

**Beni Sueif University
Faculty of Commerce
Accounting Department**

**Improving The Accuracy of Audit Judgments for
Assessing The Risk of Fraudulent Financial
Reporting by Using Bayesian Belief Networks
"Empirical Investigation"**

**Thesis Submitted in Partial Fulfillment of Master Degree in
Accounting**

Prepared By:

**Ahmed Aboud Mohammad
(Demonstrator in Accounting Department)**

Under Supervision of:

Professor Dr. Shaban Youssef Mebariz Dr Tariq Kamal El Shazely

**Professor and head of Accounting
Department**

**Faculty of Commerce
Beni Sueif University**

**Lecturer of Accounting
Faculty of Commerce
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بسم الله الرحمن الرحيم

" قالوا سبحانك لا علم لنا إلا ما علمتنا إنك انت العليم الحكيم "

صدق الله العظيم

سورة البقره - آيه ٣٢

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In the name of Allah, the Most Gracious and the Most Merciful

All Praise and glory to Almighty Allah (Subhanahu WA Taalaa) who gave me courage and patience to carry out this work. Peace and blessing of Allah be upon last Prophet Mohammad (peace be upon Him).

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To:
My dear parents,
Dr Abd El Aleim Aboud &
Dr Mohammed Abdallah

Research problem

Auditing nowadays has become an increasingly demanding task and there is much evidence that 'book cooking' accounting practices are widely applied. Some estimates state that fraud costs United State business more than \$100 billion annually ((Herbet et. al 2005).).Fraudulent financial statements have become increasingly frequent over the last few years. Management fraud can be defined as the deliberate fraud committed by management that causes damage to investors and creditors through material misleading financial statements (Crumbly.L, Apostolou, N 2003).

Traditionally, auditors focus on assessing the risk of misstatement without discriminating between intentional and unintentional misstatements (Inherent Risk assessment). SAS 99 requires a more formal approach to fraud risk assessment.

During the audit process, the auditors have to estimate the possibility of management fraud . The auditor has responsibility to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement, whether caused by errors or fraud ,but the detection of fraudulent financial statements have recently been in the limelight in all over the world. The auditor uses analytical procedures techniques, which allow for the estimation of account balances without examining relevant individual transactions. Analytical procedures techniques are classified as non-quantitative, simple quantitative and advance quantitative. **Advanced quantitative techniques** include sophisticated methods, derived from statistics and artificial intelligence, like Neural Networks and Bayesian Belief Networks and regression analysis.

The assessment of fraudulent financial reporting risk is considered as a classification problem. Data mining proposes several classification methods derived from the fields of statistics and artificial intelligence.

These methods are Decision Trees, Neural Networks, Bayesian Belief Networks and others. So, the problem of this research is to investigate wither Bayesian Belief Networks improve the accuracy of assessing the risk of fraudulent financial reporting.

Research objectives

The main objectives of this research are as follows:

- 1) Investigating wither Bayesian Belief Networks improves the accuracy of assessing the risk of fraudulent financial reporting.
- 2) Reducing the auditor detection risk, audit failure and litigation against the auditors through accurately assessing the risk of fraud
- 3) Bayesian belief network as analytical procedures will improve the capability of analytical procedures in the area of fraud risk assessment. A matter reduces the risk of analytical procedures as an element of audit risk model.
- 4) exploring and analyzing the professional issuance and literature review in the area of fraud risk assessment

Those objectives enhance the efficiency and effectiveness of Egyptian Stock Exchange through supporting the auditor's ability to lend financial statement more credibility.

Research hypotheses

- **Hypothesis One.**

Bayesian Belief network improves the accuracy of fraud risk assessment by the auditors

- **Hypothesis two:**

Bayesian Belief Network as analytical procedures achieves the requirements of Professional standards Specially SAS 99 and IAS 240 and recently Egyptian auditing standards 240.

- Hypothesis three

Bayesian belief network as audit procedures has relation to the expectation Gap in Egypt

Research methodology

The research has includes two main parts as follows:-

A) Theoretical part

In This part, the researcher explores the history of fraud and the reaction of regulatory bodies to fraud cases through details analysis of fraud risk standards and their elements {SAS 82; SAS 99; IAS 240; EAS 240}. The researcher explores the concept of fraud and the terms that are interacted with it.

In addition to, the researcher explains the main task of fraud risk assessment concentrating on analytical procedures. Analytical procedures include different techniques from simple techniques to data mining techniques. The researcher explains the concept of Bayesian Belief Network and its application in solving classification problem. As the research problem is classification problem, Bayesian belief network achieves appropriated and accepted results in classification problem.

B) Empirical Investigation

This part of the research includes empirical study on Egyptian Auditing Environment through the use of Bayesian Belief Networks as a classification technique to assess the risk of fraudulent financial statements .The researcher studies based on actual data extracted from the Kompass Egypt "Financial year book"

Limitation of the study

The research will only examine publicly available financial variable . Due to limited availability of non-quantitative data this research is limited to that of only quantitative variables that are available through the published financial statement and financial ratios.

Scope of the research

The research consists of three Chapters. **The first chapter** entitled "**An overview of Fraud in Financial Statements**" and includes the following main items:

- Fraud history
- Fraud and professional standards
- Fraud and academic literatures
- Related fraud terms
- Classification of fraud
- Fraud and expectation Gap in Egypt
- Fraud impact on economy.
- The role of auditors in fraud detection

The second chapter entitled "**Bayesian belief network for assessing the risk of fraudulent financial reporting**". This chapter includes the following items:

- Audit risk and audit risk model
- Fraud risk assessment
- Fraud risk assessment tasks
- Analytical procedures as decision aid in Fraud risk assessment process
Both Simple analytical procedures and advanced one.
- Data mining as fraud risk assessment (Data mining techniques and tasks)
- Bayesian belief network as Data mining for assessing the risk of fraudulent financial reporting (Bayes theory, Bayesian belief networks and Naïve Bayesian classifier)

The third chapter includes applied study on Egyptian auditing environment to test and evaluate the impact of Bayesian belief network as analytical procedures in assessing the risk of fraudulent financial reporting.

Table of contents

Topic	Page
Introduction	I- VXi
Chapter one	
1-1 Introduction	1
1/2 Fraud and Professional Standards	3
1/2/1 Statement on auditing standards SAS 53	3
1/2/2 Statement on auditing standards SAS 82	4
1/2/3 Statement on auditing standards SAS 99	5
<u>First</u> Fraud and professional skepticism	6
<u>Second</u> Fraud and Brainstorming	7
<u>Third</u> SAS 99 and Fraud triangle	8
<u>Fourth</u> Auditors response to management override of control	11
1/2/4) Comparison among SAS 53, SAS 82,SAS 99	13
1/2/5) Sarbanes Oxley Act and fraudulent financial reporting	17
1/2/6) Egyptian Auditing Standards EAS 240, 2008	18
1/3)Fraud and literature review	19
1/4)Fraud and related terms	36
1/4/1) Material Misstatement	36
1/4/2) Error	40
1/4/3) Illegal act	40
1/4/4 Earning Management	40
1/4/5 Financial Restatement	42
1/4/6 Fraud	45
1/5Types of fraud	48
1/5/1) IAS 240 Classification	48

1/5/1/1) Misstatements resulting from fraudulent financial reporting	48
1/5/1/2) Misstatements resulting from Misappropriation of assets.	50
1/5/2) ACFE fraud classification	51
1/6) The economical view of fraud	56
1/6/1) Micro perspective	57
1/6/2) Macro perspective	58
1/7 Fraud and expectation Gap in Egypt	57
1/8 The auditors responsibility for financial statement fraud	59
Chapter Summary and Conclusion	62
Chapter Two	
2/1 Audit risk	65
2/2 Audit risk model	66
2/2/1The risk of material misstatement	67
2/2/2) Detection risk (DR)	68
2/3 Fraud risk assessment	70
2/4 Fraud risk assessment tasks	73

2/7/4/2) Undirected data mining	101
2/7/5) Data Mining Tasks	102
2/7/5/1) Classification / Prediction	103
2/7/5/2). Estimation	103
2/7/5/3) Association	103
2/7/5/4) Clustering	104
2/7/5/5) Description	104
2/8) data warehouses and data marts as basic requirements for data mining	104
2/9) Data mining process	106
2/9/1) Stage one: identify the problems	109
2/9/2) Stage two: Collection and preparation of data	109
2/9/3) Third stage: Build and evaluate the model	110
2/10) Data Mining Techniques	111
2/10/1) Decision tree	112
2/10/2) Artificial Neural network	113
2/10/3 Bayesian belief net works	119
2/10/3/1 Bayes theorem	120
2/10/3/2 Structure of Bayesian belief network	121
2/10/3/3 Naïve bayes classifier	125
2/10/3/4 Learning Naive bayes classifier	127
2/10/4) Evaluation of data mining Techniques	132
2/11) Bayesian belief network as a tool for fraud risk assessment	133
1) Financial distress	135
2) Debit structure	135
3) Continuous Growth	136
4) Subjective estimation	137
5) Profitability	138
Chapter Summary and Conclusion	142

Chapter Three	146
3/1) Research methodology	146
3/1/1) Research variables	146
3/1/1/1) The Dependent variable	146
3/1/1/2) Independent variable	147
3/1/2 Data (Sample selection and sample size)	148
1) First Class: Non- Fraudulent financial statement	152
2) Second Class: Fraudulent financial statement	155
3/2) Methods and result	159
3/3) Hypotheses test	161
Conclusion Recommendations	163
References	178
Appendix one & Two	