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
Professor and head of Accounting Department
Faculty of Commerce
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Dr Tariq Kamal El Shazely
Lecturer of Accounting
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بسم الله الرحمن الرحيم

" قالوا سبحانك لا علم لنا إلا ماعلمتنا إنك انت العليم الحكيم "

صدق الله العظيم

سورة البقره -- آيه ٣٢

## Examination Committee

**Professor Dr: Abdo Hussein Shata**

**Professor of Accounting**
**Former Dean of Faculty of Commerce,**
**Beni Sueif University**

**Chairman**

**Professor Dr: Shaban Youssef Mebariz**

**Professor and head of Accounting Department**
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**Beni Sueif University**

**Supervisor &Member**

**Professor Dr: Mohammed Rashad Mohammed Mahna**

**Assistant Professor of accounting**
**Faculty of Commerce**
**Cairo University**

**External member**

Discussion and Approval Date 24 / 2 /2009

Committee decision has been read and approaved by the committee

Supervisor Shaban Mebariz

# Acknowledgment

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**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).**

It is my pleasure to have this opportunity to thank those, who in different ways have contributed to dissertation

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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.

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