USING FINANCIAL ANALYSIS AND INTERPRETATION AS A FOUNDATION TO COMPREHEND FINANCIAL HEALTH

by

ELDA DU TOIT

Submitted in fulfilment of the requirements for the degree of

DCOM FINANCIAL MANAGEMENT SCIENCES

in the

DEPARTMENT OF FINANCIAL MANAGEMENT

in the

FACULTY OF ECONOMIC AND MANAGEMENT SCIENCES

at the

UNIVERSITY OF PRETORIA

Study leader: Professor J.H.v.H de Wet

Co-study leader: Professor F.N.S. Vermaak

PRETORIA

OCTOBER 2012

© University of Pretoria
ACKNOWLEDGEMENTS

I would like to express my sincere gratitude and appreciation to everyone who was involved in the completion of this thesis. In particular, I would like to thank the following people:

- Prof. Johannes de Wet and Prof. Frans Vermaak, the supervisor and co-supervisor of this thesis, for their patient guidance and the motivation they gave me to complete this study;

- Mr. Phillip de Jager, previously from the Department of Financial Management at the University of Pretoria, for his input with the statistical tests;

- Mr. Sollie Millard and Mrs Joyce Jordaan from the Department of Statistics at the University of Pretoria, for their input with the interpretation of the statistical test results and Mrs Rina Owen from the Faculty of Economic and Management Sciences for her inputs in developing the questionnaire and in assisting me with the statistical analysis thereof;

- Prof Daan Gouws and Prof. Leon Brümmer for their efforts in improving the final document;

- Miss Marlaine Kruger for the professional language editing of the final document;

- my late father Carel du Toit and my loving mother Vida du Toit, for their patience, understanding, encouragement and for continuing to believe in me when I failed to do so; and

- my wonderful Creator for giving me the health, strength and patience to complete this thesis.
I dedicate this thesis to Jaco Delport, who believed in me and was there to support me every step of the way while I was completing the study.

I will forever remain thankful to you.
ABSTRACT

The ability to measure the financial health of a company is becoming an increasingly serious issue. One only needs to think of the widely published irregularities in companies such as Enron, Parmalat and Macmed to grasp something of the magnitude of the losses and other problems that investors can face if they do not have the ability to “predict” possible problems. There are individuals who are constantly identifying new and ingenious ways to deceive their customers, investors, the government and others.

It is important for parties with an interest in a company to devise new ways to identify how financial analyses can be used to protect their interests. Managers are primarily responsible for the prevention and identification of accounting irregularities. Unfortunately, at the same time, they may also be assumed to be the primary perpetrators of accounting irregularities, because they are in a position to manipulate accounting records and bypass control measures more easily than anyone else in a company.

The main aim of this study is to determine whether financial analysis and interpretation can be applied by interested parties to measure financial health and by implication identify accounting irregularities. Proof that this is possible has the potential to be used in analyses, by all parties with an interest in a company, to determine financial health and to identify irregularities in the financial statements.

The study begins with a literature review, which provides an explanation of accounting irregularities and related matters, as well as an overview of previous uses of financial analyses to determine whether such analyses are useful in the identification of irregularities in the financial statements.
The objectives of the study are as follows:

- An investigation into the characteristics, as identified by researchers locally and abroad, that are displayed by companies with a higher risk of or occurrence of accounting irregularities.
- A survey of the media by means of a literature review to identify case study companies that had allegations of accounting irregularities against them.
- The analysis of the case study companies in a quantitative and qualitative way to determine whether the characteristics that are identified as part of the first objective hold true in practice.
- Statistical analyses of the share price data of the case study companies in the form of an event study, a regression analysis and a structural break analysis to determine when and under what circumstances significant changes happened.
- Conduct a survey involving the creators and the users of financial statements in order to observe their experience regarding the usefulness of financial statements to reveal financial health. This is done by means of questionnaires that are analysed statistically, designed to derive conclusions of what practitioners tend to experience in practice and what their feelings are regarding the use of financial statements and accounting data in an analysis of the financial health of a company.

On the basis of the case studies, nine of 18 identified characteristics were found to be useful in the identification of accounting irregularities by parties other than managers. They are:

1. company age;
2. company culture;
3. debt levels;
4. directors’ behaviour and character;
5. financial distress;
6. industry or sector;
7. liquidity;
8. management’s behaviour and character; and
9. remuneration policies.
A further eight additional characteristics were also identified as useful in the identification of accounting irregularities. They are:

1. acquisitions, mergers and other restructuring;
2. dividends;
3. opposite movements from the industry or sector;
4. period before irregularities are detected;
5. “preparing” interested parties for the annual report;
6. share price changes;
7. significant changes; and
8. tax.

The results of the review of the companies’ financial information are supplemented with a statistical analysis of the companies’ share price data as well as a questionnaire that are submitted to the users and compilers of financial statements. The aim of the first statistical analysis, consisting of event studies, regression analyses and structural break analyses, is to support the findings regarding the characteristics of companies with increased risk of accounting irregularities. The questionnaire set out to relate the subjective opinions of the users and compilers of financial statements with the findings of the study.

The results of the study provide proof that interested parties have the ability to use the identified company characteristics to indicate increased accounting irregularity risk.

**Key Words**

Accounting  Financial distress  Ratio analysis
Characteristics  Fraud
Financial analysis  Irregularities
## CONTENTS

LIST OF TABLES .................................................................................................................. XIV
LIST OF FIGURES ............................................................................................................... XVIII

### CHAPTER ONE

**INTRODUCTION** ............................................................................................................. 1

1.1 BACKGROUND ............................................................................................................. 1
1.2 IMPORTANCE OF THE STUDY ................................................................................. 5
1.3 PROBLEM STATEMENT .............................................................................................. 7
1.4 RESEARCH OBJECTIVES .......................................................................................... 8
1.5 RESEARCH METHODOLOGY ..................................................................................... 9
1.6 NATURE AND FORM OF RESULTS........................................................................... 13
1.6.1 Outcomes of the study ......................................................................................... 13
1.6.2 Outline of the thesis ............................................................................................. 14

### CHAPTER TWO

**CORPORATE MISCONDUCT AND ACCOUNTING IRREGULARITIES .............. 16**

2.1 INTRODUCTION ........................................................................................................... 16
2.2 WHAT IS FRAUD? ...................................................................................................... 17
2.2.1 THE FRAUD TRIANGLE ...................................................................................... 17
2.2.2 WHITE-COLLAR CRIME AND ITS PERPETRATORS .......................................... 20
2.3 FRAUD WITHIN A COMPANY – CORPORATE FRAUD ......................................... 23
2.3.1 THE FRAUD TRIANGLE IN CORPORATE FRAUD ........................................... 23
2.3.2 MEASURES THAT ARE PUT IN PLACE TO PREVENT CORPORATE FRAUD ........ 24
2.3.3 TYPES OF CORPORATE FRAUD AND ITS IMPACT ........................................ 25
2.4 MISAPPROPRIATION OF ASSETS – EMPLOYEE FRAUD ....................................... 27
2.5 CORPORATE MISCONDUCT BY MANAGERS – ACCOUNTING IRREGULARITIES MANIFESTED IN THE FINANCIAL STATEMENTS .... 28
2.5.1 DEFINING ACCOUNTING IRREGULARITIES .................................................... 28
2.5.2 REASONS FOR ACCOUNTING IRREGULARITIES ............................................. 31
RESEARCH METHODOLOGY ........................................................................................................ 67
4.1 INTRODUCTION ............................................................................................................. 67
4.2 RESEARCH STRUCTURE, OBJECTIVES AND AIMS .................................................. 67
4.2.1 Research design structure ....................................................................................... 67
4.2.2 Research objectives and aims ................................................................................ 73
4.3 METHOD OF INVESTIGATION .................................................................................... 76
4.3.1 Research design .................................................................................................... 76
4.3.2 Data collection ...................................................................................................... 78
4.3.3 Data analysis ......................................................................................................... 79
4.4 THE QUALITATIVE AND QUANTITATIVE ANALYSES ................................................. 82
4.4.1 Qualitative analysis ............................................................................................... 82
4.4.2 Quantitative analysis ........................................................................................... 83
4.5 THE STATISTICAL ANALYSIS ................................................................................... 84
4.5.1 Event studies ....................................................................................................... 85
4.5.2 Regression and structural break analysis .............................................................. 87
4.6 A SURVEY BY MEANS OF QUESTIONNAIRES .......................................................... 89
4.6.1 The questionnaire .................................................................................................. 90
4.6.2 Development of the questionnaire ......................................................................... 91
4.6.3 Profile of respondents .......................................................................................... 92
4.6.4 Sampling design and sampling method ................................................................. 93
4.6.5 Collection of results .............................................................................................. 93
4.6.6 Analysis of the results ......................................................................................... 94
4.8.1 Permission to collect data ..................................................................................... 95
4.8.2 Informed consent .................................................................................................. 96
4.8.3 Confidentiality and anonymity ............................................................................. 96

CHAPTER FIVE
CHARACTERISTICS DISPLAYED BY COMPANIES THAT HAVE AN INCREASED RISK OF ACCOUNTING IRREGULARITIES ......................................................... 98
5.1 INTRODUCTION ........................................................................................................... 98
5.2 CATEGORIES OF CHARACTERISTICS THAT INCREASE THE RISK FOR THE OCCURRENCE OF ACCOUNTING IRREGULARITIES ........................................ 98
5.3 THE ANALYSIS OF COMPANY CHARACTERISTICS AND RELATIONSHIPS ................................................................. 99
5.3.1 Accounting transactions ................................................................. 100
5.3.2 Auditor aspects ............................................................................. 102
5.3.3 Cash flow ....................................................................................... 103
5.3.4 Company age ............................................................................... 104
5.3.5 Company size ............................................................................... 105
5.3.6 Control .......................................................................................... 106
5.3.7 Culture .......................................................................................... 108
5.3.8 Debt ................................................................................................ 109
5.3.9 Directors ........................................................................................ 110
5.3.10 Financial distress .......................................................................... 112
5.3.11 Geographic location ...................................................................... 112
5.3.12 Growth ........................................................................................ 113
5.3.13 Industry ......................................................................................... 114
5.3.14 Liquidity ....................................................................................... 117
5.3.15 Management ............................................................................... 117
5.3.16 Personnel ..................................................................................... 119
5.3.17 Profitability .................................................................................. 121
5.3.18 Receivables and inventories .......................................................... 123
5.3.19 Remuneration .............................................................................. 124
5.3.20 Shareholding ............................................................................... 125
5.3.21 Stock market performance ............................................................. 126
5.3.22 Structure ...................................................................................... 127
5.4 THE RESULTS .................................................................................. 128
5.5 SUMMARY ....................................................................................... 130

CHAPTER SIX
THE SELECTION OF THE CASE STUDY COMPANIES AND MATCHING CONTROL GROUPS .................................................................................................. 132
6.1 INTRODUCTION ............................................................................... 132
6.2 THE SELECTION METHOD TO IDENTIFY FIRMS WITH KNOWN
VIOLATIONS ............................................................................................................ 133

6.3 THE RESULTS FROM THE MEDIA SEARCHES PER CASE STUDY COMPANY .............................................................................................................. 134

6.3.1 Beige Holdings Limited ................................................................................. 134
6.3.2 Johannesburg Consolidated Investments (JCI) .............................................. 136
6.3.3 Macmed Healthcare Limited ........................................................................... 137
6.3.4 Saambou Holdings Limited ........................................................................... 140
6.3.5 Tigon Limited ................................................................................................. 142

6.4 SELECTION OF A CONTROL SAMPLE OF FIRMS WITH NO KNOWN ACCOUNTING IRREGULARITIES ........................................................................ 145

6.5 SUMMARY ........................................................................................................ 146

CHAPTER SEVEN ANALYSES OF FIVE SOUTH AFRICAN COMPANIES WITH ALLEGED ACCOUNTING IRREGULARITIES ................................................................. 147

7.1 INTRODUCTION ............................................................................................... 147
7.2 RESULTS FROM THE CASE STUDIES PRESENTED PER COMPANY 147

7.2.1 Beige Holdings Limited ............................................................................... 147
7.2.1.1 Qualitative analysis .................................................................................. 147
7.2.1.2 Quantitative analysis .............................................................................. 148
7.2.1.3 Statistical analysis .................................................................................. 152
7.2.1.4 Summary ................................................................................................. 156

7.2.2 Johannesburg Consolidated Investments (JCI) ........................................ 159
7.2.2.1 Qualitative analysis ................................................................................ 159
7.2.2.2 Quantitative analysis ............................................................................. 160
7.2.2.3 Statistical analysis ................................................................................ 163
7.2.2.4 Summary ............................................................................................... 168

7.2.3 Macmed Healthcare Limited ....................................................................... 172
7.2.3.1 Qualitative analysis ................................................................................ 172
7.2.3.2 Quantitative analysis ............................................................................. 173
7.2.3.3 Statistical analysis ................................................................................ 177
7.2.3.4 Summary ............................................................................................... 181
9.2.2 Identification of companies with known violations of accounting irregularities .............................................................................................................................................. 249

9.2.3 Quantitative and qualitative analyses of five case study companies........ 249
   a. The characteristics that proved to be of use as indicators of accounting irregularities ......................................................................................................................... 250
   b. The characteristics that proved not to be useful indicators of accounting irregularities ......................................................................................................................... 253
   c. Additional characteristics that proved to be of use as indicators of accounting irregularities ................................................................................................................. 254

9.2.4 Statistical analyses of share price data...................................................... 257
9.2.5 Questionnaire survey to users and compilers of financial statements ..... 258
9.2.6 Back to the problem statement .............................................................. 259
9.3 RECOMMENDATIONS.................................................................................. 260
9.4 OPPORTUNITIES FOR FURTHER RESEARCH ........................................... 261
9.5 CONCLUDING COMMENTS.......................................................................... 262

REFERENCES ............................................................................................................ 264
APPENDICES ........................................................................................................... 270
LIST OF TABLES

Table 5.1: 22 Categories of company characteristics considered in accounting irregularity analyses ................................................................. 99
Table 5.2: Findings regarding the accounting transactions found in firms that have an increased accounting irregularity risk ..................................... 100
Table 5.3: Findings regarding the auditors and the relationship between the auditor and the firm in cases of an increased accounting irregularity risk .... 102
Table 5.4: Findings regarding the cash flow of firms that have an increased accounting irregularity risk ................................................................. 104
Table 5.5: Findings regarding the age of firms that have an increased accounting irregularity risk ................................................................. 105
Table 5.6: Findings regarding the size of firms that have an increased accounting irregularity risk ................................................................. 105
Table 5.7: Findings regarding the controls employed in firms that have an increased accounting irregularity risk ............................................................. 107
Table 5.8: Findings regarding the culture of firms that have an increased accounting irregularity risk ................................................................. 108
Table 5.9: Findings regarding the debt in firms that have an increased accounting irregularity risk ................................................................. 109
Table 5.10: Findings regarding the directors of firms that have an increased accounting irregularity risk ................................................................. 111
Table 5.11: Findings regarding financial distress in firms that have an increased accounting irregularity risk ................................................................. 112
Table 5.12: Findings regarding the geographic location of firms that have an increased accounting irregularity risk .................................................... 113
Table 5.13: Findings regarding the growth levels of firms that have an increased accounting irregularity risk ................................................................. 113
Table 5.14: Findings regarding the industry in which firms that have an increased risk for accounting irregularities operate ............................................. 115
Table 5.15: Findings regarding the liquidity of firms that have an increased accounting irregularity risk .......................................................... 117
Table 5.16: Findings regarding the management of firms that have an increased accounting irregularity risk ............................................. 118
Table 5.17: Findings regarding the personnel of firms that have an increased accounting irregularity risk ............................................. 120
Table 5.18: Findings regarding the profitability of firms that have an increased accounting irregularity risk ............................................. 122
Table 5.19: Findings regarding the receivables and inventories of firms that have an increased accounting irregularity risk ......................... 123
Table 5.20: Findings regarding the remuneration structure of firms that have an increased accounting irregularity risk ............................ 124
Table 5.21: Findings regarding the shareholding structure of firms that have an increased accounting irregularity risk ............................ 125
Table 5.22: Findings regarding the stock market performance of firms that have an increased accounting irregularity risk ......................... 126
Table 5.23: Findings regarding the structure of firms that have an increased accounting irregularity risk .................................................. 127

Table 7.1: Quandt-Andrews unknown breakpoint test results for Beige Ltd. ........ 155
Table 7.2: Quandt-Andrews unknown breakpoint test results for JCI Ltd. ............ 168
Table 7.3: Quandt-Andrews unknown breakpoint test results for Macmed Ltd. ..... 181
Table 7.4: Quandt-Andrews unknown breakpoint test results for Saambou Ltd. ..... 193
Table 7.5: Quandt-Andrews unknown breakpoint test results for Tigon Ltd. ........ 206

Table 8.1: The statements of experts on which the questionnaire was based ........ 214
Table 8.2: Summary of means and standard deviations of the questionnaire statements ....................................................................................... 219
Table 8.3: Accounting data in the annual report has the power to predict problems with financial health (S1) .................................................... 222
Table 8.4: The annual report can help one to make financial decisions about a company (S2) ................................................................. 222
Table 8.5: Information in the annual report is not enough to make deductions about the financial health of a company (S3) ......................... 223
Table 8.6: It can happen that false information appears in the annual report (S4) .. 223
Table 8.7: It is important to consider the interactions between financial statement items when evaluating a company (S5) ................................................. 224
Table 8.8: It is the purpose of financial statements to provide information to make decisions about the financial health of a company possible (S6) ........... 224
Table 8.9: Models (e.g. the Altman model for financial distress) used to measure financial health cannot be trusted to give a perfect view of the state of a company (S7) ................................................................. 225
Table 8.10: More than only numbers need to be considered when one analyses the annual report to determine financial health (S8) .................. 225
Table 8.11: I am willing to make decisions about a company based on historical information (S9) ................................................................. 226
Table 8.12: Predicting the future is one of the objectives of annual reports (S10) .... 226
Table 8.13: Qualitative information in the annual report is generally viewed as being of lesser importance (S11) ................................................................. 227
Table 8.14: Ratio analysis as a tool ought to be eliminated (S12) ....................... 227
Table 8.15: Ratio analysis can serve a number of purposes and can even be used to indicate problems with financial health (S13) ......................... 228
Table 8.16: Ratios are not as effective as some other measures of analysis (S14) .. 228
Table 8.17: Ratios can be useful, but it depends on the selection of ratios (S15) ..... 228
Table 8.18: So-called “fraud” allegations can cause enough damage to a company so that it fails ................................................................. 229
Table 8.19: The analysis of the financial statements in the annual report by means of ratios can be used to detect financial health problems (S17) .......... 229
Table 8.20: The information from financial statements can be used for decision-making (S18) ........................................................................ 230
Table 8.21: The information in the annual report can be used for predictive purposes (S19) ........................................................................................................................................ 230

Table 8.22: The information in the annual report’s financial statements is not enough to base decisions on (S20) ............................................................................................................. 231

Table 8.23: The narrative parts of the annual report may be of more value than the numeric parts (S21) ............................................................................................................................................. 231

Table 8.24: There are measures other than the annual report that can be used to indicate the financial health of a company (S22) ................................................................. 232

Table 8.25: There are other sources of information that need to be consulted when analysing a company’s financial health (S23) ................................................................. 232

Table 8.26: There are various means to manipulate the financial statements (S24) .................................................................................................................................................. 233

Table 8.27: There is a relationship between the fairness of presentation in the annual report and a company having financial difficulties (S25) ........................................ 233

Table 8.28: Rotated Factor Loadings .......................................................................................................................................................................................... 236

Table 8.29: Histogram of Eigenvalues of unaltered correlation matrix ........................................................................................................................................ 238

Table 8.30: Total variance explained.................................................................................................................................................................................................................. 239

Table 8.31: Cronbach Alpha Reliability Coefficient for the three identified factors .................................................................................................................................................. 239

Table 8.32: Rule of thumb in interpreting Cronbach’s Alpha ........................................................................................................................................... 240

Table 8.33: Statements that form part of Factor 1 ........................................................................................................................................................................................................ 240

Table 8.34: Statements that form part of Factor 2 ........................................................................................................................................................................................................ 241

Table 8.35: Statements that form part of Factor 3 ........................................................................................................................................................................................................ 242

Table 8.36: Descriptive statistics summary for the three factors ........................................................................................................................................................................ 243
LIST OF FIGURES

Figure 1.1: The “whole systems model of science” or the “Mitroff model” ....................... 10

Figure 2.1: The fraud triangle .......................................................................................... 18
Figure 2.2: An updated fraud triangle ............................................................................. 19
Figure 2.3: Common methods of accounting irregularities ............................................. 43

Figure 4.1: Illustration of how the triangulation methodology is applied in this study.. 70

Figure 7.1: Graph illustrating the return from Beige Ltd. and the market over the period of the alleged accounting irregularities ................................................... 153
Figure 7.2: Scatter plot of Beige Ltd. return against the market return over the same period ......................................................................................................................... 154
Figure 7.3: Graph illustrating the return from JCI Ltd. and the market over the period of the alleged accounting irregularities ................................................................. 165
Figure 7.4: Scatter plot of JCI Ltd.’s return against the market return over the same period .......................................................................................................................... 166
Figure 7.5: Graph illustrating the return from Macmed Ltd. and the market over the period of the alleged accounting irregularities ......................................................... 178
Figure 7.6: Scatter plot of Macmed Ltd.’s return against the market return over the same period .................................................................................................................. 179
Figure 7.7: Graph illustrating the return from Saambou Ltd. and the market over the period of the alleged accounting irregularities ...................................................... 191
Figure 7.8: Scatter plot of Saambou Ltd. return against the market return over the same period .................................................................................................................. 192
Figure 7.9: Graph illustrating the return from Tigon Ltd. and the market over the period of the alleged accounting irregularities ......................................................... 203
Figure 7.10: Scatter plot of Tigon Ltd. return against the market return over the same period .................................................................................................................... 204
Figure 8.1: Respondents’ experience with financial statements ......................... 218
Figure 8.2: Mean and median distribution (n = 237) ........................................... 221
“Many have made a trade of delusions
and false miracles, deceiving the stupid multitude.”
- Leonardo da Vinci

“Blinding ignorance does mislead us.
O! wretched mortals, open your eyes!”
- Leonardo da Vinci