemporary Accounting Research*, Vol. 21, No. 2, pp. 325 – 350.
41. Choo, F. & Tan, K. (2004), 'An analysis of auditors' fraud risk judgments in a multi-audit task setting', *Journal of Forensic Accounting*, Vol. 5, No. 1, pp. 49 – 66.
42. D'Aquila, J. M. (2004). 'Management's emphasis on integrity and ethical values: a function of an organization's size and ownership type?' *Journal of Forensic Accounting*, Vol. 5, No. 2, pp. 393 – 410.
43. Durtschi, C., Hillison, W. & Pacini, C. (2004), 'The effective use of Benford's law to assist in detecting fraud in accounting data', *Journal of Forensic Accounting*, Vol. 5, No. 1, pp. 17 – 34.

44. Fraser, I. A. M. & Lin, K. Z. (2004), 'Auditors' perceptions of responsibilities to detect and report client illegal acts in Canada and the UK: a comparative experiment', *International Journal of Auditing*, Vol. 8, No. 2, pp. 165 – 184.
45. Kaminski, K. A., Wetzel, T. S. & Guan, L. (2004), 'Can financial ratios detect fraudulent financial reporting?', *Managerial Auditing Journal*, Vol. 19, No. 1, pp. 15-28.
46. See the list of references.
47. Sanchez, M. H. & Trewin, J. (2004), 'The forensic accountant as an expert witness in a criminal prosecution', *Journal of Forensic Accounting*, Vol. 5, pp. 231-236.
48. Wilks, T. Jeffrey and Zimbelman, Mark F., Decomposition of Fraud Risk Assessments and Auditors' Sensitivity to Fraud Cues (January 2004). Available at SSRN: <http://ssrn.com/abstract=540503> or DOI: 10.2139/ssrn.540503.
49. Glover, S. M., Prawitt, D. F., Schultz Jr., J. J. & Zimbelman, M. F. (2003), 'A test of changes in auditors' fraud-related planning judgments since the issuance of SAS No. 82', *Auditing*, Vol. 22, No. 2, pp. 237 – 251.
50. See the list of references.
51. Gramling, A. A. & Myers, P. M. (2003), '*Internal auditors' assessment of fraud warning signs: Implications for external auditors*', *The CPA Journal*, Vol. 73, No. 6, pp. 20 – 24.
52. KPMG Forensic (2008), *KPMG Singapore Fraud Survey Report 2008*. Available at: [www.kpmg.com.sg/publications/forensics\\_FraudSurvey2008.pdf](http://www.kpmg.com.sg/publications/forensics_FraudSurvey2008.pdf).
53. Makkawi, B. & Schick, A. (2003), '*Are auditors sensitive enough to fraud?*', *Managerial Auditing Journal*, Vol. 18, No. 6/7, pp. 591 – 598.

54. Moyes, G. D. & Baker, C. B. (2003), 'Auditors' beliefs about the fraud detection effectiveness of standard audit procedures', *Journal of Forensic Accounting*, Vol. 4, No. 2, pp. 199-216.
55. PricewaterhouseCoopers' (PwC) Global Economic Crime Survey (2007), *Economic crime: people, culture and controls*. Available at: [www.giacentre.org/documents/PWC.GLOBALECONOMICCRIMESURVEY2007.pdf](http://www.giacentre.org/documents/PWC.GLOBALECONOMICCRIMESURVEY2007.pdf).
56. Rose, A. M. & Rose, J. M. (2003), 'The effects of fraud risk assessments and a risk analysis decision aid on auditors' evaluation of evidence and judgment', *Accounting Forum*, Vol. 27, No. 3, pp. 312-338.
57. Smith, R. G. (2003) *Serious Fraud in Australia and New Zealand*. Canberra: Australian Institute of Criminology.
58. Specht, L. B. & Sandlin, P. K. (2003), 'SECPS member perceptions of the exposure draft on fraud: The ASB is on the right track, but will it make a difference?', *The CPA Journal*, Vol. 73, No. 2, pp. 10 – 13.
59. Burns, Peter and Stanley, Anne, Fraud Management in the Credit Card Industry (April 2002). Federal Reserve Bank of Philadelphia Payment Cards Center Discussion Paper No. 02-05. Available at SSRN: <http://ssrn.com/abstract=927784>.
60. Crawford, M. & Stein, W. (2004), 'Risk management in UK local authorities: The effectiveness of current guidance and practice', *The International Journal of Public Sector Management*, Vol. 17, No. 6/7, pp. 498 – 512.
61. Derrig, R. A. & Zicko, V. (2002), 'Prosecuting insurance fraud – a case study of the Massachusetts experience in the 1990s', *Risk Management and Insurance Review*, Vol. 5, No. 2, pp. 77 – 104.
62. See the list of references.
63. See the list of references.

64. Krambia-Kapardis, M. (2002b), 'Fraud victimisation of companies: the Cyprus experience', *Journal of Financial Crime*, Vol. 10, No. 2, pp. 184 – 191.
65. Viaene, S., Derrig, R. A., Baesens, B., Dedene, G. (2002), 'A comparison of state-of-the-art classification techniques for expert automobile insurance claim fraud detection', *Journal of Risk and Insurance*, Vol. 69, No. 3, pp. 373 – 421.
66. Wu, B. K. H, Roebuck, P. & Summers, S. (2002), 'Financial statement transparency and auditor responsibility: Enron and Andersen', *International Journal of Auditing*, Vol. 6, No. 3, pp. 287 – 302.
67. Apostolou, B., Hassell, J. M. & Sally A Webber, S. (2001a), 'Management fraud risk factors: ratings by forensic experts', *The CPA Journal*, Vol. 71, No. 10, pp. 48 – 52.
68. See the list of references.
69. Burgess, D. O. & Pacini, C. (2001), 'Forensic risk management: what employers do not know will hurt them', *Journal of Forensic Accounting*, Vol. 2, No. 1, pp. 121 – 124.
70. Majid, A., Gul, F. A. & Tsui, J. S. L. (2001), 'An analysis of Hong Kong auditors' perceptions of the importance of selected red flag factors in risk assessment', *Journal of Business Ethics*, Vol. 32, No. 3, pp. 263 – 274.
71. Saksena, P. (2001), 'The relationship between environmental factors and management fraud: an empirical analysis', *International Journal of Commerce and Management*, Vol. 11, No. 1, pp. 120 – 139.
72. Shailer, G., Willett, R., Yap, K. L. & Wade, M. (2001), 'Internationalisation of perceptions of litigation risk', *Managerial Auditing Journal*, Vol. 16, No. 2, pp. 87 – 102.
73. Shelton, Sandra Waller, O. Ray Whittington, and David Landsittel. "Auditing Firms' Fraud Risk Assessment Practices." *Accounting Horizons* 15.1 (March 2001): 19. Expanded Academic

ASAP. Gale. Southern Cross University. 21 Oct. 2008  
 <<http://find.galegroup.com.ezproxy.scu.edu.au/itx/start.do?prodId=EAIM>>.

74. Ziegenfuss, D. E. (2001), 'The role of control environment in reducing local government fraud', *Journal of Public Budgeting, Accounting & Financial Management*, Vol. 13, No. 3, pp. 312 – 324.
75. Apostolou, B., Hassell, J. M. & Webber, S. A. (2000), 'Forensic expert classification of management fraud risk factors', *Journal of Forensic Accounting*, Vol. 1, No. 2, pp. 181 – 192.
76. Bell, T. B. & Carcello, J. V. (2000), 'A decision aid for assessing the likelihood of fraudulent financial reporting', *Auditing*, Vol. 19, No. 1, pp. 169-184.
77. See the list of references.
78. Erickson, M., Hanlon, M. & Maydew E. L. (2006), 'Is there a link between executive equity incentives and accounting fraud?', *Journal of Accounting Research*, Vol. 44, No. 1, pp. 113 – 143.
79. Knapp, C. A. & Knapp, M. C. (2001), 'The effects of experience and explicit fraud risk assessment in detecting fraud with analytical procedures', *Accounting, Organizations and Society*, Vol. 26, No. 1, pp. 25 – 37.
80. Koornhof & Plessis, D. (2000), 'Red flagging as an indicator of financial statement fraud: the perspective of investors and lenders'. *Meditari Accountancy Research*, Vol. 8, No. 69-93. Available at: [www.meditari.org.za/docs/2000/Meditari%202000%20Koornhof%20&%20Du%20Plessis.pdf](http://www.meditari.org.za/docs/2000/Meditari%202000%20Koornhof%20&%20Du%20Plessis.pdf).
81. Strand, C. A., Lancaster, K. A. S., Thorne, J. (2000), 'Corporate training assessment technique: risk factors associated with misappropriation of assets', *Journal of Forensic Accounting*, Vol. 1, No. 2, pp. 193 – 214.
82. Agrawal, A., Jaffe, J. F. & Karpoff, J. M. (1999), 'Management turnover and governance changes following the revelation of fraud', *Journal of Law and Economics*, Vol. 42, No. 1 (Part 2), pp. 309 – 342.

83. Beneish, M. D. (1999), 'The detection of earnings manipulation', *Financial Analysts Journal*, Vol. 55, No. 5, pp. 24 – 36.
84. Committee of Sponsoring Organizations of the Treadway Commission (COSO) (1999), *Fraudulent Financial Reporting: 1987-1997, An Analysis of US Public Companies*. Available at: [www.coso.org/publications/FFR\\_1987\\_1997.PDF](http://www.coso.org/publications/FFR_1987_1997.PDF).
85. Karpoff, J. M., Lee, D. S. & Vondracik, V. P. (1999), 'Defense procurement fraud, penalties, and contractor influence', *The Journal of Political Economy*, Vol. 107, No. 4, pp. 809-842.
86. Pincus, K. V., Bernardi, R.A. & Ludwig, S. E. (1999), 'Audit effectiveness versus audit efficiency: Are the two in conflict?', *International Journal of Auditing*, Vol 3, No. 2, pp. 121–133.
87. Spurlock, D. C. & Ehlen, C. R. (1999), 'A case study on detecting fraud in a financial statement audit', *The CPA Journal*, Vol. 69, No. 2, pp. 54 – 56.
88. Wiedman, C. I. (1999), 'Instructional case: detecting earnings manipulation', *Issues in Accounting Education*, Vol. 14, No. 1, pp. 145 – 176.
89. Zimbelman, M. F. & Waller, W. S. (1999), 'An experimental investigation of auditor-auditee interaction under ambiguity', *Journal of Accounting Research*, Vol. 37, Supplement, pp. 135 – 155.
90. See the list of references.
91. DeZoort, F. T. & Lee, T. A. (1998), 'The impact of SAS No. 82 on perceptions of external auditor responsibility for fraud detection', *International Journal of Auditing*, Vol. 2, No. 2, pp. 167 – 182.
92. Schultz Jr, J. J. & Hooks, K. L. (1998), 'The effect of relationship and reward on reports of wrongdoing', *Auditing*, Vol. 17, No. 2, pp. 15 – 35.
93. Summers, S.L. & Sweeney, J.T. (1998), 'Fraudulently misstated financial statements and insider trading: an empirical analysis', *The Accounting Review*, Vol. 73, No. 1, pp. 131 – 146.

94. Basu, P. & Wright, A. (1997), 'An exploratory study of control environment risk factors: client contingency considerations and audit testing strategy', *International Journal of Auditing*, Vol. 1, No. 2, pp. 77 – 96.
95. Bernardi, Richard A., Probability of Fraud Estimates: The Impact of Client Integrity and Competence. *Research on Accounting Ethics*, Vol. 3, No. 1, pp. 119-140, 1997. Available at SSRN: <http://ssrn.com/abstract=1097184>.
96. See the list of references.
97. Boatsman, J. R, Moeckel, C. & Pei, B. K. W. (1997), 'The effects of decision consequences on auditors' reliance on decision aids in audit planning', *Organizational Behavior and Human Decision Processes*, Vol. 71, No. 2, pp. 211 – 247.
98. Eining, M. M., Jones, D. R. & Loebbecke, J. K. (1997), 'Reliance on decision aids: an examination of auditors' assessment of management fraud', *Auditing*, Vol. 16, No. 2, pp. 1-19.
99. See the list of references.
100. Hoffman, V. B. & Patton, J. M. (1997), 'Accountability, the dilution effect, and conservatism in auditors' fraud judgements', *Journal of Accounting Research*, Vol. 35, No. 2, pp. 227 – 237.
101. Zimbelman, Mark F., The Effects of SAS No. 82 on Auditors' Attention to Fraud Risk Factors and Audit Planning Decisions. *Journal of Accounting Research*, Vol 35, Supplement, 1997. Available at SSRN: <http://ssrn.com/abstract=35955>.
102. Zimbelman, M. F. & Hoffman, V. B. (1997), 'The effects of SAS No. 82 on auditors' attention to fraud risk factors and audit planning decisions/discussion', *Journal of Accounting Research*, Vol. 35, pp. 75 – 97.

103. Beasley, M. S. (1996), 'An empirical analysis of the relation between the board of director composition and financial statement fraud', *The Accounting Review*, Vol. 71, No. 4, pp. 443-465.
104. Bernardi, R. A. & Pincus, K. V. (1996), 'The relationship between materiality thresholds and judgments of fraud risk', *Managerial Finance*, Vol. 22, No. 9, pp. 1 – 15.
105. Dechow, P. M., Sloan, R. G. & Sweeney, A. P. (1996), 'Causes and consequences of earnings manipulations: an analysis of firms subject to enforcement actions by the SEC', *Contemporary Accounting Research*, Vol. 13, No. 1, pp. 1 – 36.
106. Hansen, J. V., McDonald, J. B., Messier, W. F. & Bell, T. B. (1996), 'A generalized qualitative-response model and the analysis of management fraud', *Management Science*, Vol. 42, No. 7, p. 1022-1032.
107. Buckhoff, T. & Hansen, J. (2002), 'Interviewing as a "forensic-type" procedure', *Journal of Forensic Accounting*, Vol. 3, No. 1, pp. 1 – 15.  
Available at:  
[www.fsllc.org/publications/Interviewing%20as%20a%20Forensic-type%20Procedure.pdf](http://www.fsllc.org/publications/Interviewing%20as%20a%20Forensic-type%20Procedure.pdf).
108. Heiman-Hoffman, V. B, Morgan, K. P. & Patton, J. M. (1996), 'The warning signs of fraudulent financial reporting', *Journal of Accountancy*, Vol. 182, No. 4, pp. 75 – 76.
109. McMullen, D. A & Raghunandan, K. (1996), 'Enhancing audit committee effectiveness', *Journal of Accountancy*, Vol. 182, No. 2, pp. 79 – 81.
110. Moyes, G. D. & Hasan, I. (1996), 'An empirical analysis of fraud detection likelihood', *Managerial Auditing Journal*, Vol. 11, No. 3, pp. 41 – 46.
111. See the list of references.

112. Zimbelman, M. F. (1996), *Assessing the risk of fraud in audit planning*, PhD thesis. The University of Arizona.
113. Heiman-Hoffman, V. B, Morgan, K. P. & Patton, J. M. (1996), 'The warning signs of fraudulent financial reporting', *Journal of Accountancy*, Vol. 182, No. 4, pp. 75 – 76.
114. Jamal, K., Johnson, P. E. & Berryman, R. G. (1995), 'Detecting framing effects in financial statements', *Contemporary Accounting Research*, Vol. 12, No. 1, pp. 85 – 105.
115. Persons, O. (1995), 'Using financial statement data to identify factors associated with fraudulent financial reporting', *Journal of Applied Business Research*, Vol. 11, No. 3, pp. 38 – 46.
116. See the list of references.
117. Calderon, T., Green, B. (1994), 'Analysts' forecast as an exogenous risk indicator in analytical auditing', *Advances in Accounting*, Vol. 12, pp. 281 – 300.
118. Hackenbrack, K. (1993), 'The effect of experience with different sized clients on auditor evaluations of fraudulent financial reporting indicators', *Auditing*, Vol. 12, No. 1, pp. 99 – 110.
119. Ponemon, L. A. (1993), 'The influence of ethical reasoning on auditors' perceptions of management's competence and integrity', *Advances in Accounting*, Vol. 11 pp.1-29.
120. Hackenbrack, K. (1992), 'Implications of seemingly irrelevant evidence in audit judgment', *Journal of Accounting Research*, Vol. 30, No. 1, pp. 126 – 136.
121. See the list of references.
122. Baucus, M. S. & Near, J. P. (1991), 'Can illegal corporate behavior be predicted? An event history analysis', *Academy of Management Journal*, Vol. 34, No. 1, pp. 9 – 36.

123. McKeown, J. C., Mutchler, J. F., Hopwood, W. & Bell, T. B. (1991), 'Towards an explanation of auditor failure to modify the audit opinions of bankrupt companies; discussion; reply', *Auditing*, Vol. 10, pp. 1 – 24.
124. Johnson, P. E., Jamal, K. & Berryman, R. G. (1991), 'Effects of framing on auditor decisions', *Organizational Behavior and Human Decision Processes*, Vol. 50, No. 1, pp. 75 – 105.
125. Mercer, L. C. J. (1990), 'Tailor-made auditing of information systems for the detection of fraud', *Computers & Security*, Vol. 9, No. 1, pp. 59 – 66.
126. Pincus, K. (1990), 'Auditor individual differences and fairness of presentation judgments', *Auditing: A Journal of Practice & Theory*, Vol. 9 No. 3, pp. 150 – 166. Available at: [www.profbailey.com/seminar/Readings/Pincus1990.pdf](http://www.profbailey.com/seminar/Readings/Pincus1990.pdf).
127. See the list of references.
128. Pincus, K. V. (1989), 'The efficacy of a red flags questionnaire for assessing the possibility of fraud', *Accounting, Organizations and Society*, Vol. 14, No. 1 – 2, pp. 153-163.
129. Dalton, D. R. & Kesner, I. F. (1988), 'On the dynamics of corporate size and illegal activity: an empirical assessment'. *Journal of Business Ethics*, Vol. 7, No. 11, pp. 861 – 870.
130. Holt, D. L. (1987), 'Auditors and base rates revisited', *Accounting, Organizations and Society*, Vol. 12, No. 6, pp. 571 – 578.
131. Albrecht, W. S., Romney, M. (1986), 'Red-flagging management fraud: a validation', *Advances in Accounting*, Vol. 3, pp. 323 – 333.
132. Wheeler, S. & Rothman, M. L. (1982), 'The Organization as Weapon in White-Collar Crime', *Michigan Law Review*, Vol. 80, No. 7, pp. 1403 – 1426.
133. Joyce, E. J. & Biddle, G. C. (1981), 'Are auditors' judgments sufficiently regressive?', *Journal of Accounting Research*, Vol. 19, No. 2, pp. 323 – 349.

134. Joyce, E. J. & Biddle, G. C. (1981), 'Anchoring and adjustment in probabilistic inference in Auditing', *Journal of Accounting Research*, Vol. 19, No. 1, pp. 120 – 145.
135. See the list of references.
136. See the list of references.

**Appendix 2 (a)**  
**Cover letter to the leaders of Indonesian institutions**

Tumpal W. Sitorus  
Australian Partnership Scholarship Awardee  
Graduate Research College  
Southern Cross University, Lismore, AUSTRALIA

The leaders of ....

INDONESIA

I recently requested your kind support and participation in a research study examining the multiple relationships leading to all forms of fraud. This study should be of great value in that it will assist the Indonesian authorities to comprehensively identify fraud risk. The request was accompanied by a 5 page questionnaire approved by the Human Research Ethics Committee, Southern Cross University.

I am writing to point out that the most valuable support of the (Indonesian institution) will be for the leaders and ... officials who have transferred fraud and corruption cases to the court for trial to participate in this study.

If you have mislaid the original questionnaire documents but would still be prepared to assist with the study, please do not hesitate to let me know by email at [t.sitorus.10@scu.edu.au](mailto:t.sitorus.10@scu.edu.au) and I will immediately forward copies to you either by mail or by e-mail.

In order to express my appreciation for your kind participation, I will provide the aggregate results of this research to (your institution) .....

Thank you for your time.

Sincerely,

Tumpal W. Sitorus

**Appendix 2 (b)**  
**Cover letter to prospective respondents**

Tumpal W. Sitorus  
Australian Partnership Scholarship Awardee  
Graduate Research College  
Southern Cross University, Lismore, AUSTRALIA

**Dear Prospective Respondents,**

I recently requested your kind support and participation in a research study examining the multiple relationships leading to all forms of fraud. This study should be of great value in that it will assist the Indonesian authorities to comprehensively identify fraud risk. The request was accompanied by a 5 page questionnaire approved by the Human Research Ethics Committee, Southern Cross University.

I am writing to point out that support is required in terms of the leaders and officials who have transferred fraud and corruption cases to the court for trial participating in this study. I therefore wish to request all of you to take the time (about 20 minutes) to complete the questionnaire. Please be aware that participation in this research is entirely of your own volition and that should you wish to withdraw from the exercise at any time you will be able to do so, when I will destroy any information that you have provided. In addition, if you do not mind, I will personally collect all the completed questionnaire responses in the last week of June 2007.

If you have already responded to this request, I thank you very much for your participation. The anonymity of the questionnaire prevents me from knowing who has completed it.

If you have mislaid the original questionnaire documents but would still be prepared to assist with the study, please do not hesitate to let me know by email at [t.sitorus.10@scu.edu.au](mailto:t.sitorus.10@scu.edu.au) and I will immediately forward copies to you either by mail or by e-mail. Your response to this questionnaire will be anonymous and only aggregate results will be reported in the study so that identification of any individual respondent will be impossible.

In order to express my appreciation for your kind participation, I will provide the aggregate results of this research to your workplace.

Thank you for your time.

Sincerely,

Tumpal W. Sitorus



### Appendix 2 (c)

#### Questionnaire: All Forms of Fraud Risk Associations

A. We would like your view on a set of statements relating to all forms of fraud prosecutions which were transferred to the courts. Please read each statement carefully and then circle one number from the seven alternatives which best describes your degree of agreement or disagreement with the statement. Please remember there are no rights or best answers. I would like your opinion to each of the following questions:

| For example: People will often try to justify fraudulent behavior. |                                                                                                           | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------|-----|-----|-----|-----|-----|-----|-----|--------|
| 1                                                                  | Potentially culpable persons in fraud cases:                                                              |           |     |     |     |     |     |     |     |        |
| 1.1                                                                | are greedy.                                                                                               | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.2                                                                | are not alone in committing fraud.                                                                        | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.3                                                                | are preoccupied with being successful.                                                                    | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.4                                                                | have an extravagant lifestyle.                                                                            | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.5                                                                | maintain an extravagant lifestyle.                                                                        | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.6                                                                | aim to get financial support.                                                                             | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.7                                                                | have control over conflicting business processes (e.g. handling cash and reconciling the bank statement). | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.8                                                                | are mainly employed in specific activities.                                                               | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.9                                                                | are careful to maintain custody of records.                                                               | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.10                                                               | are careful to maintain office space.                                                                     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.11                                                               | perform menial tasks.                                                                                     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.12                                                               | see a reward (e.g. bonus) from committing fraud.                                                          | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.13                                                               | have relatively few complaints.                                                                           | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
| 1.14                                                               | have no history of any penalties for committing fraud.                                                    | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |

|   |                                                                               |           |     |     |     |     |     |     |     |        |
|---|-------------------------------------------------------------------------------|-----------|-----|-----|-----|-----|-----|-----|-----|--------|
|   | 1.15 have relatively low pay.                                                 | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 1.16 have opportunities to commit fraud                                       | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 1.17 have a way to rationalise their dishonest acts.                          | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   |                                                                               |           |     |     |     |     |     |     |     |        |
| 2 | Rationalisations used by perpetrators are:                                    |           |     |     |     |     |     |     |     |        |
|   | 2.1 "The organization owes to me".                                            | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.2 "I am only borrowing the money and will pay it back".                     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.3 "Nobody will get hurt".                                                   | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.4 "I deserve more".                                                         | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.5 "It's for a good purpose".                                                | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.6 "Something has to be sacrificed".                                         | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.7 "I am underpaid".                                                         | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.8 "I am not appreciated".                                                   | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.9 "Everybody else is doing it"                                              | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.10 "I am not really stealing. I work hard and deserve it".                  | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.11 "The company can afford it".                                             | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.12 "Fraudulent behaviour is worth the risks".                               | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 2.13 "It is only temporary until the financial situation improves".           | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   |                                                                               |           |     |     |     |     |     |     |     |        |
| 3 | Motivated offenders will commit fraud if there are any opportunities such as: |           |     |     |     |     |     |     |     |        |
|   | 3.1 weak or incapable guardians (e.g. auditors).                              | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 3.2 lack of capable guardians (e.g. auditors).                                | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 3.3 absence of capable guardians (e.g. auditors).                             | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 3.4 absence of whistle blowers.                                               | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 3.5 absence of complaints or protests.                                        | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 3.6 a perception of a lenient sentence if convicted.                          | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 3.7 a potential delay in decision making and action.                          | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 3.8 a lack of awareness of wrongdoing.                                        | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 3.9 a lack of segregation of duties.                                          | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 3.10 failure to be informed about organisation rules.                         | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |



|   |                                                                                        |           |     |     |     |     |     |     |     |        |
|---|----------------------------------------------------------------------------------------|-----------|-----|-----|-----|-----|-----|-----|-----|--------|
| 5 | A potentially defraudable organisation will fail to protect itself from fraud because: |           |     |     |     |     |     |     |     |        |
|   | 5.1 the head of the organisation is perceived to be acting in an unethical manner.     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.2 senior management is perceived to be acting in an unethical manner.                | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.3 there are unclear messages about what is personally acceptable.                    | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.4 there is a lack of adequate control procedures for preventing fraud.               | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.5 colleagues lack of commitment to report fraud.                                     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.6 there is lack in use of technologies of crime prevention.                          | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.7 there are overly aggressive organisational targets.                                | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.8 there is an understaffing problem.                                                 | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.9 the style of management is over-authoritarian.                                     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.10 there is a poor conflict resolution process.                                      | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.11 there is a lack of open internal communications                                   | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.12 there are no penalties for committing fraud                                       | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 5.13 there is no reward for good work results.                                         | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   |                                                                                        |           |     |     |     |     |     |     |     |        |
| 6 | Commission of fraud can involve:                                                       |           |     |     |     |     |     |     |     |        |
|   | 6.1 suppliers.                                                                         | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.2 customers.                                                                         | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.3 colleagues.                                                                        | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.4 bosses.                                                                            | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.5 internal auditors.                                                                 | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.6 external auditors (public accounting firm).                                        | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.7 audit committees.                                                                  | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.8 directors.                                                                         | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.9 commissioners.                                                                     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.10 shareholders.                                                                     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.11 subsidiary companies.                                                             | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|   | 6.12 parent companies.                                                                 | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |

|    |                                                                                                |           |     |     |     |     |     |     |     |        |
|----|------------------------------------------------------------------------------------------------|-----------|-----|-----|-----|-----|-----|-----|-----|--------|
|    | 6.13 affiliated companies.                                                                     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 6.14 foundations.                                                                              | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 6.15 corrupt tax officers.                                                                     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 6.16 corrupt government auditors.                                                              | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 6.17 corrupt state and local officials.                                                        | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    |                                                                                                |           |     |     |     |     |     |     |     |        |
| 7. | Most prosecutions fail because:                                                                |           |     |     |     |     |     |     |     |        |
|    | 7.1 the evidence is insufficient.                                                              | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 7.2 a key witness fails to attend the trial.                                                   | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 7.3 a witness or witnesses fail to provide proof.                                              | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 7.4 an attempt is made to intimidate the court.                                                | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 7.5 an attempt is made to bribe the court.                                                     | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 7.6 the case takes too long (e.g. more than six months).                                       | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 7.7 the defendant is ill before the trial starts or becomes ill during the course of the trial | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 7.8 the defendant leaves Indonesia before the trial starts or during the course of the trial   | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |
|    | 7.9 the defendant dies before the trial starts or during the course of the trial               | Disagree: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | :Agree |

## **B. Demographic Information: about your profession**

For classification purposes we need to know something about your role in the Indonesian justice institution.

Q1     What is your workplace's name?

 \_\_\_\_\_

Q2     What is your division's name?

 \_\_\_\_\_

Q3     How many fraud cases have you ever investigated or transferred to the courts for trial?

☐

no more than 2

☐

2 to 5

☐

6 to 10

☐

more than 10

Thank you very much for completing this questionnaire.

### Appendix 2 (d)

#### Indonesian translation of the questionnaire

#### Kuisisioner berbagai kaitan dari segala bentuk praktik *fraud* termasuk korupsi

- A. Kami ingin mengetahui pandangan Anda atas satu set dari pernyataan-pernyataan terkait dengan segala bentuk praktik *fraud* termasuk korupsi yang diajukan ke sidang pengadilan. Mohon dibaca setiap pernyataan dengan hati-hati dan kemudian lingkari satu nomor dari tujuh alternatif yang paling menggambarkan tingkat kesetujuan atau ketidaksetujuan Anda atas pernyataan tersebut. Mohon diingat bahwa tidak ada jawaban yang benar atau terbaik. Kami ingin mengetahui pendapat Anda untuk setiap pernyataan berikut:

Sebagai contoh:

Manusia sering menilai perilaku korup.

Tidak setuju: 1 2 3 4 5 **6** 7 :Setuju

|   |                                                                                                                          |               |   |   |   |   |   |   |           |
|---|--------------------------------------------------------------------------------------------------------------------------|---------------|---|---|---|---|---|---|-----------|
| 1 | Potensi perilaku individu-individu yang dipersalahkan di dalam berbagai kasus <i>fraud</i> adalah:                       |               |   |   |   |   |   |   |           |
|   | 1.1 serakah.                                                                                                             | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.2 tidak sendiri di dalam melakukan <i>fraud</i> .                                                                      | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.3 terobsesi dengan keadaan yang penuh dengan kesuksesan.                                                               | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.4 memiliki tingkat kehidupan yang lebih dari cukup.                                                                    | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.5 memelihara tingkat kehidupan yang lebih dari cukup.                                                                  | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.6 bertujuan untuk mendapatkan tambahan pendapatan.                                                                     | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.7 memiliki kendali atas proses bisnis yang menimbulkan konflik (seperti pengaturan kas dan rekonsiliasi laporan bank). | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.8 terlibat di dalam aktivitas yang bersifat khusus.                                                                    | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.9 hati-hati di dalam menjaga rahasia.                                                                                  | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.10 hati-hati di dalam menjaga keamanan ruang kantor.                                                                   | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.11 melaksanakan pekerjaan bawahan.                                                                                     | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.12 melihat adanya penghargaan (bonus) dari perbuatan <i>fraud</i> .                                                    | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.13 relatif sedikit mendapat keluhan.                                                                                   | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.14 tidak pernah tercatat melakukan <i>fraud</i> sebelumnya.                                                            | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |
|   | 1.15 relatif memiliki gaji yang rendah.                                                                                  | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 :Setuju |

|   |                                                                                                                 |               |   |   |   |   |   |   |   |         |
|---|-----------------------------------------------------------------------------------------------------------------|---------------|---|---|---|---|---|---|---|---------|
|   | 1.16 memiliki peluang untuk melakukan tindakan <i>fraud</i> .                                                   | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 1.17 memiliki cara untuk membenarkan diri dari tindakan yang tidak terpuji.                                     | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
| 2 | Berbagai ungkapan pembenaran yang dinyatakan oleh para pelaku <i>fraud</i> adalah:                              |               |   |   |   |   |   |   |   |         |
|   | 2.1 “Organisasi ini berhutang budi pada saya .”                                                                 | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.2 “Saya hanya meminjam uang dan akan mengembalikannya.”                                                       | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.3 “Tidak ada yang kehilangan atas perbuatan ini.”                                                             | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.4 “Saya pantas mendapatkan lebih.”                                                                            | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.5 “Ini untuk tujuan yang baik.”                                                                               | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.6 “Sesuatu harus dikorbankan.”                                                                                | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.7 “Saya digaji rendah.”                                                                                       | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.8 “Saya tidak dihargai.”                                                                                      | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.9 “Setiap orang pun melakukannya.”                                                                            | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.10 “Saya tidak bermaksud mencuri. Saya berkerja keras dan pantas mendapatkannya.”                             | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.11 “Perusahaan dapat menanggungnya.”                                                                          | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.12 “Perilaku <i>fraud</i> adalah setara dengan risiko.”                                                       | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 2.13 “Ini hanya sementara sampai situasi keuangan membaik.”                                                     | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
| 3 | Pelaku yang memiliki motivasi berbuat <i>fraud</i> akan melakukannya jika memiliki berbagai kesempatan seperti: |               |   |   |   |   |   |   |   |         |
|   | 3.1 pengawas (misalnya, auditor) yang lemah atau tidak cakap di dalam melaksanakan tugasnya.                    | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.2 keterbatasan kemampuan pengawas.                                                                            | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.3 tidak adanya pengawas.                                                                                      | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.4 tidak adanya orang yang mau membuka perbuatan <i>fraud</i> .                                                | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.5 tidak adanya keluhan atau protes.                                                                           | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.6 adanya persepsi tentang hukuman yang ringan bila terbukti bersalah.                                         | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.7 adanya potensi tertundanya didalam mengambil keputusan dan aksi.                                            | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.8 kurangnya kesadaran atas perbuatan yang salah.                                                              | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |

|   |                                                                                                                                                                        |               |   |   |   |   |   |   |   |         |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---|---|---|---|---|---|---|---------|
|   | 3.9 kurangnya pembagian tugas.                                                                                                                                         | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.10 kegagalan untuk menginformasikan mengenai peraturan organisasi yang berhubungan dengan perbuatan <i>fraud</i> .                                                   | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.11 kegagalan untuk menginformasikan mengenai konsekuensi dari perbuatan <i>fraud</i> .                                                                               | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.12 perpindahan pegawai yang terlalu cepat.                                                                                                                           | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.13 beroperasi seperti biasa walau dalam keadaan krisis keuangan.                                                                                                     | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.14 kurangnya pengujian atas transaksi keuangan.                                                                                                                      | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.15 tidak efektifnya pengawasan dari atasan langsung.                                                                                                                 | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.16 kurangnya otorisasi transaksi.                                                                                                                                    | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.17 lemahnya pembukuan akuntansi.                                                                                                                                     | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.18 lemahnya pengawasan fisik atas aset.                                                                                                                              | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 3.19 terlalu banyak kepercayaan yang diberikan kepada pegawai yang memegang posisi keuangan.                                                                           | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
| 4 | Ketika melakukan perbuatan <i>fraud</i> atau berupaya menutupinya, pelaku yang termotivasi atas perbuatan tersebut dapat juga berkolusi dengan berbagai pihak seperti: |               |   |   |   |   |   |   |   |         |
|   | 4.1 rekanan.                                                                                                                                                           | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.2 konsumen.                                                                                                                                                          | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.3 rekan kerja sekantor.                                                                                                                                              | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.4 atasan.                                                                                                                                                            | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.5 pengawas internal (auditor internal).                                                                                                                              | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.6 auditor independen (kantor akuntan publik).                                                                                                                        | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.7 komite audit.                                                                                                                                                      | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.8 direktur.                                                                                                                                                          | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.9 komisaris.                                                                                                                                                         | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.10 pemegang saham.                                                                                                                                                   | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.11 anak perusahaan.                                                                                                                                                  | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.12 induk perusahaan.                                                                                                                                                 | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.13 perusahaan afiliasi.                                                                                                                                              | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.14 yayasan yang memiliki koneksi dengan aktivitas pelaku tersebut.                                                                                                   | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |

|   |                                                                                                             |               |   |   |   |   |   |   |   |         |
|---|-------------------------------------------------------------------------------------------------------------|---------------|---|---|---|---|---|---|---|---------|
|   | 4.15 pegawai pajak yang korup.                                                                              | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.16 auditor pemerintah yang korup.                                                                         | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.17 pegawai pemerintah yang korup.                                                                         | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
| 5 | Organisasi yang berpotensi menjadi korban dari perbuatan <i>fraud</i> akan gagal melindungi dirinya karena: |               |   |   |   |   |   |   |   |         |
|   | 5.1 pimpinan dari organisasi diyakini bertindak secara tidak etis.                                          | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.2 manajer senior diyakini bertindak secara tidak etis.                                                    | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.3 adanya ketidakjelasan berbagai pesan tentang hal-hal yang dapat diterima secara pribadi.                | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.4 adanya kekurangan dari berbagai prosedur pengendalian yang memadai untuk mencegah <i>fraud</i> .        | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.5 rekan kerja kurang berkomitmen untuk melaporkan <i>fraud</i> .                                          | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.6 adanya kekurangan penggunaan teknologi untuk pencegahan kejahatan.                                      | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.7 adanya target organisasi yang terlalu agresif.                                                          | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.8 adanya masalah kekurangan staf.                                                                         | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.9 gaya manajemen terlalu otoriter.                                                                        | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.10 buruknya proses penyelesaian konflik.                                                                  | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.11 adanya kekurangan komunikasi internal yang terbuka.                                                    | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.12 tidak adanya hukuman untuk perbuatan <i>fraud</i> .                                                    | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 5.13 tidak adanya penghargaan atas hasil-hasil kerja yang baik.                                             | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
| 6 | Komisi dari praktik <i>fraud</i> dapat melibatkan:                                                          |               |   |   |   |   |   |   |   |         |
|   | 4.1 rekanan.                                                                                                | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.2 konsumen.                                                                                               | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.3 rekan kerja sekantor.                                                                                   | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.4 atasan.                                                                                                 | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.5 pengawas internal (auditor internal).                                                                   | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.6 auditor independen (kantor akuntan publik).                                                             | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.7 komite audit.                                                                                           | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.8 direktur.                                                                                               | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.9 komisaris.                                                                                              | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|   | 4.10 pemegang saham.                                                                                        | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |

|    |                                                                                                   |               |   |   |   |   |   |   |   |         |
|----|---------------------------------------------------------------------------------------------------|---------------|---|---|---|---|---|---|---|---------|
|    | 4.11 anak perusahaan.                                                                             | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 4.12 induk perusahaan.                                                                            | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 4.13 perusahaan afiliasi.                                                                         | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 4.14 yayasan yang memiliki koneksi dengan aktivitas pelaku <i>fraud</i> .                         | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 4.15 pegawai pajak yang korup.                                                                    | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 4.16 auditor pemerintah yang korup.                                                               | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 4.17 pegawai pemerintah yang korup.                                                               | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
| 7. | Sebagian besar kegagalan penuntutan kasus <i>fraud</i> karena:                                    |               |   |   |   |   |   |   |   |         |
|    | 7.1 bukti tidak cukup.                                                                            | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 7.2 saksi kunci tidak menghadiri sidang pengadilan.                                               | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 7.3 saksi atau berbagai saksi gagal menunjukkan bukti.                                            | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 7.4 adanya upaya untuk mengintimidasi pengadilan.                                                 | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 7.5 adanya upaya untuk menyuap pengadilan.                                                        | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 7.6 kasus berlangsung terlalu lama (misalnya, lebih dari enam bulan).                             | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 7.7 tersangka jatuh sakit sebelum pengadilan dimulai atau sakit selama persidangan berlangsung.   | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 7.8 tersangka meninggalkan Indonesia sebelum pengadilan dimulai atau saat pengadilan berlangsung. | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 7.9 tersangka meninggal dunia sebelum pengadilan dimulai atau saat pengadilan berlangsung.        | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 7.10 hakim jatuh sakit selama pengadilan berlangsung.                                             | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |
|    | 7.11 hakim meninggal dunia saat pengadilan berlangsung.                                           | Tidak setuju: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | :Setuju |

## B. Informasi demografis: profesi responden

Untuk tujuan pengklasifikasian, kami ingin mengetahui tentang pekerjaan atau peran Anda.

1. Apa nama institusi tempat Anda bekerja?

 \_\_\_\_\_

2. Apa nama divisi/satuan kerja Anda?

 \_\_\_\_\_

3. Berapa banyak kasus *fraud* (*financial crime*) termasuk korupsi yang pernah Anda proses sampai ke tingkat pengadilan?

< 2

2 – 5

6 – 10

> 10

Terma kasih atas partisipasi Anda. Selamat bekerja dan sukses selalu.

### Appendix 3

#### Research methodologies of fraud risk investigations

| No | Authors<br>(Organisation) | Year   | Qualitative | Quantitative                                           |                   |                              |                  |                                           |                                           | Others |
|----|---------------------------|--------|-------------|--------------------------------------------------------|-------------------|------------------------------|------------------|-------------------------------------------|-------------------------------------------|--------|
|    |                           |        |             | Traditional<br>statistical<br>models &<br>econometrics | Neural<br>Network | Meta-<br>classifie<br>system | Fuzzy<br>systems | Digital<br>analysis<br>(Benford's<br>law) | Mathematical<br>model<br>(game<br>theory) |        |
| 1  | Brazel <i>et al.</i>      | 2007   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 2  | Elliot                    | 2007   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 3  | Pinquet                   | 2007   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 4  | Tillman & Indergaard      | 2007   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 5  | Gordon                    | 2006   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 6  | Khalil & Lawarree         | 2006   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 7  | Skousen & Wright          | 2006   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 8  | Agrawal & Chadha          | 2005   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 9  | Caudill <i>et al.</i>     | 2005   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 10 | Chen & Sennetti           | 2005   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 11 | Reed & Pence              | 2005   |             |                                                        |                   |                              |                  | yes                                       |                                           |        |
| 12 | Steane & Cockerell        | 2005   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 13 | Durtschi <i>et al.</i>    | 2004   |             |                                                        |                   |                              |                  | yes                                       |                                           |        |
| 14 | Kaminski <i>et al.</i>    | 2004   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 15 | Wolfe & Hermanson         | 2004   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 16 | Artis <i>et al.</i>       | 2002   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 17 | Brockett <i>et al.</i>    | 2002   |             |                                                        |                   |                              |                  |                                           |                                           | yes    |
| 18 | Bezanis                   | 2002   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 19 | Krambia-Kapardis          | 2002 a | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 20 | Krambia-Kapardis          | 2002 b | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 21 | Apostolou <i>et al.</i>   | 2001 a |             |                                                        |                   |                              |                  |                                           |                                           | yes    |
| 22 | Belhadji                  | 2000   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 23 | Bell & Carcello           | 2000   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 24 | Braun                     | 2000   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 25 | Chartier & Spillane       | 2000   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 26 | Feroz <i>et al.</i>       | 2000   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 27 | Hassibi                   | 2000   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 28 | Knapp & Knapp             | 2000   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 29 | Lanza                     | 2000   |             |                                                        |                   |                              |                  | yes                                       |                                           |        |
| 30 | Wheeler & Aitken          | 2000   |             |                                                        |                   | yes                          |                  |                                           |                                           |        |
| 31 | Artis <i>et al.</i>       | 1999   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 32 | Beasley                   | 1999   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 33 | Beneish                   | 1999   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 34 | Brause <i>et al.</i>      | 1999   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 35 | Chan <i>et al.</i>        | 1999   |             |                                                        |                   | yes                          |                  |                                           |                                           |        |
| 36 | Hillison <i>et al.</i>    | 1999   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 37 | Stolfo <i>et al.</i>      | 1999   |             |                                                        |                   | yes                          |                  |                                           |                                           |        |
| 38 | Zimbelman & Waller        | 1999   |             |                                                        |                   |                              |                  |                                           | yes                                       |        |
| 39 | Brockett <i>et al.</i>    | 1998   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 40 | Busta & Weinberg          | 1998   |             |                                                        |                   |                              |                  | yes                                       |                                           |        |
| 41 | Chan & Stolfo             | 1998   |             |                                                        |                   | yes                          |                  |                                           |                                           |        |
| 42 | Fanning & Cogger          | 1998   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 43 | Karim & Siegel            | 1998   |             |                                                        |                   |                              |                  |                                           |                                           | yes    |
| 44 | Schultz & Hooks           | 1998   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 45 | Summers & Sweeney         | 1998   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 46 | Weisberg & Derrig         | 1998   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 47 | Aleskerov <i>et al.</i>   | 1997   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 48 | Bloomfield                | 1997   |             |                                                        |                   |                              |                  |                                           | yes                                       |        |
| 49 | Boatsman <i>et al.</i>    | 1997   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 50 | Deshmukh                  | 1997   |             |                                                        |                   |                              | yes              |                                           |                                           |        |

### Appendix 3

#### Research methodologies of fraud risk investigations

| No  | Authors<br>(Organisation) | Year   | Qualitative | Quantitative                                           |                   |                              |                  |                                           |                                           | Others |
|-----|---------------------------|--------|-------------|--------------------------------------------------------|-------------------|------------------------------|------------------|-------------------------------------------|-------------------------------------------|--------|
|     |                           |        |             | Traditional<br>statistical<br>models &<br>econometrics | Neural<br>Network | Meta-<br>classifie<br>system | Fuzzy<br>systems | Digital<br>analysis<br>(Benford's<br>law) | Mathematical<br>model<br>(game<br>theory) |        |
| 51  | Dorransoro <i>et al.</i>  | 1997   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 52  | Eining <i>et al.</i>      | 1997   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 53  | Green & Choi              | 1997   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 54  | He <i>et al.</i>          | 1997   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 55  | Hoffman & Patton          | 1997   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 56  | Moreau <i>et al.</i>      | 1997   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 57  | Nigrini & Mittermaier     | 1997   |             |                                                        |                   |                              |                  | yes                                       |                                           |        |
| 58  | Ryan & Miikkulainen       | 1997   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 59  | Stolfo <i>et al.</i>      | 1997 a |             |                                                        |                   | yes                          |                  |                                           |                                           |        |
| 60  | Stolfo <i>et al.</i>      | 1997 b |             |                                                        |                   | yes                          |                  |                                           |                                           |        |
| 61  | Zimbelman                 | 1997   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 62  | Beasley                   | 1996   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 63  | Hansen <i>et al.</i>      | 1996   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 64  | Heiman-Hoffman <i>et</i>  | 1996   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 65  | Nigrini                   | 1996   |             |                                                        |                   |                              |                  | yes                                       |                                           |        |
| 66  | Albrecht, <i>et al.</i>   | 1995   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 67  | Bloomfield                | 1995   |             |                                                        |                   |                              |                  |                                           | yes                                       |        |
| 68  | Derrig & Ostaszewski      | 1995   |             |                                                        |                   |                              | yes              |                                           |                                           |        |
| 69  | Fanning <i>et al.</i>     | 1995   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 70  | Hoffman <i>et al.</i>     | 1995   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 71  | Persons                   | 1995   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 72  | Bernardi                  | 1994   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 73  | Calderon & Green          | 1994   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 74  | Ghosh & Reilly            | 1994   |             |                                                        | yes               |                              |                  |                                           |                                           |        |
| 75  | Cummins & Derrig          | 1993   |             |                                                        |                   |                              | yes              |                                           |                                           |        |
| 76  | Hackenbrack               | 1993   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 77  | Kofman & Lawarree         | 1993   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 78  | Ponemon                   | 1993   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 79  | Wells                     | 1993   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 80  | Hackenbrack               | 1992   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 81  | Matsumura & Tucker        | 1992   |             |                                                        |                   |                              |                  |                                           | yes                                       |        |
| 82  | Bell <i>et al.</i>        | 1991   |             | yes                                                    |                   |                              |                  |                                           |                                           |        |
| 83  | Pincus                    | 1990   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 84  | Shibano & Watts           | 1990   |             |                                                        |                   |                              |                  |                                           | yes                                       |        |
| 85  | Loebbecke <i>et al.</i>   | 1989   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 86  | Pincus                    | 1989   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 87  | Thomas                    | 1989   |             |                                                        |                   |                              |                  | yes                                       |                                           |        |
| 88  | Carslaw                   | 1988   |             |                                                        |                   |                              |                  | yes                                       |                                           |        |
| 89  | Holt                      | 1987   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 90  | Albrecht & Romney         | 1986   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 91  | Fellingham & Newman       | 1985   |             |                                                        |                   |                              |                  |                                           | yes                                       |        |
| 92  | Joyce & Biddle            | 1981 a | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 93  | Joyce & Biddle            | 1981 b | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 94  | Hough <i>et al.</i>       | 1980   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 95  | Romney <i>et al.</i>      | 1980 a | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 96  | Romney <i>et al.</i>      | 1980 b | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 97  | Kinney                    | 1975   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 98  | Sykes & Matza             | 1957   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 99  | Cressey                   | 1950   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |
| 100 | Lafrentz                  | 1924   | yes         |                                                        |                   |                              |                  |                                           |                                           |        |

**Appendix 4**  
**Skewness and kurtosis of all the observed variables (N = 244)**

| <b>Variables</b>                                            | <b>skewness</b> | <b>kurtosis</b> |
|-------------------------------------------------------------|-----------------|-----------------|
| <b>1 Personal behaviour</b>                                 |                 |                 |
| 1.1 are greedy.                                             | -1.6            | 2.8             |
| 1.2 are not alone in committing fraud.                      | -1.7            | 3.1             |
| 1.3 are preoccupied with being successful.                  | -1.1            | 0.8             |
| 1.4 have an extravagant lifestyle.                          | -0.8            | 0.3             |
| 1.5 maintain an extravagant lifestyle.                      | -0.9            | 0.6             |
| 1.6 aim to get financial support.                           | -1.2            | 1.2             |
| 1.7 have control over conflicting business processes        | -1.1            | 1.2             |
| 1.8 are mainly employed in specific activities.             | -0.8            | 0.4             |
| 1.9 are careful to maintain custody of records.             | -0.4            | -0.7            |
| 1.10 are careful to maintain office space.                  | -0.3            | -0.9            |
| 1.11 perform menial tasks (" <b>m_task</b> ").              | -0.1            | -0.8            |
| 1.12 see a (" <b>reward</b> ") ... from committing fraud.   | -0.5            | -0.9            |
| 1.13 have relatively (" <b>few_complaints</b> ")....        | -0.1            | -0.6            |
| 1.14 have no history of any penalties for committing fraud. | -0.1            | -0.8            |
| 1.15 have relatively low pay.                               | -0.3            | -1.0            |
| 1.16 have opportunities to commit fraud                     | -1.5            | 4.2             |
| 1.17 have a way to rationalise their dishonest acts.        | -1.6            | 3.9             |
| <b>2 Rationalisations</b>                                   |                 |                 |
| 2.1 "The organization owes to me".                          | -0.5            | -0.8            |
| 2.2 "I am only borrowing the money ...".                    | -0.5            | -0.8            |
| 2.3 "Nobody will get hurt" (" <b>no-hurt</b> ").            | -0.6            | -0.8            |
| 2.4 "I deserve more" (" <b>deserve</b> ").                  | -0.9            | 0.3             |
| 2.5 "It's for a good purpose" (" <b>good</b> ").            | -0.3            | -0.9            |
| 2.6 "Something has to be sacrificed".                       | -0.3            | -0.8            |
| 2.7 "I am underpaid".                                       | -0.7            | -0.4            |
| 2.8 "I am not appreciated".                                 | -0.5            | -0.5            |
| 2.9 "Everybody else is doing it"                            | -0.9            | -0.2            |
| 2.10 "I am not really stealing.... (" <b>no_steal</b> ").   | -0.6            | -0.7            |
| 2.11 "The company can afford it" (" <b>afford</b> ").       | -0.3            | -0.9            |
| 2.12 "Fraudulent behaviour is worth the risks".             | -0.5            | -0.7            |
| 2.13 "It is only temporary ...".                            | -0.4            | -0.9            |

**Appendix 4**  
**Skewness and kurtosis of all the observed variables (N = 244)**

| <b>Variables</b>                                                    | <b>skewness</b> | <b>kurtosis</b> |
|---------------------------------------------------------------------|-----------------|-----------------|
| <b>3 Opportunity for fraud</b>                                      |                 |                 |
| 3.1 weak or incapable guardians (e.g. auditors).                    | -1.1            | 0.5             |
| 3.2 lack of capable guardians (e.g. auditors).                      | -1.3            | 1.4             |
| 3.3 absence of capable guardians (e.g. auditors).                   | -1.3            | 1.0             |
| 3.4 absence of whistle blowers.                                     | -1.1            | 0.5             |
| 3.5 absence of complaints or protests.                              | -1.0            | 0.6             |
| 3.6 a perception of a lenient sentence if convicted.                | -0.9            | 0.0             |
| 3.7 a potential delay in decision making and action.                | -0.7            | -0.1            |
| 3.8 a lack of awareness of wrongdoing.                              | -1.1            | 0.6             |
| 3.9 a lack of segregation of duties.                                | -0.7            | 0.0             |
| 3.10 failure to be informed about organisation rules.               | -0.6            | -0.3            |
| 3.11 failure to be informed about the consequences of ... fr        | -0.6            | -0.2            |
| 3.12 rapid turnover of employees.                                   | 0.2             | -0.8            |
| 3.13 constantly operating under financial crisis conditions.        | -0.2            | -0.5            |
| 3.14 a lack of an audit trail (" <b>audit_trail</b> ").             | -1.1            | 1.2             |
| 3.15 ineffective (" <b>supervision</b> ").                          | -1.6            | 2.6             |
| 3.16 a lack of ... authorisations (" <b>authorisation</b> ").       | -0.7            | -0.2            |
| 3.17 poor (" <b>accounting</b> ") records.                          | -1.2            | 1.2             |
| 3.18 a lack of physical control over assets (" <b>p_control</b> "). | -1.4            | 2.1             |
| 3.19 too much trust ....                                            | -1.2            | 1.1             |
| <b>4 The networks of collusion</b>                                  |                 |                 |
| 4.1 suppliers.                                                      | -1.1            | 0.8             |
| 4.2 customers.                                                      | -1.2            | 1.3             |
| 4.3 colleagues.                                                     | -0.8            | 0.4             |
| 4.4 bosses.                                                         | -1.5            | 0.4             |
| 4.5 internal auditors (" <b>i_auditor_1</b> ").                     | -1.0            | 0.4             |
| 4.6 external auditors (public accounting firm).                     | -0.8            | -0.4            |
| 4.7 audit committees (" <b>a_committee_1</b> ").                    | -0.5            | -0.8            |
| 4.8 directors (" <b>director_1</b> ").                              | -1.0            | 0.2             |
| 4.9 commissioners (" <b>comm_1</b> ").                              | -0.5            | -0.8            |
| 4.10 shareholders (" <b>s_holder_1</b> ").                          | -0.2            | -1.1            |
| 4.11 subsidiary companies (" <b>s_company_1</b> ").                 | -0.7            | -0.2            |
| 4.12 parent companies (" <b>p_company_1</b> ").                     | -0.5            | -0.6            |
| 4.13 affiliated companies (" <b>a_company_1</b> ").                 | -0.6            | -0.3            |
| 4.14 foundations ....                                               | -0.9            | 0.1             |
| 4.15 corrupt tax officers.                                          | -1.9            | 4.5             |
| 4.16 corrupt government auditors.                                   | -1.7            | 3.4             |
| 4.17 corrupt state and local officials.                             | -1.8            | 4.5             |

**Appendix 4**  
**Skewness and kurtosis of all the observed variables (N = 244)**

| Variables                                                     | skewness | kurtosis |
|---------------------------------------------------------------|----------|----------|
| <b>5 Organisation orientation vis a vis fraud</b>             |          |          |
| 5.1 the head ... is ... in an unethical manner.               | -1.0     | 0.6      |
| 5.2 ... management is perceived ... in an unethical manner    | -1.0     | 0.6      |
| 5.3 there are unclear messages about what is ... acceptable   | -0.8     | 0.6      |
| 5.4 there is a lack of adequate control procedures ....       | -1.3     | 2.0      |
| 5.5 colleagues lack of commitment to report fraud.            | -1.1     | 1.8      |
| 5.6 ... lack in use of technologies (" <b>tech</b> ")....     | -0.8     | 0.3      |
| 5.7 there are overly aggressive organisational targets.       | -0.4     | -0.5     |
| 5.8 there is an understaffing problem.                        | -0.3     | -0.5     |
| 5.9 ... management is over - (" <b>authoritarian</b> ").      | -0.6     | -0.1     |
| 5.10 ... poor conflict resolution .... (" <b>conflict</b> "). | -1.0     | 1.4      |
| 5.11 ... lack of open internal (" <b>communication</b> ").    | -1.1     | 1.2      |
| 5.12 there are no penalties for committing fraud.             | -1.5     | 1.7      |
| 5.13 there is (" <b>no_reward</b> ") for good work results.   | -1.3     | 1.8      |
| <b>6 The networks of the fraud commission</b>                 |          |          |
| 6.1 suppliers.                                                | -2.1     | 5.7      |
| 6.2 customers.                                                | -1.2     | 0.9      |
| 6.3 colleagues.                                               | -1.4     | 3.2      |
| 6.4 bosses.                                                   | -1.5     | 3.2      |
| 6.5 internal auditors.                                        | -1.1     | 0.7      |
| 6.6 external auditors (public accounting firm).               | -0.9     | 0.0      |
| 6.7 audit committees.                                         | -0.7     | -0.4     |
| 6.8 directors (" <b>director_2</b> ").                        | -1.0     | 0.6      |
| 6.9 commissioners.                                            | -0.7     | -0.3     |
| 6.10 shareholders (" <b>s_holder_2</b> ").                    | -0.4     | -0.7     |
| 6.11 subsidiary companies (" <b>s_company_2</b> ").           | -0.8     | 0.2      |
| 6.12 parent companies (" <b>p_company_2</b> ").               | -0.7     | -0.1     |
| 6.13 affiliated companies (" <b>a_company_2</b> ").           | -0.6     | -0.2     |
| 6.14 foundations.                                             | -1.0     | 0.4      |
| 6.15 corrupt tax officers.                                    | -1.6     | 2.3      |
| 6.16 corrupt government auditors.                             | -1.5     | 1.5      |
| 6.17 corrupt state and local officials.                       | -1.6     | 2.0      |
| <b>7 Justice avoidance</b>                                    |          |          |
| 7.1 the evidence is insufficient.                             | -2.0     | 4.3      |
| 7.2 a key witness fails to attend the trial.                  | -1.1     | 0.7      |
| 7.3 a witness or witnesses fail to provide proof.             | -1.5     | 2.3      |
| 7.4 an attempt is made to (" <b>intimidate</b> ") the court.  | -1.1     | 0.9      |
| 7.5 an attempt is made to (" <b>bribe</b> ") the court.       | -2.0     | 5.6      |
| 7.6 the case takes too (" <b>long</b> ") (e.g. > six months). | -1.1     | 0.5      |
| 7.7 the defendant is ill before the trial starts ....         | -0.7     | -0.2     |
| 7.8 the defendant leaves Indonesia ... (" <b>d_out</b> ").    | -1.1     | 0.5      |
| 7.9 the defendant dies before the trial starts ....           | -0.7     | -0.4     |

**Appendix 5 (a)**  
**Tandem process: CFA – fit indices**  
**F 1 “Opportunity for fraud” (sample 1)**

Assessment of normality

| Variable      | min   | max   | skew   | c.r.   | kurtosis | c.r.   |
|---------------|-------|-------|--------|--------|----------|--------|
| P_CONTROL     | 2.000 | 7.000 | -1.147 | -5.173 | 1.098    | 2.475  |
| ACCOUNTING    | 1.000 | 7.000 | -1.300 | -5.862 | 1.598    | 3.604  |
| AUTHORISATION | 1.000 | 7.000 | -.588  | -2.653 | -.363    | -.819  |
| SUPERVISION   | 1.000 | 7.000 | -1.386 | -6.251 | 1.878    | 4.235  |
| Multivariate  |       |       |        |        | 24.912   | 19.858 |

Models

Computation of degrees of freedom

|                                                |    |
|------------------------------------------------|----|
| Number of distinct sample moments:             | 10 |
| Number of distinct parameters to be estimated: | 8  |
| Degrees of freedom (10 - 8):                   | 2  |

Result

Minimum was achieved  
Chi-square = 4.286  
Degrees of freedom = 2  
Probability level = .117

Model Fit Summary

CMIN

| Model              | NPAR | CMIN    | DF | P    | CMIN/DF |
|--------------------|------|---------|----|------|---------|
| Default model      | 8    | 4.286   | 2  | .117 | 2.143   |
| Saturated model    | 10   | .000    | 0  |      |         |
| Independence model | 4    | 183.426 | 6  | .000 | 30.571  |

## RMR, GFI

| Model              | RMR  | GFI   | AGFI | PGFI |
|--------------------|------|-------|------|------|
| Default model      | .053 | .984  | .919 | .197 |
| Saturated model    | .000 | 1.000 |      |      |
| Independence model | .738 | .530  | .217 | .318 |

## Baseline Comparisons

| Model              | NFI<br>Delta1 | RFI<br>rho1 | IFI<br>Delta2 | TLI<br>rho2 | CFI   |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model      | .977          | .930        | .987          | .961        | .987  |
| Saturated model    | 1.000         |             | 1.000         |             | 1.000 |
| Independence model | .000          | .000        | .000          | .000        | .000  |

## Parsimony-Adjusted Measures

| Model              | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model      | .333   | .326 | .329 |
| Saturated model    | .000   | .000 | .000 |
| Independence model | 1.000  | .000 | .000 |

## NCP

| Model              | NCP     | LO 90   | HI 90   |
|--------------------|---------|---------|---------|
| Default model      | 2.286   | .000    | 12.443  |
| Saturated model    | .000    | .000    | .000    |
| Independence model | 177.426 | 136.887 | 225.389 |

## FMIN

| Model              | FMIN  | F0    | LO 90 | HI 90 |
|--------------------|-------|-------|-------|-------|
| Default model      | .035  | .019  | .000  | .103  |
| Saturated model    | .000  | .000  | .000  | .000  |
| Independence model | 1.516 | 1.466 | 1.131 | 1.863 |

## RMSEA

| Model              | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model      | .097  | .000  | .227  | .194   |
| Independence model | .494  | .434  | .557  | .000   |

## AIC

| Model              | AIC     | BCC     | BIC     | CAIC    |
|--------------------|---------|---------|---------|---------|
| Default model      | 20.286  | 20.976  | 42.718  | 50.718  |
| Saturated model    | 20.000  | 20.862  | 48.040  | 58.040  |
| Independence model | 191.426 | 191.771 | 202.642 | 206.642 |

## ECVI

| Model              | ECVI  | LO 90 | HI 90 | MECVI |
|--------------------|-------|-------|-------|-------|
| Default model      | .168  | .149  | .252  | .173  |
| Saturated model    | .165  | .165  | .165  | .172  |
| Independence model | 1.582 | 1.247 | 1.978 | 1.585 |

## HOELTER

| Model              | HOELTER<br>.05 | HOELTER<br>.01 |
|--------------------|----------------|----------------|
| Default model      | 170            | 261            |
| Independence model | 9              | 12             |

## Default model

Standardized RMR = .0287

**Appendix 5 (b)**  
**Tandem process: CFA – fit indices**  
**F 2 “Rationalisation” (sample 1)**

Assessment of normality

| Variable     | min   | max   | skew  | c.r.   | kurtosis | c.r.   |
|--------------|-------|-------|-------|--------|----------|--------|
| AFFORD       | 1.000 | 7.000 | .078  | .351   | -.972    | -2.191 |
| NO_STEAL     | 1.000 | 7.000 | -.501 | -2.261 | -.877    | -1.976 |
| GOOD         | 1.000 | 7.000 | -.191 | -.861  | -1.126   | -2.540 |
| DESERVE      | 1.000 | 7.000 | -.834 | -3.762 | -.049    | -.110  |
| Multivariate |       |       |       |        | 3.394    | 2.706  |

Models

Computation of degrees of freedom

|                                                |    |
|------------------------------------------------|----|
| Number of distinct sample moments:             | 10 |
| Number of distinct parameters to be estimated: | 8  |
| Degrees of freedom (10 - 8):                   | 2  |

Result

Minimum was achieved  
Chi-square = 1.601  
Degrees of freedom = 2  
Probability level = .449

Model Fit Summary

CMIN

| Model              | NPAR | CMIN    | DF | P    | CMIN/DF |
|--------------------|------|---------|----|------|---------|
| Default model      | 8    | 1.601   | 2  | .449 | .800    |
| Saturated model    | 10   | .000    | 0  |      |         |
| Independence model | 4    | 242.722 | 6  | .000 | 40.454  |

## RMR, GFI

| Model              | RMR   | GFI   | AGFI | PGFI |
|--------------------|-------|-------|------|------|
| Default model      | .047  | .994  | .968 | .199 |
| Saturated model    | .000  | 1.000 |      |      |
| Independence model | 1.577 | .456  | .093 | .273 |

## Baseline Comparisons

| Model              | NFI<br>Delta1 | RFI<br>rho1 | IFI<br>Delta2 | TLI<br>rho2 | CFI   |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model      | .993          | .980        | 1.002         | 1.005       | 1.000 |
| Saturated model    | 1.000         |             | 1.000         |             | 1.000 |
| Independence model | .000          | .000        | .000          | .000        | .000  |

## Parsimony-Adjusted Measures

| Model              | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model      | .333   | .331 | .333 |
| Saturated model    | .000   | .000 | .000 |
| Independence model | 1.000  | .000 | .000 |

## NCP

| Model              | NCP     | LO 90   | HI 90   |
|--------------------|---------|---------|---------|
| Default model      | .000    | .000    | 6.882   |
| Saturated model    | .000    | .000    | .000    |
| Independence model | 236.722 | 189.443 | 291.420 |

## FMIN

| Model              | FMIN  | F0    | LO 90 | HI 90 |
|--------------------|-------|-------|-------|-------|
| Default model      | .013  | .000  | .000  | .057  |
| Saturated model    | .000  | .000  | .000  | .000  |
| Independence model | 2.006 | 1.956 | 1.566 | 2.408 |

## RMSEA

| Model              | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model      | .000  | .000  | .169  | .549   |
| Independence model | .571  | .511  | .634  | .000   |

## AIC

| Model              | AIC     | BCC     | BIC     | CAIC    |
|--------------------|---------|---------|---------|---------|
| Default model      | 17.601  | 18.290  | 40.033  | 48.033  |
| Saturated model    | 20.000  | 20.862  | 48.040  | 58.040  |
| Independence model | 250.722 | 251.067 | 261.938 | 265.938 |

## ECVI

| Model              | ECVI  | LO 90 | HI 90 | MECVI |
|--------------------|-------|-------|-------|-------|
| Default model      | .145  | .149  | .206  | .151  |
| Saturated model    | .165  | .165  | .165  | .172  |
| Independence model | 2.072 | 1.681 | 2.524 | 2.075 |

## HOELTER

| Model              | HOELTER<br>.05 | HOELTER<br>.01 |
|--------------------|----------------|----------------|
| Default model      | 453            | 697            |
| Independence model | 7              | 9              |

## Default model

Standardized RMR = .0143

**Appendix 5 (c)**  
**Tandem process: CFA – fit indices**  
**F 3 “Collusion” (sample 1)**

Assessment of normality

| Variable     | min   | max   | skew  | c.r.   | kurtosis | c.r.   |
|--------------|-------|-------|-------|--------|----------|--------|
| A_COMPANY_1  | 1.000 | 7.000 | -.534 | -2.408 | -.479    | -1.079 |
| P_COMPANY_1  | 1.000 | 7.000 | -.477 | -2.152 | -.721    | -1.626 |
| S_COMPANY_1  | 1.000 | 7.000 | -.549 | -2.475 | -.427    | -.962  |
| COMM_1       | 1.000 | 7.000 | -.481 | -2.171 | -.905    | -2.040 |
| Multivariate |       |       |       |        | 39.432   | 31.432 |

Models

Computation of degrees of freedom

|                                                |    |
|------------------------------------------------|----|
| Number of distinct sample moments:             | 10 |
| Number of distinct parameters to be estimated: | 8  |
| Degrees of freedom (10 - 8):                   | 2  |

Result

Minimum was achieved  
Chi-square = 1.828  
Degrees of freedom = 2  
Probability level = .401

Model Fit Summary

CMIN

| Model              | NPAR | CMIN    | DF | P    | CMIN/DF |
|--------------------|------|---------|----|------|---------|
| Default model      | 8    | 1.828   | 2  | .401 | .914    |
| Saturated model    | 10   | .000    | 0  |      |         |
| Independence model | 4    | 389.953 | 6  | .000 | 64.992  |

## RMR, GFI

| Model              | RMR   | GFI   | AGFI  | PGFI |
|--------------------|-------|-------|-------|------|
| Default model      | .034  | .993  | .964  | .199 |
| Saturated model    | .000  | 1.000 |       |      |
| Independence model | 1.802 | .370  | -.050 | .222 |

## Baseline Comparisons

| Model              | NFI<br>Delta1 | RFI<br>rho1 | IFI<br>Delta2 | TLI<br>rho2 | CFI   |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model      | .995          | .986        | 1.000         | 1.001       | 1.000 |
| Saturated model    | 1.000         |             | 1.000         |             | 1.000 |
| Independence model | .000          | .000        | .000          | .000        | .000  |

## Parsimony-Adjusted Measures

| Model              | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model      | .333   | .332 | .333 |
| Saturated model    | .000   | .000 | .000 |
| Independence model | 1.000  | .000 | .000 |

## NCP

| Model              | NCP     | LO 90   | HI 90   |
|--------------------|---------|---------|---------|
| Default model      | .000    | .000    | 7.435   |
| Saturated model    | .000    | .000    | .000    |
| Independence model | 383.953 | 322.899 | 452.415 |

## FMIN

| Model              | FMIN  | F0    | LO 90 | HI 90 |
|--------------------|-------|-------|-------|-------|
| Default model      | .015  | .000  | .000  | .061  |
| Saturated model    | .000  | .000  | .000  | .000  |
| Independence model | 3.223 | 3.173 | 2.669 | 3.739 |

## RMSEA

| Model              | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model      | .000  | .000  | .175  | .503   |
| Independence model | .727  | .667  | .789  | .000   |

## AIC

| Model              | AIC     | BCC     | BIC     | CAIC    |
|--------------------|---------|---------|---------|---------|
| Default model      | 17.828  | 18.518  | 40.260  | 48.260  |
| Saturated model    | 20.000  | 20.862  | 48.040  | 58.040  |
| Independence model | 397.953 | 398.297 | 409.169 | 413.169 |

## ECVI

| Model              | ECVI  | LO 90 | HI 90 | MECVI |
|--------------------|-------|-------|-------|-------|
| Default model      | .147  | .149  | .210  | .153  |
| Saturated model    | .165  | .165  | .165  | .172  |
| Independence model | 3.289 | 2.784 | 3.855 | 3.292 |

## HOELTER

| Model              | HOELTER<br>.05 | HOELTER<br>.01 |
|--------------------|----------------|----------------|
| Default model      | 397            | 610            |
| Independence model | 4              | 6              |

## Default model

Standardized RMR = .0105

**Appendix 5 (d)**  
**Tandem process: CFA – fit indices**  
**F 4 “Commission of fraud” (sample 1)**

Assessment of normality

| Variable     | min   | max   | skew  | c.r.   | kurtosis | c.r.   |
|--------------|-------|-------|-------|--------|----------|--------|
| A_COMPANY_2  | 1.000 | 7.000 | -.529 | -2.384 | -.034    | -.077  |
| S_COMPANY_2  | 1.000 | 7.000 | -.761 | -3.431 | .505     | 1.139  |
| S HOLDER_2   | 1.000 | 7.000 | -.377 | -1.702 | -.646    | -1.457 |
| P_COMPANY_2  | 1.000 | 7.000 | -.576 | -2.599 | .033     | .075   |
| Multivariate |       |       |       |        | 24.050   | 19.171 |

Models

Computation of degrees of freedom

Number of distinct sample moments: 10  
Number of distinct parameters to be estimated: 8  
Degrees of freedom (10 - 8): 2

Result

Minimum was achieved  
Chi-square = 3.696  
Degrees of freedom = 2  
Probability level = .158

Model Fit Summary

CMIN

| Model              | NPAR | CMIN    | DF | P    | CMIN/DF |
|--------------------|------|---------|----|------|---------|
| Default model      | 8    | 3.696   | 2  | .158 | 1.848   |
| Saturated model    | 10   | .000    | 0  |      |         |
| Independence model | 4    | 485.529 | 6  | .000 | 80.922  |

## RMR, GFI

| Model              | RMR   | GFI   | AGFI  | PGFI |
|--------------------|-------|-------|-------|------|
| Default model      | .031  | .985  | .923  | .197 |
| Saturated model    | .000  | 1.000 |       |      |
| Independence model | 1.403 | .358  | -.071 | .215 |

## Baseline Comparisons

| Model              | NFI<br>Delta1 | RFI<br>rho1 | IFI<br>Delta2 | TLI<br>rho2 | CFI   |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model      | .992          | .977        | .996          | .989        | .996  |
| Saturated model    | 1.000         |             | 1.000         |             | 1.000 |
| Independence model | .000          | .000        | .000          | .000        | .000  |

## Parsimony-Adjusted Measures

| Model              | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model      | .333   | .331 | .332 |
| Saturated model    | .000   | .000 | .000 |
| Independence model | 1.000  | .000 | .000 |

## NCP

| Model              | NCP     | LO 90   | HI 90   |
|--------------------|---------|---------|---------|
| Default model      | 1.696   | .000    | 11.340  |
| Saturated model    | .000    | .000    | .000    |
| Independence model | 479.529 | 410.924 | 555.538 |

## FMIN

| Model              | FMIN  | F0    | LO 90 | HI 90 |
|--------------------|-------|-------|-------|-------|
| Default model      | .031  | .014  | .000  | .094  |
| Saturated model    | .000  | .000  | .000  | .000  |
| Independence model | 4.013 | 3.963 | 3.396 | 4.591 |

## RMSEA

| Model              | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model      | .084  | .000  | .216  | .244   |
| Independence model | .813  | .752  | .875  | .000   |

## AIC

| Model              | AIC     | BCC     | BIC     | CAIC    |
|--------------------|---------|---------|---------|---------|
| Default model      | 19.696  | 20.385  | 42.128  | 50.128  |
| Saturated model    | 20.000  | 20.862  | 48.040  | 58.040  |
| Independence model | 493.529 | 493.874 | 504.745 | 508.745 |

## ECVI

| Model              | ECVI  | LO 90 | HI 90 | MECVI |
|--------------------|-------|-------|-------|-------|
| Default model      | .163  | .149  | .242  | .168  |
| Saturated model    | .165  | .165  | .165  | .172  |
| Independence model | 4.079 | 3.512 | 4.707 | 4.082 |

## HOELTER

| Model              | HOELTER<br>.05 | HOELTER<br>.01 |
|--------------------|----------------|----------------|
| Default model      | 197            | 302            |
| Independence model | 4              | 5              |

Default model

Standardized RMR = .0120

**Appendix 5 (e)**  
**Tandem process: CFA – fit indices**  
**F5 “Organisational Orientation vis a vis fraud” (sample 1)**

Assessment of normality

| Variable      | min   | max   | skew   | c.r.   | kurtosis | c.r.   |
|---------------|-------|-------|--------|--------|----------|--------|
| TECH          | 1.000 | 7.000 | -.761  | -3.432 | .080     | .180   |
| NO_REWARD     | 1.000 | 7.000 | -1.457 | -6.568 | 2.329    | 5.252  |
| CONFLICT      | 1.000 | 7.000 | -.836  | -3.768 | 1.126    | 2.538  |
| COMMUNICATION | 1.000 | 7.000 | -1.032 | -4.655 | 1.317    | 2.969  |
| Multivariate  |       |       |        |        | 17.681   | 14.094 |

Models

Computation of degrees of freedom

|                                                |    |
|------------------------------------------------|----|
| Number of distinct sample moments:             | 10 |
| Number of distinct parameters to be estimated: | 8  |
| Degrees of freedom (10 - 8):                   | 2  |

Result

Minimum was achieved  
Chi-square = 3.163  
Degrees of freedom = 2  
Probability level = .206

Model Fit Summary

CMIN

| Model              | NPAR | CMIN    | DF | P    | CMIN/DF |
|--------------------|------|---------|----|------|---------|
| Default model      | 8    | 3.163   | 2  | .206 | 1.582   |
| Saturated model    | 10   | .000    | 0  |      |         |
| Independence model | 4    | 160.698 | 6  | .000 | 26.783  |

## RMR, GFI

| Model              | RMR  | GFI   | AGFI | PGFI |
|--------------------|------|-------|------|------|
| Default model      | .050 | .987  | .936 | .197 |
| Saturated model    | .000 | 1.000 |      |      |
| Independence model | .710 | .558  | .264 | .335 |

## Baseline Comparisons

| Model              | NFI<br>Delta1 | RFI<br>rho1 | IFI<br>Delta2 | TLI<br>rho2 | CFI   |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model      | .980          | .941        | .993          | .977        | .992  |
| Saturated model    | 1.000         |             | 1.000         |             | 1.000 |
| Independence model | .000          | .000        | .000          | .000        | .000  |

## Parsimony-Adjusted Measures

| Model              | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model      | .333   | .327 | .331 |
| Saturated model    | .000   | .000 | .000 |
| Independence model | 1.000  | .000 | .000 |

## NCP

| Model              | NCP     | LO 90   | HI 90   |
|--------------------|---------|---------|---------|
| Default model      | 1.163   | .000    | 10.304  |
| Saturated model    | .000    | .000    | .000    |
| Independence model | 154.698 | 117.033 | 199.788 |

## FMIN

| Model              | FMIN  | F0    | LO 90 | HI 90 |
|--------------------|-------|-------|-------|-------|
| Default model      | .026  | .010  | .000  | .085  |
| Saturated model    | .000  | .000  | .000  | .000  |
| Independence model | 1.328 | 1.278 | .967  | 1.651 |

## RMSEA

| Model              | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model      | .069  | .000  | .206  | .301   |
| Independence model | .462  | .402  | .525  | .000   |

## AIC

| Model              | AIC     | BCC     | BIC     | CAIC    |
|--------------------|---------|---------|---------|---------|
| Default model      | 19.163  | 19.853  | 41.595  | 49.595  |
| Saturated model    | 20.000  | 20.862  | 48.040  | 58.040  |
| Independence model | 168.698 | 169.043 | 179.914 | 183.914 |

## ECVI

| Model              | ECVI  | LO 90 | HI 90 | MECVI |
|--------------------|-------|-------|-------|-------|
| Default model      | .158  | .149  | .234  | .164  |
| Saturated model    | .165  | .165  | .165  | .172  |
| Independence model | 1.394 | 1.083 | 1.767 | 1.397 |

## HOELTER

| Model              | HOELTER<br>.05 | HOELTER<br>.01 |
|--------------------|----------------|----------------|
| Default model      | 230            | 353            |
| Independence model | 10             | 13             |

## Default model

Standardized RMR = .0268

**Appendix 5 (f)**  
**Tandem process: CFA – fit indices**  
**F6 “Justice Avoidance” (sample 1)**

Assessment of normality

| Variable     | min   | max   | skew   | c.r.   | kurtosis | c.r.   |
|--------------|-------|-------|--------|--------|----------|--------|
| D_OUT        | 1.000 | 7.000 | -1.112 | -5.015 | .692     | 1.559  |
| BRIBE        | 1.000 | 7.000 | -2.056 | -9.272 | 6.156    | 13.879 |
| INTIMIDATE   | 1.000 | 7.000 | -1.133 | -5.108 | .964     | 2.174  |
| LONG         | 1.000 | 7.000 | -1.193 | -5.381 | .949     | 2.139  |
| Multivariate |       |       |        |        | 15.101   | 12.038 |

Models

Computation of degrees of freedom

|                                                |    |
|------------------------------------------------|----|
| Number of distinct sample moments:             | 10 |
| Number of distinct parameters to be estimated: | 8  |
| Degrees of freedom (10 - 8):                   | 2  |

Result

Minimum was achieved  
Chi-square = 2.298  
Degrees of freedom = 2  
Probability level = .317

Model Fit Summary

CMIN

| Model              | NPAR | CMIN   | DF | P    | CMIN/DF |
|--------------------|------|--------|----|------|---------|
| Default model      | 8    | 2.298  | 2  | .317 | 1.149   |
| Saturated model    | 10   | .000   | 0  |      |         |
| Independence model | 4    | 17.669 | 6  | .007 | 2.945   |

## RMR, GFI

| Model              | RMR  | GFI   | AGFI | PGFI |
|--------------------|------|-------|------|------|
| Default model      | .069 | .978  | .891 | .196 |
| Saturated model    | .000 | 1.000 |      |      |
| Independence model | .826 | .832  | .720 | .499 |

## Baseline Comparisons

| Model              | NFI<br>Delta1 | RFI<br>rho1 | IFI<br>Delta2 | TLI<br>rho2 | CFI   |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model      | .870          | .610        | .981          | .923        | .974  |
| Saturated model    | 1.000         |             | 1.000         |             | 1.000 |
| Independence model | .000          | .000        | .000          | .000        | .000  |

## Parsimony-Adjusted Measures

| Model              | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model      | .333   | .290 | .325 |
| Saturated model    | .000   | .000 | .000 |
| Independence model | 1.000  | .000 | .000 |

## NCP

| Model              | NCP    | LO 90 | HI 90  |
|--------------------|--------|-------|--------|
| Default model      | .298   | .000  | 8.505  |
| Saturated model    | .000   | .000  | .000   |
| Independence model | 11.669 | 2.674 | 28.264 |

## FMIN

| Model              | FMIN | F0   | LO 90 | HI 90 |
|--------------------|------|------|-------|-------|
| Default model      | .019 | .002 | .000  | .070  |
| Saturated model    | .000 | .000 | .000  | .000  |
| Independence model | .146 | .096 | .022  | .234  |

## RMSEA

| Model              | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model      | .035  | .000  | .187  | .420   |
| Independence model | .127  | .061  | .197  | .031   |

## AIC

| Model              | AIC    | BCC    | BIC    | CAIC   |
|--------------------|--------|--------|--------|--------|
| Default model      | 18.298 | 18.988 | 40.730 | 48.730 |
| Saturated model    | 20.000 | 20.862 | 48.040 | 58.040 |
| Independence model | 25.669 | 26.014 | 36.885 | 40.885 |

## ECVI

| Model              | ECVI | LO 90 | HI 90 | MECVI |
|--------------------|------|-------|-------|-------|
| Default model      | .151 | .149  | .219  | .157  |
| Saturated model    | .165 | .165  | .165  | .172  |
| Independence model | .212 | .138  | .349  | .215  |

## HOELTER

| Model              | HOELTER<br>.05 | HOELTER<br>.01 |
|--------------------|----------------|----------------|
| Default model      | 316            | 485            |
| Independence model | 87             | 116            |

## Default model

Standardized RMR = .0267

**Appendix 6 (a)**  
**SEM – fit indices: the first theoretical model**  
**(Sample 1)**

Computation of degrees of freedom

Number of distinct sample moments: 276  
 Number of distinct parameters to be estimated: 51  
 Degrees of freedom (276 - 51): 225

Result

Minimum was achieved  
 Chi-square = 414.258  
 Degrees of freedom = 225  
 Probability level = .000

Model Fit Summary

Baseline Comparisons

| Model              | NFI<br>Delta1 | RFI<br>rho1 | IFI<br>Delta2 | TLI<br>rho2 | CFI   |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model      | .800          | .775        | .897          | .883        | .896  |
| Saturated model    | 1.000         |             | 1.000         |             | 1.000 |
| Independence model | .000          | .000        | .000          | .000        | .000  |

RMSEA

| Model              | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model      | .083  | .071  | .096  | .000   |
| Independence model | .243  | .234  | .253  | .000   |

Default model

Standardized RMR = .1255

**Appendix 6 (b)**  
**SEM – fit indices: the second theoretical model**  
**(Sample 1)**

Computation of degrees of freedom

Number of distinct sample moments: 276  
 Number of distinct parameters to be estimated: 51  
 Degrees of freedom (276 - 51): 225

Result (Default model)

Minimum was achieved  
 Chi-square = 413.808  
 Degrees of freedom = 225  
 Probability level = .000

Model Fit Summary

Baseline Comparisons

| Model              | NFI<br>Delta1 | RFI<br>rho1 | IFI<br>Delta2 | TLI<br>rho2 | CFI   |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model      | .800          | .775        | .898          | .883        | .896  |
| Saturated model    | 1.000         |             | 1.000         |             | 1.000 |
| Independence model | .000          | .000        | .000          | .000        | .000  |

RMSEA

| Model              | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model      | .083  | .071  | .096  | .000   |
| Independence model | .243  | .234  | .253  | .000   |

Default model

Standardized RMR = .1246

**Appendix 7 (a)**  
**Standardized residual covariances (the first model, sample 1)**

|               |    | 1     | 2           | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19   | 20   | 21    | 22   | 23   |
|---------------|----|-------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|------|------|
| A_COMPANY_1   | 1  | 0.00  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| P_COMPANY_1   | 2  | -0.17 | 0.00        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| S_COMPANY_1   | 3  | 0.08  | 0.03        | 0.00  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| COMM_1        | 4  | 0.26  | -0.02       | -0.06 | 0.00  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| P_COMPANY_2   | 5  | 0.29  | 0.82        | -0.04 | -0.03 | 0.54  |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| S_COMPANY_2   | 6  | 0.43  | 0.78        | 0.67  | -0.14 | 0.54  | 0.50  |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| S_HOLDER_2    | 7  | 0.89  | 1.56        | 1.17  | 1.48  | 0.37  | 0.60  | 0.30  |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| A_COMPANY_2   | 8  | 1.23  | 0.11        | -0.56 | 0.88  | 0.61  | 0.32  | 0.20  | 0.40  |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| DESERVE       | 9  | 1.51  | 2.70        | 2.15  | 1.10  | 1.64  | 1.74  | 2.37  | 0.11  | 0.00  |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| GOOD          | 10 | 1.80  | 2.81        | 3.40  | 2.27  | 2.28  | 2.74  | 2.50  | 0.69  | -0.04 | 0.00  |       |       |       |       |       |       |       |       |      |      |       |      |      |
| NO_STEAL      | 11 | 2.06  | 2.95        | 2.05  | 1.10  | 2.13  | 2.13  | 2.05  | 0.70  | 0.06  | -0.06 | 0.00  |       |       |       |       |       |       |       |      |      |       |      |      |
| AFFORD        | 12 | 0.03  | 1.20        | 1.21  | 1.12  | 0.70  | 0.83  | 1.78  | -0.58 | -0.36 | 0.28  | 0.08  | 0.00  |       |       |       |       |       |       |      |      |       |      |      |
| SUPERVISION   | 13 | 0.46  | 1.57        | 1.38  | -0.58 | 1.32  | 1.76  | 0.14  | 1.23  | -0.26 | -2.13 | -1.76 | -2.45 | 0.00  |       |       |       |       |       |      |      |       |      |      |
| AUTHORISATION | 14 | -0.14 | 1.14        | 1.07  | 0.89  | 1.11  | 1.36  | 0.37  | 0.43  | 0.72  | -0.37 | -0.61 | 0.59  | 0.62  | 0.00  |       |       |       |       |      |      |       |      |      |
| ACCOUNTING    | 15 | 0.60  | 2.27        | 2.31  | 0.85  | 1.93  | 1.78  | 1.16  | 1.04  | 0.98  | -0.04 | -0.15 | 0.51  | -0.24 | 0.06  | 0.00  |       |       |       |      |      |       |      |      |
| P_CONTROL     | 16 | 1.67  | 2.53        | 2.53  | 1.38  | 2.70  | 2.33  | 0.73  | 1.76  | 1.11  | 0.13  | -0.17 | 0.01  | 0.26  | -0.55 | 0.10  | 0.00  |       |       |      |      |       |      |      |
| TECH          | 17 | 0.08  | 0.35        | 1.46  | 0.37  | -0.65 | -0.58 | -0.37 | -1.36 | -0.50 | 1.48  | 0.13  | 0.88  | 1.17  | 1.79  | 1.70  | 0.66  | 0.00  |       |      |      |       |      |      |
| CONFLICT      | 18 | 0.64  | 0.64        | 0.55  | -0.67 | 0.56  | 0.60  | -0.51 | 0.38  | 0.30  | 0.54  | 0.95  | -0.43 | 2.17  | -0.28 | -0.32 | -0.25 | 0.47  | 0.00  |      |      |       |      |      |
| COMMUNICATION | 19 | 1.45  | 0.87        | 1.02  | 0.63  | 0.72  | 0.61  | -0.05 | 0.74  | 0.80  | -0.31 | 0.19  | 0.27  | 1.57  | 0.36  | -1.24 | -0.97 | -0.04 | -0.13 | 0.00 |      |       |      |      |
| NO_REWARD     | 20 | 0.79  | 0.87        | 0.78  | -0.18 | 1.20  | 1.08  | 0.20  | 1.20  | 1.39  | -0.18 | 0.17  | -1.32 | 2.24  | 0.96  | -0.40 | -0.43 | -0.68 | -0.04 | 0.25 | 0.00 |       |      |      |
| INTIMIDATE    | 21 | 2.01  | 2.60        | 2.41  | 0.80  | 1.74  | 1.97  | 1.57  | 1.32  | 3.17  | 2.49  | 2.34  | 1.81  | 1.23  | 2.44  | 1.39  | 1.62  | 1.23  | 0.10  | 0.15 | 0.93 | 0.00  |      |      |
| BRIBE         | 22 | 2.40  | <b>3.57</b> | 3.13  | 3.23  | 1.98  | 2.73  | 1.94  | 1.85  | 2.18  | 1.31  | 1.59  | 0.97  | 1.70  | 3.00  | 1.03  | 0.71  | 2.05  | 2.06  | 2.07 | 3.32 | 0.02  | 0.00 |      |
| D_OUT         | 23 | 2.56  | 3.14        | 2.64  | 1.77  | 2.43  | 2.17  | 1.35  | 1.55  | 3.19  | 1.60  | 2.31  | 1.85  | 1.34  | 1.71  | 1.70  | 2.59  | 1.32  | 1.96  | 2.13 | 1.54 | -0.07 | 0.01 | 0.00 |

**Appendix 7 (b)**  
**Standardized residual covariances (the second model, sample 1)**

|               |    | 1     | 2           | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19   | 20   | 21    | 22   | 23   |
|---------------|----|-------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|------|------|
| A_COMPANY_1   | 1  | 0.00  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| P_COMPANY_1   | 2  | -0.17 | 0.00        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| S_COMPANY_1   | 3  | 0.08  | 0.03        | 0.00  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| COMM_1        | 4  | 0.25  | -0.02       | -0.06 | 0.00  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| P_COMPANY_2   | 5  | 0.30  | 0.84        | -0.02 | -0.02 | 0.57  |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| S_COMPANY_2   | 6  | 0.44  | 0.80        | 0.69  | -0.13 | 0.57  | 0.53  |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| S_HOLDER_2    | 7  | 0.91  | 1.59        | 1.19  | 1.50  | 0.39  | 0.63  | 0.31  |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| A_COMPANY_2   | 8  | 1.25  | 0.12        | -0.54 | 0.90  | 0.63  | 0.35  | 0.22  | 0.42  |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| DESERVE       | 9  | 1.51  | 2.70        | 2.15  | 1.10  | 1.76  | 1.85  | 2.45  | 0.20  | 0.00  |       |       |       |       |       |       |       |       |       |      |      |       |      |      |
| GOOD          | 10 | 1.80  | 2.81        | 3.40  | 2.27  | 2.39  | 2.84  | 2.58  | 0.78  | -0.05 | 0.00  |       |       |       |       |       |       |       |       |      |      |       |      |      |
| NO_STEAL      | 11 | 2.06  | 2.95        | 2.05  | 1.10  | 2.26  | 2.25  | 2.14  | 0.80  | 0.06  | -0.05 | 0.00  |       |       |       |       |       |       |       |      |      |       |      |      |
| AFFORD        | 12 | 0.03  | 1.20        | 1.21  | 1.12  | 0.80  | 0.93  | 1.85  | -0.49 | -0.37 | 0.28  | 0.08  | 0.00  |       |       |       |       |       |       |      |      |       |      |      |
| SUPERVISION   | 13 | 0.46  | 1.57        | 1.38  | -0.58 | 1.02  | 1.47  | -0.09 | 0.97  | -0.26 | -2.13 | -1.76 | -2.45 | 0.00  |       |       |       |       |       |      |      |       |      |      |
| AUTHORISATION | 14 | -0.14 | 1.14        | 1.07  | 0.89  | 0.77  | 1.04  | 0.13  | 0.15  | 0.72  | -0.37 | -0.61 | 0.59  | 0.61  | 0.00  |       |       |       |       |      |      |       |      |      |
| ACCOUNTING    | 15 | 0.60  | 2.27        | 2.31  | 0.85  | 1.49  | 1.35  | 0.83  | 0.66  | 0.98  | -0.04 | -0.14 | 0.51  | -0.24 | 0.07  | 0.00  |       |       |       |      |      |       |      |      |
| P_CONTROL     | 16 | 1.67  | 2.53        | 2.53  | 1.38  | 2.32  | 1.96  | 0.45  | 1.43  | 1.10  | 0.12  | -0.17 | 0.01  | 0.25  | -0.55 | 0.10  | 0.00  |       |       |      |      |       |      |      |
| TECH          | 17 | 0.08  | 0.35        | 1.46  | 0.37  | -0.74 | -0.67 | -0.44 | -1.44 | -0.50 | 1.48  | 0.13  | 0.88  | 1.17  | 1.79  | 1.70  | 0.66  | 0.00  |       |      |      |       |      |      |
| CONFLICT      | 18 | 0.64  | 0.64        | 0.55  | -0.67 | 0.43  | 0.47  | -0.61 | 0.27  | 0.30  | 0.54  | 0.95  | -0.43 | 2.17  | -0.28 | -0.31 | -0.25 | 0.47  | 0.00  |      |      |       |      |      |
| COMMUNICATION | 19 | 1.45  | 0.87        | 1.02  | 0.63  | 0.59  | 0.47  | -0.15 | 0.62  | 0.80  | -0.31 | 0.19  | 0.27  | 1.57  | 0.36  | -1.24 | -0.97 | -0.04 | -0.13 | 0.00 |      |       |      |      |
| NO_REWARD     | 20 | 0.79  | 0.87        | 0.78  | -0.18 | 1.06  | 0.95  | 0.10  | 1.08  | 1.39  | -0.18 | 0.17  | -1.32 | 2.24  | 0.97  | -0.40 | -0.44 | -0.67 | -0.04 | 0.25 | 0.00 |       |      |      |
| INTIMIDATE    | 21 | 2.01  | 2.60        | 2.41  | 0.80  | 1.76  | 1.99  | 1.59  | 1.33  | 3.17  | 2.49  | 2.34  | 1.81  | 1.23  | 2.44  | 1.39  | 1.62  | 1.23  | 0.10  | 0.15 | 0.93 | 0.00  |      |      |
| BRIBE         | 22 | 2.40  | <b>3.57</b> | 3.13  | 3.23  | 2.01  | 2.76  | 1.96  | 1.87  | 2.18  | 1.31  | 1.59  | 0.97  | 1.70  | 3.00  | 1.03  | 0.71  | 2.05  | 2.06  | 2.07 | 3.32 | 0.02  | 0.00 |      |
| D_OUT         | 23 | 2.56  | 3.14        | 2.64  | 1.77  | 2.45  | 2.19  | 1.37  | 1.57  | 3.19  | 1.60  | 2.31  | 1.85  | 1.34  | 1.71  | 1.70  | 2.59  | 1.32  | 1.96  | 2.13 | 1.54 | -0.07 | 0.01 | 0.00 |

**Appendix 8 (a)**  
***Post hoc* model – fit indices (sample 2)**

Assessment of normality

| Variable      | min   | max   | skew   | c.r.   | kurtosis | c.r.   |
|---------------|-------|-------|--------|--------|----------|--------|
| NO_REWARD     | 2.000 | 7.000 | -1.003 | -4.521 | .691     | 1.559  |
| COMMUNICATION | 1.000 | 7.000 | -1.062 | -4.791 | .923     | 2.081  |
| CONFLICT      | 1.000 | 7.000 | -1.132 | -5.107 | 1.563    | 3.523  |
| TECH          | 1.000 | 7.000 | -.885  | -3.992 | .541     | 1.220  |
| P_COMPANY_2   | 1.000 | 7.000 | -.725  | -3.270 | -.332    | -.749  |
| S_HOLDER_2    | 1.000 | 7.000 | -.461  | -2.078 | -.842    | -1.897 |
| DIRECTOR_2    | 1.000 | 7.000 | -1.248 | -5.628 | 1.132    | 2.552  |
| S_COMPANY_2   | 1.000 | 7.000 | -.746  | -3.364 | -.205    | -.461  |
| INTIMIDATE    | 1.000 | 7.000 | -1.086 | -4.897 | .648     | 1.462  |
| BRIBE         | 1.000 | 7.000 | -1.920 | -8.657 | 4.853    | 10.941 |
| D_OUT         | 1.000 | 7.000 | -1.071 | -4.832 | .266     | .599   |
| S_COMPANY_1   | 1.000 | 7.000 | -.790  | -3.564 | -.003    | -.006  |
| COMM_1        | 1.000 | 7.000 | -.550  | -2.480 | -.689    | -1.553 |
| A_COMPANY_1   | 1.000 | 7.000 | -.725  | -3.269 | -.206    | -.463  |
| P_COMPANY_1   | 1.000 | 7.000 | -.586  | -2.641 | -.460    | -1.036 |
| GOOD          | 1.000 | 7.000 | -.389  | -1.755 | -.704    | -1.588 |
| AFFORD        | 1.000 | 7.000 | -.623  | -2.810 | -.640    | -1.442 |
| NO_STEAL      | 1.000 | 7.000 | -.711  | -3.207 | -.434    | -.979  |
| NO_HURT       | 1.000 | 7.000 | -.577  | -2.600 | -.767    | -1.730 |
| AUDIT_TRIAL   | 1.000 | 7.000 | -1.160 | -5.231 | 1.359    | 3.065  |
| AUTHORISATION | 1.000 | 7.000 | -.856  | -3.859 | -.072    | -.162  |
| ACCOUNTING    | 1.000 | 7.000 | -1.095 | -4.939 | .845     | 1.906  |
| P_CONTROL     | 1.000 | 7.000 | -1.503 | -6.775 | 2.127    | 4.795  |
| Multivariate  |       |       |        |        | 136.185  | 22.178 |

## Models

### Computation of degrees of freedom (Default model)

Number of distinct sample moments: 276  
 Number of distinct parameters to be estimated: 63  
 Degrees of freedom (276 - 63): 213

### Result

Minimum was achieved  
 Chi-square = 279.876  
 Degrees of freedom = 213  
 Probability level = .001

### Model Fit Summary

#### CMIN

| Model              | NPAR | CMIN     | DF  | P    | CMIN/DF |
|--------------------|------|----------|-----|------|---------|
| Default model      | 63   | 279.876  | 213 | .001 | 1.314   |
| Saturated model    | 276  | .000     | 0   |      |         |
| Independence model | 23   | 2256.717 | 253 | .000 | 8.920   |

#### RMR, GFI

| Model              | RMR  | GFI   | AGFI | PGFI |
|--------------------|------|-------|------|------|
| Default model      | .127 | .845  | .799 | .652 |
| Saturated model    | .000 | 1.000 |      |      |
| Independence model | .860 | .256  | .189 | .235 |

### Baseline Comparisons

| Model              | NFI<br>Delta1 | RFI<br>rho1 | IFI<br>Delta2 | TLI<br>rho2 | CFI   |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model      | .876          | .853        | .967          | .960        | .967  |
| Saturated model    | 1.000         |             | 1.000         |             | 1.000 |
| Independence model | .000          | .000        | .000          | .000        | .000  |

## Parsimony-Adjusted Measures

| Model              | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model      | .842   | .737 | .814 |
| Saturated model    | .000   | .000 | .000 |
| Independence model | 1.000  | .000 | .000 |

## NCP

| Model              | NCP      | LO 90    | HI 90    |
|--------------------|----------|----------|----------|
| Default model      | 66.876   | 27.571   | 114.284  |
| Saturated model    | .000     | .000     | .000     |
| Independence model | 2003.717 | 1855.540 | 2159.302 |

## FMIN

| Model              | FMIN   | F0     | LO 90  | HI 90  |
|--------------------|--------|--------|--------|--------|
| Default model      | 2.313  | .553   | .228   | .944   |
| Saturated model    | .000   | .000   | .000   | .000   |
| Independence model | 18.651 | 16.560 | 15.335 | 17.845 |

## RMSEA

| Model              | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model      | .051  | .033  | .067  | .451   |
| Independence model | .256  | .246  | .266  | .000   |

## AIC

| Model              | AIC      | BCC      | BIC      | CAIC     |
|--------------------|----------|----------|----------|----------|
| Default model      | 405.876  | 437.051  | 582.529  | 645.529  |
| Saturated model    | 552.000  | 688.577  | 1325.910 | 1601.910 |
| Independence model | 2302.717 | 2314.098 | 2367.209 | 2390.209 |

## ECVI

| Model              | ECVI   | LO 90  | HI 90  | MECVI  |
|--------------------|--------|--------|--------|--------|
| Default model      | 3.354  | 3.030  | 3.746  | 3.612  |
| Saturated model    | 4.562  | 4.562  | 4.562  | 5.691  |
| Independence model | 19.031 | 17.806 | 20.317 | 19.125 |

## HOELTER

| Model              | HOELTER<br>.05 | HOELTER<br>.01 |
|--------------------|----------------|----------------|
| Default model      | 108            | 115            |
| Independence model | 16             | 17             |

Default model

Standardized RMR = .0543

## Appendix 8 (b)

### Standardized residual covariances (the post hoc model, sample 2)

|               |    | 1    | 2    | 3    | 4    | 5    | 6    | 7          | 8    | 9   | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19  | 20   | 21   | 22  | 23  |
|---------------|----|------|------|------|------|------|------|------------|------|-----|------|------|------|------|------|------|------|------|------|-----|------|------|-----|-----|
| NO_REWARD     | 1  | 0.0  |      |      |      |      |      |            |      |     |      |      |      |      |      |      |      |      |      |     |      |      |     |     |
| COMMUNICATION | 2  | 0.0  | 0.0  |      |      |      |      |            |      |     |      |      |      |      |      |      |      |      |      |     |      |      |     |     |
| CONFLICT      | 3  | -0.1 | 0.0  | 0.0  |      |      |      |            |      |     |      |      |      |      |      |      |      |      |      |     |      |      |     |     |
| TECH          | 4  | -0.1 | 0.0  | 0.0  | 0.0  |      |      |            |      |     |      |      |      |      |      |      |      |      |      |     |      |      |     |     |
| P_COMPANY_2   | 5  | 0.4  | 0.5  | 0.7  | -0.3 | 0.1  |      |            |      |     |      |      |      |      |      |      |      |      |      |     |      |      |     |     |
| S_HOLDER_2    | 6  | 0.2  | 0.4  | 0.7  | -0.3 | 0.1  | 0.0  |            |      |     |      |      |      |      |      |      |      |      |      |     |      |      |     |     |
| DIRECTOR_2    | 7  | 1.6  | 0.5  | 1.4  | 0.0  | 0.2  | 0.2  | 0.0        |      |     |      |      |      |      |      |      |      |      |      |     |      |      |     |     |
| S_COMPANY_2   | 8  | 0.5  | 0.5  | 0.6  | -0.1 | 0.1  | 0.0  | -0.1       | 0.1  |     |      |      |      |      |      |      |      |      |      |     |      |      |     |     |
| INTIMIDATE    | 9  | -1.5 | 0.3  | 0.9  | 0.7  | 0.3  | 0.4  | 0.4        | 0.0  | 0.1 |      |      |      |      |      |      |      |      |      |     |      |      |     |     |
| BRIBE         | 10 | -0.6 | 0.3  | 0.4  | -0.9 | 0.0  | 0.4  | 1.0        | 0.2  | 0.1 | 0.0  |      |      |      |      |      |      |      |      |     |      |      |     |     |
| D_OUT         | 11 | -0.4 | 0.0  | 1.2  | -0.2 | 0.8  | 0.7  | 1.0        | 0.9  | 0.2 | 0.3  | 0.1  |      |      |      |      |      |      |      |     |      |      |     |     |
| S_COMPANY_1   | 12 | 1.2  | 1.1  | 0.4  | -0.5 | -0.1 | 0.0  | 0.3        | 0.1  | 0.0 | 0.7  | 1.2  | 0.0  |      |      |      |      |      |      |     |      |      |     |     |
| COMM_1        | 13 | 0.2  | 0.2  | 1.1  | -0.3 | -0.2 | 0.6  | <b>2.1</b> | 0.0  | 0.7 | 1.4  | 1.0  | -0.1 | 0.0  |      |      |      |      |      |     |      |      |     |     |
| A_COMPANY_1   | 14 | 1.8  | 0.8  | 0.6  | -0.6 | -0.2 | 0.3  | 0.1        | 0.1  | 0.0 | 0.6  | 1.1  | 0.0  | 0.1  | 0.0  |      |      |      |      |     |      |      |     |     |
| P_COMPANY_1   | 15 | 1.1  | 1.0  | 0.9  | -0.4 | 0.2  | 0.3  | 1.0        | 0.1  | 0.1 | 0.0  | 1.3  | 0.0  | 0.2  | 0.0  | 0.0  |      |      |      |     |      |      |     |     |
| GOOD          | 16 | 0.2  | 0.2  | 0.4  | -0.8 | -0.1 | 0.6  | 0.7        | 0.3  | 1.2 | 0.3  | 0.8  | 0.4  | 0.4  | 0.4  | 0.6  | 0.1  |      |      |     |      |      |     |     |
| AFFORD        | 17 | 0.1  | -0.3 | 1.9  | -0.3 | -0.1 | -0.5 | 0.1        | 0.0  | 1.0 | -0.7 | -0.3 | 0.0  | -0.5 | 0.4  | 0.4  | 0.6  | 0.0  |      |     |      |      |     |     |
| NO_STEAL      | 18 | 0.7  | 0.0  | 0.0  | 0.7  | 0.3  | 0.1  | -0.6       | 0.6  | 1.0 | -0.4 | 0.1  | 0.2  | -0.6 | 0.8  | 0.4  | -0.1 | 0.0  | 0.0  |     |      |      |     |     |
| NO_HURT       | 19 | 0.4  | -1.0 | 0.9  | -0.7 | 0.3  | 0.8  | -0.3       | 0.6  | 1.1 | -0.4 | 0.7  | 0.9  | -0.1 | 1.0  | 1.1  | 0.2  | -0.2 | 0.0  | 0.0 |      |      |     |     |
| AUDIT_TRIAL   | 20 | 0.7  | 0.8  | -0.1 | 0.4  | -0.1 | -0.4 | 0.7        | 0.1  | 0.8 | 0.0  | 0.9  | 0.0  | -0.5 | 0.1  | -0.6 | -0.5 | -0.8 | -0.4 | 1.0 | 0.0  |      |     |     |
| AUTHORISATION | 21 | 0.8  | -0.2 | 0.9  | -0.9 | 0.2  | 1.3  | 0.6        | 0.6  | 1.0 | -0.2 | 0.8  | 0.3  | 0.8  | 1.2  | 0.0  | -0.2 | 0.2  | -0.3 | 0.6 | -0.1 | 0.0  |     |     |
| ACCOUNTING    | 22 | 0.8  | -0.1 | -0.3 | 0.8  | -0.6 | -0.3 | -0.2       | -0.3 | 0.4 | 0.2  | 0.1  | -0.5 | -0.6 | -0.1 | -1.0 | -0.8 | -0.1 | 0.5  | 0.1 | 0.1  | -0.1 | 0.0 |     |
| P_CONTROL     | 23 | 0.8  | -0.3 | 0.2  | -0.3 | 0.1  | 0.1  | 1.0        | 0.2  | 0.1 | -0.3 | 0.1  | 0.1  | 0.6  | 0.3  | -0.5 | -1.0 | -0.2 | -0.3 | 1.1 | -0.1 | 0.1  | 0.0 | 0.0 |

| <b>Appendix 8 (c):</b>                                |                      |          |       |        |       |  |
|-------------------------------------------------------|----------------------|----------|-------|--------|-------|--|
| <b>Maximum likelihood estimates</b>                   |                      |          |       |        |       |  |
| <b>Regression weights: (post hoc model, sample 2)</b> |                      |          |       |        |       |  |
| <b>Measurement model</b>                              |                      |          |       |        |       |  |
|                                                       |                      |          |       |        |       |  |
|                                                       |                      | Estimate | S.E.  | C.R.   | P     |  |
| P_CONTROL                                             | <--- Opportunities   | 1        |       |        |       |  |
| ACCOUNTING                                            | <--- Opportunities   | 0.994    | 0.075 | 13.309 | 0.000 |  |
| AUTHORISATION                                         | <--- Opportunities   | 0.905    | 0.095 | 9.559  | 0.000 |  |
| AUDIT_TRIAL                                           | <--- Opportunities   | 0.753    | 0.076 | 9.855  | 0.000 |  |
| NO_HURT                                               | <--- Rationalisation | 1        |       |        |       |  |
| NO_STEAL                                              | <--- Rationalisation | 1.104    | 0.143 | 7.735  | 0.000 |  |
| AFFORD                                                | <--- Rationalisation | 0.961    | 0.132 | 7.308  | 0.000 |  |
| GOOD                                                  | <--- Rationalisation | 0.619    | 0.125 | 4.964  | 0.000 |  |
| P_COMPANY_1                                           | <--- Collusion       | 1        |       |        |       |  |
| A_COMPANY_1                                           | <--- Collusion       | 1.106    | 0.065 | 16.904 | 0.000 |  |
| COMM_1                                                | <--- Collusion       | 0.749    | 0.127 | 5.888  | 0.000 |  |
| S_COMPANY_1                                           | <--- Collusion       | 1.072    | 0.059 | 18.046 | 0.000 |  |
| D_OUT                                                 | <--- Justice         | 1        |       |        |       |  |
| BRIBE                                                 | <--- Justice         | 1.448    | 0.443 | 3.271  | 0.001 |  |
| INTIMIDATE                                            | <--- Justice         | 2.528    | 0.843 | 2.998  | 0.003 |  |
| S_COMPANY_2                                           | <--- Commission      | 1        |       |        |       |  |
| DIRECTOR_2                                            | <--- Commission      | 0.699    | 0.058 | 11.992 | 0.000 |  |
| S HOLDER_2                                            | <--- Commission      | 0.932    | 0.065 | 14.369 | 0.000 |  |
| P_COMPANY_2                                           | <--- Commission      | 0.977    | 0.028 | 35.039 | 0.000 |  |
| TECH                                                  | <--- Organisation    | 1        |       |        |       |  |
| CONFLICT                                              | <--- Organisation    | 1.779    | 0.526 | 3.382  | 0.000 |  |
| COMMUNICATION                                         | <--- Organisation    | 2.594    | 0.728 | 3.564  | 0.000 |  |
| NO_REWARD                                             | <--- Organisation    | 1.524    | 0.454 | 3.356  | 0.000 |  |
| GOOD                                                  | <--- Commission      | 0.23     | 0.08  | 2.86   | 0.004 |  |
| P_COMPANY_1                                           | <--- Justice         | 0.474    | 0.207 | 2.294  | 0.022 |  |
| AUTHORISATION                                         | <--- Rationalisation | 0.156    | 0.093 | 1.674  | 0.094 |  |
| P_COMPANY_2                                           | <--- Organisation    | 0.273    | 0.116 | 2.35   | 0.019 |  |
| COMM_1                                                | <--- Commission      | 0.183    | 0.108 | 1.698  | 0.089 |  |
| D_OUT                                                 | <--- Organisation    | 1.13     | 0.425 | 2.658  | 0.008 |  |
| TECH                                                  | <--- Rationalisation | 0.298    | 0.116 | 2.57   | 0.010 |  |
| TECH                                                  | <--- Opportunities   | 0.22     | 0.117 | 1.885  | 0.059 |  |
| D_OUT                                                 | <--- Rationalisation | 0.191    | 0.111 | 1.714  | 0.087 |  |

**Appendix 8 (d-1)**  
**Standardized total effects (post hoc model, sample 2)**  
**measurement model**

|               | Organisation | Opportunities | Collusion | Justice | Commission | Rationalisation |
|---------------|--------------|---------------|-----------|---------|------------|-----------------|
| NO_REWARD     | 0.588        | 0             | 0         | 0       | 0          | 0               |
| COMMUNICATION | 0.953        | 0             | 0         | 0       | 0          | 0               |
| CONFLICT      | 0.607        | 0             | 0         | 0       | 0          | 0               |
| TECH          | 0.46         | 0.322         | 0         | 0       | 0          | 0.262           |
| P_COMPANY_2   | 0.264        | 0.344         | 0.69      | 0.179   | 0.958      | 0               |
| S_HOLDER_2    | 0.155        | 0.289         | 0.58      | 0.151   | 0.804      | 0               |
| DIRECTOR_2    | 0.145        | 0.268         | 0.539     | 0.14    | 0.748      | 0               |
| S_COMPANY_2   | 0.191        | 0.354         | 0.711     | 0.185   | 0.987      | 0               |
| INTIMIDATE    | 0.261        | 0.111         | 0.323     | 0.927   | 0          | 0               |
| BRIBE         | 0.185        | 0.079         | 0.23      | 0.659   | 0          | 0               |
| D_OUT         | 0.448        | 0.11          | 0.108     | 0.31    | 0          | 0.151           |
| S_COMPANY_1   | 0.139        | 0.333         | 0.97      | 0       | 0          | 0               |
| COMM_1        | 0.121        | 0.271         | 0.734     | 0.032   | 0.169      | 0               |
| A_COMPANY_1   | 0.136        | 0.325         | 0.946     | 0       | 0          | 0               |
| P_COMPANY_1   | 0.163        | 0.311         | 0.905     | 0.143   | 0          | 0               |
| GOOD          | 0.141        | 0.315         | 0.164     | 0.043   | 0.227      | 0.485           |
| AFFORD        | 0.154        | 0.367         | 0         | 0       | 0          | 0.764           |
| NO_STEAL      | 0.168        | 0.401         | 0         | 0       | 0          | 0.835           |
| NO_HURT       | 0.144        | 0.344         | 0         | 0       | 0          | 0.715           |
| AUDIT_TRIAL   | 0.309        | 0.739         | 0         | 0       | 0          | 0               |
| AUTHORISATION | 0.337        | 0.807         | 0         | 0       | 0          | 0.127           |
| ACCOUNTING    | 0.368        | 0.88          | 0         | 0       | 0          | 0               |
| P_CONTROL     | 0.376        | 0.899         | 0         | 0       | 0          | 0               |

**Appendix 8 (d-2)**  
**Standardized direct effects (post hoc model, sample 2)**  
**measurement model**

|               | Organisation | Opportunities | Collusion | Justice | Commission | Rationalisation |
|---------------|--------------|---------------|-----------|---------|------------|-----------------|
| NO_REWARD     | 0.588        | 0             | 0         | 0       | 0          | 0               |
| COMMUNICATION | 0.953        | 0             | 0         | 0       | 0          | 0               |
| CONFLICT      | 0.607        | 0             | 0         | 0       | 0          | 0               |
| TECH          | 0.326        | 0.196         | 0         | 0       | 0          | 0.262           |
| P_COMPANY_2   | 0.078        | 0             | 0         | 0       | 0.958      | 0               |
| S_HOLDER_2    | 0            | 0             | 0         | 0       | 0.804      | 0               |
| DIRECTOR_2    | 0            | 0             | 0         | 0       | 0.748      | 0               |
| S_COMPANY_2   | 0            | 0             | 0         | 0       | 0.987      | 0               |
| INTIMIDATE    | 0            | 0             | 0         | 0.927   | 0          | 0               |
| BRIBE         | 0            | 0             | 0         | 0.659   | 0          | 0               |
| D_OUT         | 0.33         | 0             | 0         | 0.31    | 0          | 0.151           |
| S_COMPANY_1   | 0            | 0             | 0.97      | 0       | 0          | 0               |
| COMM_1        | 0            | 0             | 0.612     | 0       | 0.169      | 0               |
| A_COMPANY_1   | 0            | 0             | 0.946     | 0       | 0          | 0               |
| P_COMPANY_1   | 0            | 0             | 0.855     | 0.143   | 0          | 0               |
| GOOD          | 0            | 0             | 0         | 0       | 0.227      | 0.485           |
| AFFORD        | 0            | 0             | 0         | 0       | 0          | 0.764           |
| NO_STEAL      | 0            | 0             | 0         | 0       | 0          | 0.835           |
| NO_HURT       | 0            | 0             | 0         | 0       | 0          | 0.715           |
| AUDIT_TRIAL   | 0            | 0.739         | 0         | 0       | 0          | 0               |
| AUTHORISATION | 0            | 0.746         | 0         | 0       | 0          | 0.127           |
| ACCOUNTING    | 0            | 0.88          | 0         | 0       | 0          | 0               |

**Appendix 8 (d-3)**  
**Standardized indirect effects (post hoc model, sample 2)**  
**measurement model**

|               | Organisation | Opportunities | Collusion | Justice | Commission | Rationalisation |
|---------------|--------------|---------------|-----------|---------|------------|-----------------|
| NO_REWARD     | 0            | 0             | 0         | 0       | 0          | 0               |
| COMMUNICATION | 0            | 0             | 0         | 0       | 0          | 0               |
| CONFLICT      | 0            | 0             | 0         | 0       | 0          | 0               |
| TECH          | 0.135        | 0.126         | 0         | 0       | 0          | 0               |
| P_COMPANY_2   | 0.185        | 0.344         | 0.69      | 0.179   | 0          | 0               |
| S_HOLDER_2    | 0.155        | 0.289         | 0.58      | 0.151   | 0          | 0               |
| DIRECTOR_2    | 0.145        | 0.268         | 0.539     | 0.14    | 0          | 0               |
| S_COMPANY_2   | 0.191        | 0.354         | 0.711     | 0.185   | 0          | 0               |
| INTIMIDATE    | 0.261        | 0.111         | 0.323     | 0       | 0          | 0               |
| BRIBE         | 0.185        | 0.079         | 0.23      | 0       | 0          | 0               |
| D_OUT         | 0.118        | 0.11          | 0.108     | 0       | 0          | 0               |
| S_COMPANY_1   | 0.139        | 0.333         | 0         | 0       | 0          | 0               |
| COMM_1        | 0.121        | 0.271         | 0.122     | 0.032   | 0          | 0               |
| A_COMPANY_1   | 0.136        | 0.325         | 0         | 0       | 0          | 0               |
| P_COMPANY_1   | 0.163        | 0.311         | 0.05      | 0       | 0          | 0               |
| GOOD          | 0.141        | 0.315         | 0.164     | 0.043   | 0          | 0               |
| AFFORD        | 0.154        | 0.367         | 0         | 0       | 0          | 0               |
| NO_STEAL      | 0.168        | 0.401         | 0         | 0       | 0          | 0               |
| NO_HURT       | 0.144        | 0.344         | 0         | 0       | 0          | 0               |
| AUDIT_TRIAL   | 0.309        | 0             | 0         | 0       | 0          | 0               |
| AUTHORISATION | 0.337        | 0.061         | 0         | 0       | 0          | 0               |
| ACCOUNTING    | 0.368        | 0             | 0         | 0       | 0          | 0               |
| P_CONTROL     | 0.376        | 0             | 0         | 0       | 0          | 0               |