

ENRON SCANDAL: EVIDENCE OF A MISSED OPPORTUNITY TO DETECT AND HALT FRAUD AND BANKRUPTCY

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ABSTRACT: *This paper aims to provide evidence of a missed opportunity to detect and halt financial fraud and bankruptcy of Enron Corporation early enough. The paper utilizes data from the financial statements of Enron Corporation 10K reports in the US SEC Edgar Data Base from 1997- 2001 to detect financial fraud and imminent bankruptcy of Enron Corporation. Financial fraud and bankruptcy were assessed in terms of Z-score and Days' Sales Receivables, Gross Margin, Asset Quality, Sales Growth and Total Accruals to Total Assets indices. The modified Altman Z-Score Index and Beneish Models were used to determine the indices for Enron Corporation. The results revealed that the modified Altman Z-Score Model yielded score indexes which signified financial statement manipulation and bankruptcy. While the Beneish Model yielded indices were found to be higher than the non-manipulation means thresholds implying that, receivables and revenues were out of balance for some years. The analysis and results in this paper provide evidence that Enron Corporation engaged in financial fraud resulting into bankruptcy and there was a missed opportunity to detect and halt the financial fraud and bankruptcy as early as 1998 if an effective corporate governance system had been in place. Strengthening of corporate governance frameworks, adoption of proactive strategies to corporate failures and vigilance of the stakeholders in public firms are recommended as some of the ways of avoiding similar scandals in future.*

KEY WORDS: bankruptcy, Enron, evidence, fraud, scandal, missed opportunity.

INTRODUCTION

The world was shocked to learn about the collapse of Enron Corporation which was an American corporate giant operating a business portfolio comprising of commodities, natural gas, electricity, water, communication, and paper. For some years Enron Corporation portrayed an image of excellent performance which was based on manipulation of earnings (Grove et al., 2004). In 2001 policymakers, investors, corporate leaders, and other stakeholders witnessed the biggest corporate scandal within the United States (US) as a result of serious failure of corporate governance due to: - managerial greed, corruption based on anticipated stock options, use of special purpose enterprises to cover up huge debts and fraudulent financial reporting contrary to the Generally Accepted Accounting Principles (GAAP) by Enron Corporation (Benston et al., 2003). Before this scandal, the world was just recovering from the Asian financial crisis shock of 1997-98 and the collapse of the stock market bubble of 2000.

Despite the widespread campaign for effective corporate governance of corporations, a number of corporate accounting scandals have engulfed the global business environment since the 1990s. During the period 2000-2010, numerous giant corporations such as WorldCom, Arthur Andersen, Xerox, OAL/Time Warner, Enron Corporation and Lehman Brothers collapsed due to serious failures in corporate governance as a result of managerial greed, weak regulation,

inaccurate ratings and corporate accounting scandals (Ioana, 2014; Johansson, 2010; Jollineau et al., 2014). It was also during this era when the global financial crisis happened (Dombret, 2013) and in 2001 Enron Corporation filed for bankruptcy. It is disappointing that each of the above giant firms which collapsed had external auditors from well renowned audit firms in the world. The purpose of this paper is to explore and understand whether there was a missed opportunity to detect and halt the financial fraud and bankruptcy of Enron Corporation early enough. Early financial fraud detection and avoidance of bankruptcy is beneficial in the following ways: It translates into a reduction of corporate failures, less emotional torture on part of the stakeholders in terms of jobs, business and investment losses. It also enhances credibility for disclosure/transparency monitoring mechanism of corporate governance (Chou & Buchdadi, 2017). This paper contributes to literature by demonstrating that the use of Altman Z-Score and Beneish index models as alternative tools of analysis could have assisted in detecting financial fraud and halt bankruptcy of Enron Corporation. Therefore, the research question tackled in this paper is: Is there evidence that indicates that there was a missed opportunity to detect and halt the financial fraud and bankruptcy of Enron Corporation? The rest of the paper is organized as follows: The second section of the paper presents the historical, current state and environmental perspective of Enron Corporation, while section three presents data and methodology. The fourth section, presents and discusses the results of the study after which the fifth section provides the implications to research and practice. Section six of the paper presents the conclusion and the last section provides some recommendations.

HISTORICAL, CURRENT STATE AND ENVIRONMENTAL PERSPECTIVE.

Enron Corporation had a business portfolio comprising of commodities, natural gas, electricity, water, communication, and paper. During the later years of its operations, signs of its collapse began to show as a result of mismanagement and misstating of earnings (Benston et al., 2003). The anticipated merger of Enron Corporation with Dynegey Inc. never materialized because the due diligence process revealed that the merger was not viable after the down grading of Enron's bonds to junk bonds. The corporation filed for bankruptcy protection in December 2001 when its stock price had reached a USD 0.5 level. This collapse exposed the most important bankruptcy scandal in the American history at that time. The bankruptcy filings indicated that USD 13.1billion was in debt for the parent company, USD 18.1billion as the debt for affiliates and approximately USD 20 billion was off the balance sheet (McLean et al., 2001).

The current state of Enron Corporation is a sad story of a collapsed giant organization due to weak corporate governance and fraudulent corporate accounting systems. Corporate governance pertains to the establishment of effective governance systems and regulatory policies so as to safeguard the stakeholders' interests (Andres & Vallelado, 2008; Fathima, 2016; Kamau et al., 2018; Olof et al., 2007). Enron Corporation was a firm with a failed corporate governance system or absence of an effective one where fraudulent financial reporting was used and resulted into bankruptcy of the corporation in 2001. The Enron Corporation corporate governance scandal was also fuelled by managerial greed, corruption based on anticipated stock options, and the use of special-purpose enterprises to hide in huge debts (Benston et al., 2003). The corporation executives used a financial reporting system that misled the stakeholders and all the watchdogs. Enron Corporation management painted an image of a financially healthy corporation by manipulating financial statements through the addition of false sales, inflating revenues and thus engaging in financial statement frauds. The aim of an effective corporate governance system is to make sure that structures, processes and

mechanisms are in order so that a firm is directed and managed in such a way that enhances the long term shareholder value through, accountability by managers and organizational performance (Amba, 2014; Velnamby, 2013). It is the usual practice that, an effective board of directors is key in monitoring management to make sure that a corporate governance system within an organization does not breakdown (Adebayo et al., 2014; Mehetra, 2016; Sunil & Santanu, 2012). Enron Corporation lacked adequate governance structures as evidenced by the massive financial fraud and today there are many former employees together with stockholders who lost their pension and investments amounting to USD 61billions in the corporation (Benston et al. 2003). The downturn suffered by Enron Corporation which was once one of the most successful corporations was irrecoverable. The financial fraud and eventual bankruptcy of Enron Corporation enabled the world to realize the serious inadequacies in corporate governance in terms of the oversight role of boards of directors, the professional standards of auditors as well as the effectiveness of statutory bodies as monitors of corporate performance.

The environmental perspective of Enron Corporation is disappointing for a corporation that was once ranked as the seventh most powerful corporation by Forbes but collapsed a few years later due to huge failures in corporate governance and massive financial statement fraud. Jensen and Mackling (1976) posit that a well-organized corporate governance system forms the basis for the sound management of firms. Such a system provides the premise on which managers should manage firms in order to maximize the long term shareholder value. As argued by Simon and Karr (2001) as well as Cuong (2011), corporate governance mechanisms that enhance transparency and corporate disclosure should include, separation of chief executive officer and chairman of board of director roles, presence of independent (non-executive) directors on corporate boards and formation of audit and remuneration committees. Furthermore, corporate disclosure boosts the confidence of the various stakeholders of an organization as far as its performance and governance are concerned (Amba, 2014). Jansen (1993) asserts that, corporate boards of directors have numerous responsibilities such as: i) Ensuring that firms have effective corporate internal control systems ii) Exercising the most important responsibility of ensuring that the firm functions normally and iii) Setting the rules of the game for the chief executive officers. In any firm, if the corporate internal control system is dysfunctional the ultimate consequence would be failure of the firm (Simpson & Gleason, 1992). With weak system of management control, Enron Corporation couldn't survive in a very dynamic business environment and as such it went bankrupt resulting in loss of employment, pensions, investments and a sharp fall of stock markets (Benston et al., 2003).

Justification for the Study

Previous studies have discussed the collapse of Enron Corporation from different angles. However, most of the literature has only focussed on the chronology of events leading to its collapse qualitatively. For instance, Cuong (2011) qualitatively used Powers, Chief Investigation Testimony and Subcommittees reports in his study of corporate governance and corporate culture of Enron Corporation. Other previous qualitative studies focused on, examination of agency problems (Arnold & De Lange, 2004), the Enron failure and the state of corporate disclosure (Benston et al., 2003), Enron Red Flags (Grove et al., 2004), major financial reporting frauds of the 21st century- corporate governance and risk lessons learned (Grove & Basilico, 2011), and why Enron went bust (McClean et al., 2001).

This study hopes to contribute to the domain of knowledge by adopting a combination of qualitative and quantitative scenarios to discuss the Enron failure and adduce evidence of a

missed opportunity to detect and halt fraud and bankruptcy of the corporation. Under the qualitative scenario, the inadequacies in the Enron corporate governance system that caused its collapse are articulated. While under the quantitative scenario Enron financial statements are quantitatively analysed using the Altman Z-Score Index and Beneish models for fraud and bankruptcy detection.

DATA AND METHODOLOGY

A quantitative research approach was used in this paper to adduce evidence that there was a missed opportunity to detect and halt the financial fraud and bankruptcy of Enron Corporation. The choice of a quantitative research approach is based on the fact that previous researchers on bankruptcy have employed a quantitative approach. For instance, Kasgani et al. (2013) advocate that, quantitative methodologies such as the Beaver Model 1966, multiple discriminant analysis and the logit model have been used in bankruptcy studies. Furthermore, Niresh and Prathepan (2015) used the Altman Z-Score Index to predict the bankruptcy of firms in the trading sector in Sri Lanka. While Diakomihalis (2012) applied a similar model while studying hotel bankruptcy in Greece. The modified Altman Z-Score Index and Beneish Models were used in this paper to analyze the data for the study.

The data for the study was obtained from the income statement and balance sheet metrics of Enron Corporation 10K annual financial reports in the US SEC Edgar Database for the years 1997, 1998, 1999, 2000 and 2001. According to the above reports, Enron Corporation had 318,297,276 shares outstanding valued at USD 20.78 each in 1997, 335,547,276 shares outstanding valued at USD 28.34 each in 1998, 716,865,081 shares outstanding valued at USD 44.75 each in 1999, 752,205,112 shares outstanding valued at USD 83.12 each in 2000 and 743,904,638 shares outstanding valued at USD 0.26 in 2001.

The Modified Altman Z-Score Index Model for Fraud Detection and Bankruptcy.

The modified Altman Z-Score Index Model for fraud detection and corporate financial health was used to detect fraud and assess the financial health of Enron Corporation. The Altman Z-Score Model is more powerful than other fraud detection tools because of its capacity to act as an early warning fraud detection mechanism (Altman, 1968). According to Altman (1968), bankruptcy can be predicted by computing the overall Z-Score Index using the general discriminant function:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + .999X_5$$

where:

X_1 = Working Capital / Total Assets.

X_2 = Retained Earnings / Total Assets.

X_3 = Earnings Before Interest and Taxes / Total Assets.

X_4 = Book Value of Equity / Total Liabilities.

X_5 = Sales / Total Assets.

However, since for most of its existence Enron Corporation lacked manufacturing capital, the modified Altman Z-Score Index Model for non-manufacturing firms takes into account only four variables X_1 , X_2 , X_3 , and X_4 . The model also adjusts the weights associated with these variables (Altman, 2000) and the modified Z-Score Index bankruptcy model has the form:

$$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4.$$

It is this Z-Score Index bankruptcy model which is used in this paper to assess the bankruptcy and corporate financial health of Enron Corporation.

Using the data from the income statement and balance sheet statements of Enron Corporation 10K annual financial reports in the US SEC Edgar Database for the years 1997, 1998, 1999, 2000 and 2001, the values of X_1 , X_2 , X_3 and X_4 were computed and used to determine the modified Altman Z-Score Indices for the years 1997-2001. An organization which is healthy and not involved in financial statement manipulation should have a Z-Score Index of greater than 2.6. However, when $1.1 < \text{Z-Score Index} < 2.6$ the organization is on the borderline of safety and bankruptcy and when $\text{Z-Score Index} < 1.1$, the organization is in financial distress (Diakomihalis, 2012).

In order to correctly apply the modified Altman Z-Score Model it was necessary to determine the inflection points where major changes took place relative to another in gross margins of Enron Corporation (Nugent, 2003). Gross margin measures the operational efficiency of a firm and it is defined as the difference between the net sales and the cost of goods sold (Nugent, 2003). Thus in business gross margin has a direct relationship with profitability and operational efficiency. Furthermore, Nugent (2003) advocates that emphasis should be put on the sign of the independent variable X_4 due to the fact that debt servicing becomes more difficult as gross margins fall.

The Beneish Model for Fraud Detection

The Beneish Model was used to analyze financial statement fraud and it is based on five predictors of earnings manipulation: Days' Sales Receivables Index (DSRI), Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI) and Total Accruals to Total Assets (TATA) (Beneish, 1999; Grove & Basilico, 2011; Wells, 2001). All the indices were computed from the 1997-2001 income and balance sheet metrics of Enron Corporation and compared them with the threshold values for non-manipulation means (Beneish, 1999; Wells, 2001). The components of the Beneish Model employed in this study are detailed below and in all the formulae the current year is denoted by t and the previous year is denoted by $t-1$.

Days' Sales Receivables Index (DSRI): The DSRI quotient is used to ascertain whether receivables are in or out of balance in two consecutive years such that increases in DSRI imply higher chances of revenues and earnings being manipulated through creation of fictitious accounts receivable from one period to another (Beneish, 1999; Wells, 2001). Such a situation would signal a breakdown of a management control system of a firm. Furthermore, Beneish (1999) argues that earnings manipulation involves the violation of GAAP and paints a rosy image of a firm's financial performance whereas the opposite is true.

$$DSRI = \frac{\frac{\text{Accounts receivable}_t}{\text{Sales}_t}}{\frac{\text{Accounts receivable}_{t-1}}{\text{Sales}_{t-1}}}$$

Gross Margin Index (GMI): The gross margin index signifies the prospects of a firm and when the gross margins deteriorate then, the gross margin index is greater than 1 which is an

indication that a firm has bad prospects (Beneish, 1999). The bad corporate prospects provide an incentive for earnings manipulation by creating artificial profits or decreasing losses.

$$\text{GMI} = \frac{\text{Sales}_{t-1} - \text{Cost of sales}_{t-1}}{\text{Sales}_{t-1}} \div \frac{\text{Sales}_t - \text{Cost of sales}_t}{\text{Sales}_t}$$

Asset Quality Index (AQI): The degree of asset quality index is proportional to the chances of earnings manipulation and when it is greater than one a firm is deemed to be involved in cost deferral (Beneish, 1999). The asset quality index is computed as follows:

$$\text{AQI} = \frac{1 - \frac{\text{Current assets}_t + \text{Net fixed assets}_t}{\text{Total assets}_t}}{1 - \frac{\text{Current assets}_{t-1} + \text{Net fixed assets}_{t-1}}{\text{Total assets}_{t-1}}}$$

Sales Growth Index (SGI): The sales gross index helps to alert the owners that their firm is involved in creative accounting through addition of false sales.

$$\text{SGI} = \frac{\text{Sales}_t}{\text{Sales}_{t-1}}$$

Total Accruals to Assets Index (TATA): The total accruals to assets index helps in alerting the prospective investors that, higher values of the index signify that there have been attempts by management to internally finance its losses as a result of higher accruals and a corresponding decrease in cash (Wells, 2001).

$$\text{TATA} = \frac{\text{Change in Working Capital} - \text{Change in Cash} - \text{Change in Current Taxes Payable} - \text{Dep. and Amortization}}{\text{Total Asset}}$$

The 5 variable version of the Beneish Model for financial statement fraud detection discussed in this paper does not include the Depreciation Index (DEPI), the Sales, General and Administrative Index (SGAI) and the Leverage Index (LVGI) since they were found to be insignificant in earlier studies (Beneish, 2009).

RESULTS AND DISCUSSION

This section presents the results and discussion of the findings of the study. The main objective of the study was to establish whether there was evidence of a missed opportunity to detect and halt the financial fraud and bankruptcy of Enron Corporation. The paper sought to apply the modified Altman Z-Score Index and Beneish Models to establish the financial health of the corporation.

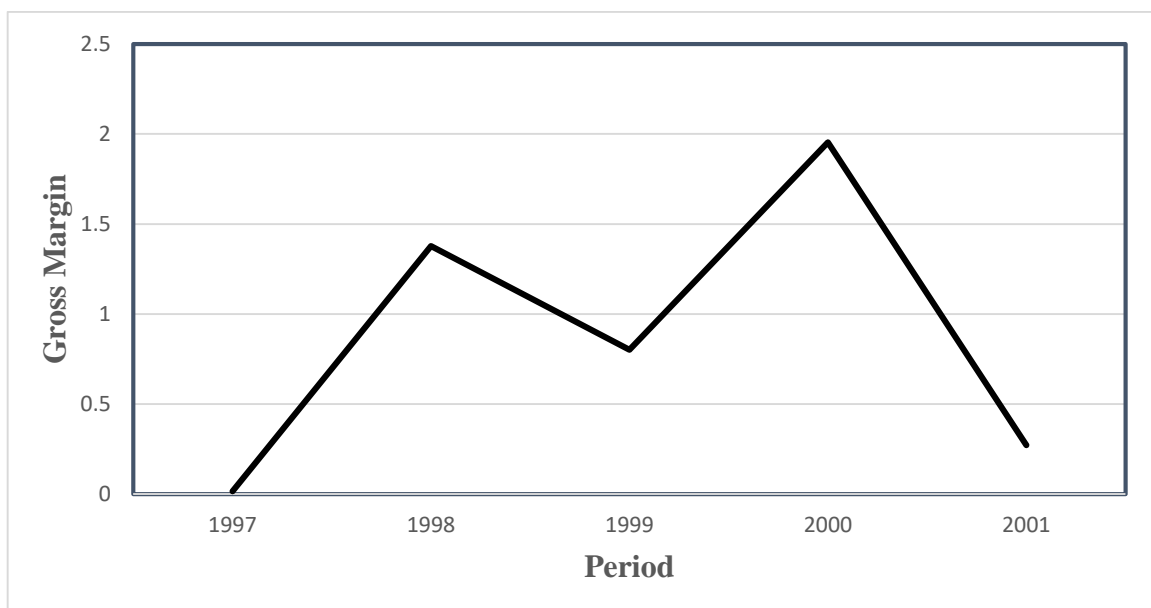
Modified Altman Z-Score Index Model Results

Table 1 reports the changes in gross revenue, gross margin and the percentage change in gross margin for Enron Corporation for the period 1997-2001.

Table1: Trend of Gross Revenue, Gross Margin and Percentage Change in Gross Margin for Enron Corporation 1997-2001(Billions of U S Dollars).

| Year | Gross Revenue | Gross Margin | Gross Margin% | % Change |
|------|---------------|--------------|---------------|----------|
| 1997 | 20.273 | 0.015 | 0.074 | - |
| 1998 | 31.260 | 1.378 | 4.408 | 4.334 |
| 1999 | 40.112 | 0.802 | 1.999 | -2.409 |
| 2000 | 100.789 | 1.953 | 1.936 | -0.060 |
| 2001 | 138.718 | 0.272 | 0.196 | -1.740 |

The resulting graph of gross margin against time for Enron Corporation for the period 1997-2001 has the form depicted below where the gross margins exhibited a porpoising behavior.

**Figure 1: Porpoising Behavior of Gross Margins for Enron Corporation 1997-2001.**

It is evident from Table1 that the gross margins for Enron Corporation fell to the lowest levels in 1997, 1999 and 2001 exhibiting a porpoising behavior over the years under consideration. The diverging gross margins are usually an indication of financial statement fraud (Nugent, 2003). With an effective corporate governance system in place, these changes should have alerted the securities analysts, the board of directors, external auditors and regulators to raise red flags that the performance of Enron Corporation was on the decline. Apparently, the percentage changes in gross margin were negative in 1999, 2000 and 2001 whereas, the changes were positive in 1998. Such a change of represents a point of inflection (Nugent, 2003) which implies that X_4 had to be assigned a coefficient of -0.6 when computing the overall Z-Score Index.

Table 2: Modified Altman Z-Score Indexes for Enron Corporation 1997-2001

| Year | 1997 | 1998 | 1999 | 2000 | 2001 |
|---------------------------------|--------|--------|---------|---------|---------|
| Adjusted Altman Z-Score Indexes | 0.2428 | 0.2722 | -0.1814 | -0.1265 | -0.0204 |

The modified Altman Z-Score Indices are reported in Table 2 and the trend of the adjusted Z-Scores in Table 2 and Figure 2 implies that for the period 1997-2001, the Enron Corporation was in unhealthy financial state. The scores increased from 0.2428 in 1997 to 0.2722 in 1998 but showed a sharp drop to -0.1822 in 1999. In 2000 the score rose to -0.1265 and then dropped to -0.2040 in 2001. Firms which are financially healthy and not involved in financial statement manipulation should have Z-Score Index of 2.6 and above but when the Z-Scores fall below 1.1 such organization are likely to go bankrupt (Diakomihalis, 2012). In the case of Enron Corporation all the Z-Score Indexes for the period 1997-2001 were less than 1.1 which implied that Enron Corporation was financially unhealthy and was involved in financial statement manipulation. The board of directors and the external auditors for Enron Corporation should have detected financial statement frauds as early as 1998 and raised red flags. Unfortunately, both of them failed to carry out their oversight role. The adjusted Altman Z-Score Indexes for Enron Corporation for the period 1997-2001 exhibited the behavior shown in figure 2.

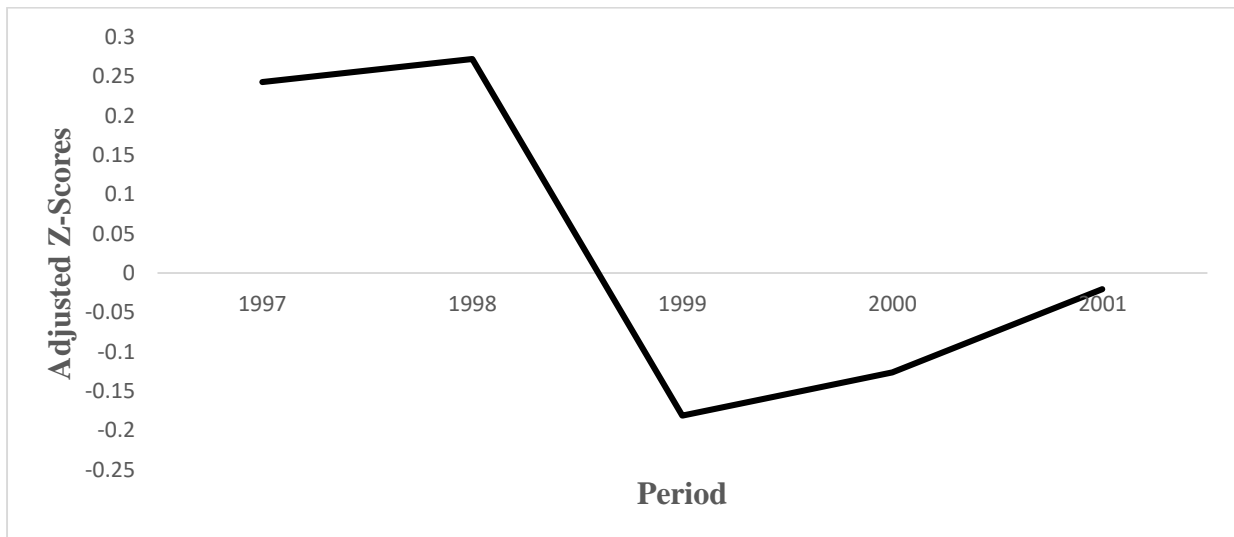


Figure 2: Adjusted Z-Scores for Enron Corporation 1997-2001

4.1 Beneish Model Results

The Beneish Model for bankruptcy detection and corporate health analysis involved determination of DSRI, GMI, AQI, SGI and TATA. The results are reported in Table 3.

Table 3: DSRI, GMI, AQI, SGI and TATA Indices for Enron Corporation 1997-2001.

| Period | DSRI | GMI | AQI | SGI | TATA |
|-----------|--------|---------|------|-------|--------|
| 1997-1998 | 0.9737 | 70.1752 | 1.06 | 1.542 | 2.242 |
| 1998-1999 | 1.1463 | 0.1678 | 1.07 | 1.283 | 0.327 |
| 1999-2000 | 1.3655 | 2.2048 | 1.39 | 2.513 | -1.532 |
| 2000-2001 | 0.3180 | 1.0318 | 1.08 | 1.376 | -7.081 |

From Table 3, the values for DSRI for 1998-1999 and 1999-2000 were higher than the non-manipulation mean threshold of 1.03 (Beneish, 1999), which means that the receivables and revenues were out of balance during the above periods. This further implies that Enron

Corporation management manipulated her financial statements by inflating the revenues (Beneish, 1999; Wells, 2001). The values of the GMI for 1997-1998 and 1999-2000 were higher than the threshold value of 1.041 which means that the gross margins dropped during the above years and Enron Corporation had the incentive to manipulate earnings so as to portray a rosy image. All the values for AQI from 1998-2001 were greater than the threshold value of 1.039 (Beneish, 1999). These figures implied that Enron Corporation engaged in financial statement fraud by encouraging cost deferral. The SGI values were above the threshold value of 1.134 for non-manipulators of financial statements which implied that Enron Corporation manipulated her financial statements by adding false sales. The threshold for the TATA index for non-manipulating firms is .018 (Beneish, 1999). However, for Enron Corporation the TATA indices for 1997-2001 were far above the threshold which implied that financial statement fraud had taken place (Beneish, 1999; Wells, 2001). Therefore, the various tools which were applied in the analysis of the 1997-2001 financial statements for Enron Corporation revealed massive manipulation of financial statements. The financial fraud and imminent bankruptcy should have been detected, and halted as early as 1998.

IMPLICATIONS TO RESEARCH AND PRACTICE.

From the foregoing it is evident that, Enron Corporation management and auditors failed to safeguard the interests of her stakeholders and instead fuelled fraud through creative accounting by manipulating financial statements which eventually resulted in bankruptcy and collapse of the corporation (Borras et al., 2002). Red flags signalling financial fraud and imminent bankruptcy of Enron Corporation should have been raised as early as 1998 unfortunately, the auditors, board of directors, the US Securities Exchange Commission and security analysts never acted. The bankruptcy of such a giant corporation shook capital markets, and exposed the loopholes in the corporate governance codes for management of firms and unethical behavior of corporate executives. The efficacy of the existing corporate governance practices in promoting transparency, accountability, and financial disclosure quality was questioned.

The Enron Corporation scandal has some implications for corporate governance of public firms. All the concerned parties failed to carry out the oversight role which requires vigilance and continuous attention due to the dynamics within the business environment. Furthermore, the corporate financial reporting scandals exhibited by Enron Corporation, have created the need for policy makers to be more active in monitoring the governance of public firms with more emphasis on levels of financial reporting and disclosure (Healy & Palepu, 2001). This calls for raising the level of ethical conduct and regular monitoring of auditors and board members. The auditing profession has to be more innovative in order to avoid similar scandals. Eulerich and Kalinichenko (2018) have championed this move by advocating for new auditing technologies such as continuous auditing. There is also need to continuously strengthen the regulatory frameworks for public firms and some efforts in this direction have led to the establishment of corporate governance regulatory frameworks. Among these are the Sarbanes-Oxley Act in US, OECD Guidelines on Corporate Governance, and Corporate Governance Codes in various countries although they have not been very effective as evidenced by the collapse of some public firms after the Enron scandal.

CONCLUSION

The analysis and results in section four involving the modified Altman Z-Score Index and Beneish Models for financial statement manipulation and bankruptcy detection and the ensuing discussion compel the author to deduce that there is evidence of manipulation of financial statements and signals of imminent bankruptcy of Enron Corporation. The conclusion which arises from the foregoing is that there was a missed opportunity to detect and halt the financial fraud and subsequent bankruptcy of the corporation as early as 1998.

RECOMMENDATIONS

Enron Corporation caused losses to its stakeholders and a sharp drop in the stock market prices thereby destroying the investments of various investors. In order to avoid similar corporate failures in future, it is recommended that corporate governance regulatory frameworks for governing firms should be strengthened and proactive approaches to corporate failures should be adopted rather than take action when investments are already damaged. It is also recommended that the stakeholders in public firms should be more vigilant and demand for ethical behaviors and transparency from the hired technocrats who are entrusted with the responsibility of managing their firms.

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