Research Article **Open Access**

Fraud Examination of Enron Corp

Payal Chadha*

Swiss Management Center University Zug, Kuwait

Abstract

This paper uses the tools provided by Modified Altman, Chanos, Beneish, etc. to examine Enron Corp. annual 10K reports filed with SEC for the years 1997-2001 to identify the financial frauds committed. The US SEC Edgar Database for company 10K Annual Financial Reports was used. After employing tools such as Beneish: Fraud Statement Index, Analytical Tools, and Altman's Modified Bankruptcy Predictor; this paper concludes that, Enron's fraud could be detected between 1999-2000 period.

Introduction

Fraudulent financial reporting can have significant consequences for the organization and public confidence in capital markets. The high profile cases like Enron Corp. in the US or Satyam in India, of fraudulent financial reporting raise concerns about the credibility of the financial reporting process and question the roles of auditors, regulators, and analysts in financial reporting [1,2].

The crumple of Enron Corporation led to question the soundness of current accounting and financial reporting standards [3]. Fortune had rated Enron as "The Most Innovative Company in America" from 1997-2001 [4].

Enron provided products and services related to natural gas, electricity, and communications to wholesale and retail customers through subsidiaries and affiliates. Their activities were divided into 5 segments: transportation and distribution; wholesale services; retail energy services; broadband services; and other. They operated in the United States, Canada, Europe, Japan, Australia, South America, and India (Enron Corp. Appendix). Their wholesale services accounted for 93% of 2,000 revenues; retail energy services, 4%; transportation and distribution, 3%; and broadband services and other services, less than 1% (Enron Corp. Appendix).

Enron's employees lost around $1.3 billion in 401(k) accounts and investors lost around $61 billion [4]. The main institution players i.e., independent auditors, board of directors, private security analysts, securities regulators, and criminal prosecutors with US Department of Justice got fooled and mislead by Enron Corp. The accountants of Arthur Anderson helped Enron achieve the fraud instead of stopping it [4]. In the following sections below, we shall discuss the history of Enron and what strategies they used to deceive investors and others around the globe.

History

The Reagan administration in the 1980s started eliminating price controls which gave gas producers and pipeline companies the ability to contract freely. This made the market highly deregulated. Prior to this, natural gas was a regulated market by the federal government [4].

In 1985, Houston Natural Gas combined with InterNorth, a natural gas company based in Omaha, Nebraska, to form Enron, a natural gas pipeline company with 37,500 miles of pipe. This company took advantage of the deregulation that existed in the market by exploiting the inefficiencies and rationalizing the whole market [4].

In 1987, Enron exposed the oil traders in their New York office, who diverted company funds to their personal accounts. Enron executive Mike Muckleroy bluffs the market by reducing the loss of $1 billion to $140 million. In 1989, Enron began trading natural gas commodities and became the major natural gas merchant in North America and the United Kingdom.

In 1991, Enron asked SEC to approve mark-to-market accounting and got approval in 1992. In 1993, Enron and the government of the state of Maharashtra, India, signed an agreement to build a power plant whose construction cost was $2.8 billion.

In 1996, Enron entered a contract to explore 11 gas fields in Uzbekistan, whose project cost was $1.3 billion. Enron and the government of Maharashtra renewed their agreement to shift the construction costs and reduce the electricity tariffs. New Dabhol agreement was announced in the same year and the COO of Enron, Richard Kinder, left the company and Jeff Skilling took over.

In 1999, Tim Belden conducted his first experiment to exploit the rules of California's deregulated energy market. The same year, Enron's Board of Directors exempts CFO so that he could run a private equity fund to raise money for Enron and did deals. The company Merrill Lynch, released placement memo for LJM2 in the same year.

In 2000, stocks rose to 26% with new high of $67.25 per stock. A new strategy called "Death Star" was announced to game the California market. Within few months, The California ISO declared a Stage One Emergency, warning of low power reserves. Enron then announcedthat its Broadband unit (EBS) joined forces with Blockbuster to supply video-on-demand. This lead stock all-time high of $90.56 with market valuation of $70 billion. By November 2000, the FERC investigation forgave Enron for any wrongdoing in California. Enron used "aggressive" accounting to declare $53 million in earnings for Broadband on a collapsing deal that hadn't earned a penny in profit towards the end of 2000.

In 2001, Belden's West Coast power desk had its most profitable

---

*Corresponding author: Chadha P, Swiss Management Center, University Zug, Kuwait, Tel: +96569078096; E-mail: payal.chad@gmail.com

month of $254 million in gross profits which convinced the analysts and Ken Rice increased his estimates for value of Broadband and cashed in $53 million in shares and options. Skilling becomes the new CEO. Enron transferred large portions of EES business into wholesale to hide EES losses. Enron scheduled unusual analyst conference call to boost stock which worked. Mid of 2001, FERC instituted price caps across the western states and ends the California energy crisis. Skilling made a bullish speech on EES and layed off 300 employees that afternoon. Soon Lay replaced Skilling as new CEO.

Jim Chanos bets aggressively on the stocks and the release of second quarter 10-Q declared Enron's cash flow as a negative $1.3 billion. Skilling sold $15.5 million of stock to generate sales to over $70. In October 2001, Enron reported a $618 million third-quarter loss and declared a $1.01 billion non-recurring charge against its balance sheet, partly related to "structured finance" operations and Lay announced a $1.2 billion cut in shareholder equity. Arthur Andersen destroyed one ton of Enron documents in a massive shredding operation held in October 2001 followed by announcement of formal investigation by SEC shortly.

In November 2001, Enron filed documents with SEC revising its financial statements for past five years to account for $586 million in losses. Dynegy agreed to buy Enron for about $9 billion in stock and cash followed by a disclosure by Enron of restructure of $690 million obligation. The shares of Enron fell below $1 and Dynegy withdrew from the deal. In December 2001, Enron filed for Chapter 11 bankruptcy protection, the largest bankruptcy in US history, followed by criminal investigation in January 2002.

Enron deception strategies

Enron bought huge quantities of natural gas from producers at unreasonable discounts, and then delivered it to the wholesale customers through its own pipeline system. This strategy helped the company capture majority of the market and was the leading company in the US.

Soon the market became efficient, opportunities declined, competition stiffened, and profit margins shrank by 1993. Enron decided to diversify into other sectors of the economy by investing billions of dollars and tried to replicate their natural gas success. The company failed to understand that the strategy used in natural gas cannot be applied to other sectors. They succeeded in natural gas business because of their extensive knowledge in the field. With no experience in other sectors, the company failed to generate revenues in other sectors where huge investments were made.

With rise in success of the energy sector, there was equivalent failure in other business. For example power plant in India never became operational and costed them a huge loss of fortune. The cost structure of the company was beyond repairs with no employment growth. Enron was ruined because of poor management and greed. They borrowed $30 billion to meet its costs without any harm to its reputation. The investors had no idea that the company was losing money heavily and had liabilities beyond control.

Discussion of the Tools Used to Detect Fraud

The secondary data gathered for fraud examination is obtained from various resources. The financial statements of Enron Corp. were searched using the US SEC Edgar database. These statements consist of income statement, balance sheet statement and cash flows statement.

A financial fraud exists if the numbers in the three statements are not correctly interrelated [5].

Using the guidelines provided by Modified Altman, Beneish, etc. a determination would be made as to whether or not the resulting picture from the ratios or indexes from Enron"s financial statements make good sense, or otherwise give indication of possible fraud and imminent bankruptcy. The analysis would also give a clue as to the earliest period when the fraud might have occurred [5].

The tools used for assessing Enron Corporation Fraud are stated below:

Beneish: Fraud Statement Index

Beneish: Fraud Statement Index was formed by Professor Messod Beneish. The M-Score uses 8 financial ratios to detect whether a company has manipulated its earnings. The variables are generated from the company's financial statements and create a score to describe the extent to which the earnings have been manipulated. The M-Score is focused on earnings manipulation. The M-Score greater than - 2.22 indicates that the company has maneuvered with its earnings. The 8 variables used for developing the M-Score are [6]:

DSRI - Days' sales in receivable index [6]=[receivables current year/sales current year]/[receivables prior year/sales prior year] [7].

GMI - Gross margin index [6] = [(sales prior year minus cost of goods sold prior year)/sales prior year]/[(sales current year minus cost of goods sold current year)/sales current year] [7].

AQI - Asset quality index [6] = [Current assets + Property, plant and equipment]/Total assets [8].

SGI - Sales growth index [6] = sales current year/ sales prior year [7].

DEPI - Depreciation index [6] = [Depreciation current year/ Depreciation + PPE current year]/[Depreciation prior year/ Depreciation + PPE prior year] [8].

SGAI - Sales and general and administrative expenses index [6]= [sales, general and administrative expenses current year/sales current year]/[sales, general and administrative expenses prior year/sales prior year] [7].

LVGI-Leverage index [6] = [Long term debt + Current liabilities current year/Total assets current year]/[Long term debt + Current liabilities prior year/Total assets prior year] [8].

TATA - Total accruals to total assets (Omar et al., 2014). = [Change in working capital – change in cash –change in current tax payable – depreciation and amortization]/Total Assets [7].

M = -4.84 + 0.92*DSRI + 0.528*GMI + 0.404*AQI + 0.892*SGI + 0.115*DEPI – 0.172*SGAI + 4.679*TATA – 0.327*LVGI [9].

Analytical tools

Days sales Receivables Index – A ratio of 1:1 shows steady relationship. If account receivable is becoming a larger % of sales, examine the situation. Gross Margin Index – A ratio of less than 1:1 indicates declining operational efficiency and may give rise to fraudulent activity.

Asset Quality Index – When the ratio is greater than 1:1, it would indicate that costs are being capitalized and deferred. Examine such a situation.

Sales Growth Index – Ratio of current sales to previous year's sales.

Total Accruals to Total Assets – A large result indicates that a growing percentage of the entity's working capital is comprised of non cash items. Examine the situation [5].

Altman's discriminant function algorithm

The Altman Z-Score is focused on detecting bankruptcy. The score lower than 1.8 means bankruptcy is on the way [10].

X1 = Working Capital/Total Assets

X2 = Retained Earnings/Total Assets

X3 = EBIT/Total Assets

X4 = Market Value of Equity/Book Value of Total Debt

X5 = Net Sales/Total Assets

Z = Overall Index of Corporate Health

Z = (1.2*X1) + (1.4*X2) + (3.3*X3) + (0.6*X4) + (1.0*X5) [1].

Analysis of the Tools Used to Detect Fraud

The results for the above mentioned tools are as follows (Table 1):

The formula for Beneish: Fraud Statement Index is

M-score for 2001 = -4.84 + 0.92*DSRI + 0.528*GMI + 0.404*AQI + 0.892*SGI + 0.115*DEPI – 0.172*SGAI + 4.679*TATA – 0.327*LVGI =

- 4.84 + 0.92 * 0.51 + 0.528 * 1.15 + 0.404 *0.90 + 0.892 *1.11 + 0.115*0.92 – 0.172 *1.08 +4.679 *-0.13 – 0.327 * 0.83 = -4.84+0.4692+0.6072+0.3636+0.99012+0.1058-0.18576-0.60827-0.27141=

-3.36952 means manouvered its earnings.

M-score for 2000 = -4.84 + 0.92*DSRI + 0.528*GMI + 0.404*AQI

+ 0.892*SGI + 0.115*DEPI – 0.172*SGAI + 4.679*TATA – 0.327*LVGI =

- 4.84 + 0.92 * 0.55 + 0.528 * 0.05 + 0.404 *0.85 + 0.892 *1.77 + 0.115*3.65 – 0.172 *0.46 +4.679 *-0.18 – 0.327 * 0.98 = - 4.84 +0.506+0.0264+0.3434+1.57884+0.41975-0.07912-0.84222-.32046 = **-3.20741** means manouvered its earnings.

M-score for 1999 = -4.84 + 0.92*DSRI + 0.528*GMI + 0.404*AQI + 0.892*SGI + 0.115*DEPI – 0.172*SGAI + 4.679*TATA – 0.327*LVGI =

- 4.84 + 0.92 *1.18 + 0.528 * 6.51 + 0.404 *0.33 + 0.892 *1.04 + 0.115*1.28 – 0.172 *1.15 +4.679 *-0.12 – 0.327 * 0.91 = - 4.84 +1.0856+3.43728+0.13332+0.92768+0.1472-0.1978-0.56148-0.29757 = **-0.16577** means not manouvered its earnings.

M-score for 1998 = -4.84 + 0.92*DSRI + 0.528*GMI + 0.404*AQI + 0.892*SGI + 0.115*DEPI – 0.172*SGAI + 4.679*TATA – 0.327*LVGI =

- 4.84 + 0.92 *1.61 + 0.528 * 1.67 + 0.404 *0.37 + 0.892 *0.99 + 0.115*1.02 – 0.172 *1.29 +4.679 *-0.09 – 0.327 * 1.02 = - 4.84 + 1.4812+0.88176+0.14948+0.88308+0.1173-0.22188-0.42111-0.33354 = **-2.30371** means manouvered its earnings.

I. Analytical Tools

Days sales Receivables Index – The ratio is dropping since 2000 hence, examining is needed.

Growth margin Index – The ratio declines massively in 2000 indicating examining is needed.

Sales growth Index – The ratio is increasing since 1999 hence, examining is needed.

Total accruals to Total assets – This is showing negative results throughout the period 1997-2001.

		2001	2000	1999	1998	1997
Days' sales in receivable index =	[receivables current year/sales current year]/[receivables prior year/sales prior year]	0.51	0.55	1.18	1.61	1.31
Gross margin index =	[(sales prior year minus cost of goods sold prior year)/sales prior year]/[(sales current year minus cost of goods sold current year)/sales current year]	1.15	0.05	6.51	1.67	22.10
Asset quality index =	[Current assets + Property, plant and equipment]/Total assets	0.90	0.85	0.33	0.37	0.41
Sales growth index =	sales current year/ sales prior year	1.11	1.77	1.04	0.99	0.09
Depreciation index =	[Depreciation current year/Depreciation + PPE current year]/[Depreciation prior year/Depreciation + PPE prior year]	0.92	3.65	1.28	1.02	0.55
Sales and general and administrative expenses index =	[sales, general and administrative expenses current year/sales current year]/[sales, general and administrative expenses prior year /sales prior year]	1.08	0.46	1.15	1.29	
Leverage index =	[Long term debt + Current liabilities current year/Total assets current year]/[Long term debt + Current liabilities prior year/Total assets prior year]	0.83	0.98	0.91	1.02	
Total accruals to total assets =	[Change in working capital – change in cash –change in current tax payable – depreciation and amortization]/Total Assets	-0.13	-0.18	-0.12	-0.09	-0.10

Table 1: Beneish: fraud statement index.

	2001	2000	1999	1998	1997
X1=Working Capital/Total Assets	-0.0088	0.0067	-0.0077	-0.0067	-0.0037
X2=Retained Earnings/Total Assets	0.4888	0.4335	0.0222	0.0055	0.0066
X3=EBIT/Total Assets	0.1971	0.2300	0.2423	0.0367	0.3370
X4=Market Value of Equity/Book Value of Total Debt	0.9266	0.8519	0.7635	0.7399	0.8889
X5=Net Sales/Total Assets	0.4847	0.4964	0.2523	0.2754	0.3638

Z = (1.2*X1) + (1.4*X2) + (3.3*X3) + (0.6*X4) + (1.0*X5)

Table 2: Altman's discriminant function algorithm.

	2001	2000	1999	1998	1997
(1.2*X1) + (1.4*X2) + (3.3*X3) + (0.6*X4) + (1.0*X5)	2.364656	2.381446551	1.531839	0.840042	2.014102864

Table 3: The score lower than 1.8 means bankruptcy is on the way. Enron had a z-score of 1.531839 in 1999 and 0.840042 in 1998, which means that the company did show early signs of bankruptcy.

II. The formula for Altman's Discriminant Function Algorithm is showm in Tables 2 and 3.

Conclusion

Based on the above analysis, it can be concluded without any doubts that the period between 1999-2000, the fraud could be detected using the above mentioned tools [11-13]. It needs to be noted that fraud could be handled through three (3) main strategies, preferably in the order as follows:

- Prevention

- Detection

- Control (Denteh, 2011)

Recommendations

- Certified accountants conducting fraud examination should avoid the following mistakes:

- Failing to inform proper parties (Audit Committee/Board, Management, Counsel) before beginning the investigation;

- Not keeping counsel to shield the attorney client privilege;

- Conducting a fraud investigation without sufficient skill;

- Not engaging the services of an anti-fraud expert;

- Not using the fraud theory method;

- Not handling the evidence well;

- Not considering the legal repercussions of fraud;

- Not possessing adequate interviewing skills;

- Premature questioning about the subject; and

Having a lack of patience when attempting to obtain a confession.

References

1. Nugent JH (2003) Plan to Win: Analytical and Operational Tools - Gaining Competitive Advantage (2nd edn.). McGraw Hill, USA.

2. Beasley MS, Carcello JV, Hermanson DR (1999) Fraudulent Financial Reporting: 1987-1997. An Analysis of U.S. Public Companies. Committee of Sponsoring Organizations of the Treadway Commission. pp: 1-67.

3. Catanach AH, Catanach SR (2003) Enron: A Financial Reporting Failure. Villanova University.

4. Kroger JR (2003) Enron Fraud and Securities Reform: An Enron's Prosecutor's Perspective.

5. Denteh F (2011) Enron: Fraud Detection Timeliness. SMC University.

6. Omar N, Koya RK, Sanusi ZM, Shafie NA (2014) Financial Statement Fraud: A Case Examination Using Beneish Model and Ratio Analysis. International Journal of Trade, Economics and Finance 5: 184-186.

7. Harrington C (2005) Analysis ratios for Detecting Financial Statement Fraud. Fraud Magazine.

8. Aris NA, Othman R, Arif SMM, Malek MAA, Omar N (2013) Fraud Detection: Benford's Law vs Beneish Model. IEEE Symposium on Humanities, Science and Engineering Research (SHUSER). pp: 726-731.

9. Croft E (2011) The Beneish M-Score: Identifying Earnings Management and Short Candidates.

10. ACFE (2006) Fraud and the Financial Statement Audit: Auditor Responsibilities under New SAS 99 Consideration of Fraud in a Financial Statement Audit.

11. Dharan BG, Bufkins WR (2008) Red Flags in Enron's Reporting of Revenues and Key Financial Measures. pp: 97-112.

12. Enron Corp GAO-03-138 Financial Restatements. pp: 144-151.

13. Obiri C (2011) Enron: Could the Fraud have been Detected Sooner.