Role of Forensic Accounting – An Analysis

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Abstract – In this paper, we have studied the basics of forensic accounting and the overview of various forensic accounting techniques. One among the techniques, Beneish M-Score model has been used for finding earnings manipulation in 10 foreign companies and 10 Indian companies in the past five years which have been selected on the assumption that the company is involved in manipulative activities in any particular financial year. The results from such analysis have been categorised into manipulative and non-manipulative companies. For proving the manipulative results, complaints and enforcements against the companies have been collected and provided as evidence for such manipulative results. The paper concludes by stating the uses of incorporating forensic accounting into the internal and statutory audit functions and procedures to avoid frauds or manipulations, and suggestions have been made to improve transparency and accountability of all the manipulations in India.

Keywords: Forensic Accounting, Earnings Manipulation, Beneish M-Score Model, M-Score, Fraud Detection.

I.   INTRODUCTION

"Forensic" means "usable in court of law". Hence, Forensic accounting is a specialised branch of accounting wherein the forensic accountants conduct an accounting analysis that is suitable to the court which will form the basis for discussion, debate and ultimately dispute resolution. Forensic accounting involves many complex techniques which help in detecting fraud and earnings manipulations in the financial statements. One among the techniques is Beneish M-Score Model. Beneish M-Score model is a mathematical model which helps in detecting the financial/earnings manipulations of the companies using eight independent variables which are calculated using the values from the financial statements of the company. It was created by Professor M. Daniel Beneish in June 1999.The M-Score (Manipulation score) is a dependent variable with eight independent variables comparing the values of current year (t) with the immediately preceding year (t-1) from the financial statements and cash flow statements of the companies.The M-Score uses a multiple regression equation which is expressed as:

M-Score =   -4.840 + [0.920DSRI + 0.528GMI + 0.404AQI + 0.892SGI + 0.115DEPI + 4.697TATA] + [-0.172SGAI – 0.327LVGI]

Where, the eight independent variables are as follows:

DSRI – Daily Sales Receivable Index,

GMI – Gross Margin Index,

AQI – Asset Quality Index,

SGI – Sales Growth Index,

DEPI – Depreciation Index,

TATA – Total Accruals to Total Assets,

SGAI – Selling, General and Administrative Expenses Index,

LVGI – Leverage Index

The heuristic rule is that a M-Score greater than -2.22 (i.e. more positive than -2.22) indicates a possibility of financial manipulation.

II.   REVIEW OF LITERATURE

Alexander, PV (2016) in his thesis "A study on the application of forensic accounting tools in progressive accounting practices for detection and prevention of fraud" attempts to find the various causes of fraud, psychology of a fraudster, warning signs of future frauds and ways and measures to detect and prevent such frauds. The study also finds the usage of forensic practices in the industry by surveying various professional categories of accounting professionals. The study also uses a high-end forensic tool called Beneish M-Score model on the major cement companies in India to find out if there is any scope of manipulations in such cement companies. (Alexander, 2016)

Messod D. Beneish(1999) in his paper "The Detection of Earnings Manipulation" has created a model which is a mathematical equation that uses eight financial ratios weighted by coefficients to identify whether a company has manipulated its earnings. Beneish also stated that there is a systematic relation between the probability of manipulation and the variables in the financial statements. The model uses the accounting variables in the financial statements to find the earnings manipulation and, also a sample test has successfully identified approximately half of the companies involved in manipulation. (Beneish, 1999)

O. Ronald Gray,Stephanie D. Moussalli(2006), their research paper named "Forensic Accounting and Auditing United Again: A Historical Perspective"is a review and a comment on the relation between auditing and forensic accounting in an historical context. They have stated that earlier forensic accounting was an integral part of mainstream accounting and there was no specific significance given to Forensic

Accounting as such. But however, as time passed by, with increase of corporate failures and frauds Forensic accounting is now treated as a profession and the demand for it is also empirically increasing. (Gray & Moussalli, 2006)

Tina Carpenter,Cindy Durtschi,Lisa Milici Gaynor(2008) in their article "The Incremental Benefits of a Forensic Accounting Course on Scepticism and Fraud-Related Judgments" have conducted a survey and examined how the scepticism and fraud related judgemental skills would increase in the students by providing a course of Forensic accounting and also have compared the untrained students with the panel of trained forensic accounting students to find out how the scepticism and judgemental skills have been better in the trained students rather than the untrained students. Their study concluded that by providing Forensic Accounting education the fraud and risk assessment skills of the students is increased and sustained. (Carpenter, Durtschi, & Gaynor, 2008)

Enyi Patrick Enyi(2008)in their research paper "Detecting Causes of Variances in Operational Outputs of Manufacturing Organizations: A Forensic Accounting Investigation Approach" have stated that the introduction of International Standard on Auditing 240 (ISA-240) required the auditors to identify and assess the material misstatements occurring due to fraud at the initial stages that is at the financial statements level only. Thus, the auditors were no required to get the knowledge of forensic accounting. But however, the study stated that the auditors concentrated only on the financial transactions leaving aside other operations of the entities such as the manufacturing processes where there have been financial leakages which are not easily detected with the normal analysis of financial statements. The paper concluded with suggestions on how to apply forensic accounting in investigating variances and suspected fraudulent activities in manufacturing processes.(Enyi, 2008)

Subhajit Ghosh(2014) in his paper "Forensic accounting – A study on its significance in Indian corporate sector" has studied the need of incorporating forensic accounting into the audit procedures to provide better services to the clients. The researcher has surveyed different accounting professionals: practising Chartered accountants, Non-practising Chartered Accountants and Academicians with questionnaires. The result state that forensic accounting must be a part of Chartered Accountancy curriculum to enable aspiring Chartered Accountants to handle the fraud assignments. He has concluded that for forensic accounting to gain popularity in India, change of mindsets and improved infrastructure is required.(Ghosh, 2014)

Emmanuel Ikechukwu Okoye (2009) in his article "Forensic Accounting in Developing Economies, Problems and Prospects" has highlighted the importance of forensic accounting in the developing countriesfor litigation support services and investigative functions. The paper concentrated on the prospects and problems of forensic accounting in developing countries and found out that it is a new trend and there are many developing countries which are yet to bring in forensic accounting because of which the accountants in these countries lack the technical know-how of forensic issues. The paper then concluded

that the prospects of forensic accounting are to be harnessed to make Forensic accounting an integral part of businesses.(Okoye, SSRN, 2009)

III.   RESEARCH DESIGN

Scope of the Study: We have considered 10 Indiancompanies and 10 Foreign companiesbased on the assumption that such selected companies are involved in manipulative activities in the last five years and calculated M-Score for all the selected companies.

FOREIGN COMPANIES	YEAR	INDIAN COMPANIES	YEAR
Magna chip semiconductor corporation	2016-17	Bajaj Auto ltd	2017-18
Akron Inc.	2015-16	Tata Motors ltd	2017-18
Dow Chemical company and subsidiaries	2014-15	Patanjali Ayurved ltd	2014-15
General Motors Company	2014-15	Hero Motocorp ltd	2015-16
Axesstel Inc.	2016-17	Bata India ltd	2017-18
General Cable Corporation and subsidiaries	2016-17	Bosch India ltd	2017-18
Aluminium Corporation of China ltd	2016-17	Asian Paints ltd	2015-16
ISUZU Motors Ltd	2013-14	Essar Steel India ltd	2015-16
ArcelorMittal and Subsidiaries	2015-16	Visaka Industries ltd	2017-18
Kinross Gold Corporation	2013-14	Hindustan Unilever ltd	2017-18

Statement of problem: Detection of fraud and manipulation involves many complex processes. There are many forensic accounting techniques which help in fraud detection and identify earnings manipulation in a company. Thus, this paper uses one such forensic accounting technique to find earnings manipulation in selected companies and suggest ways to improve transparency and decrease the scope for earnings manipulation in the companies.

Objective of study:

- To evaluate the earnings manipulation in selected Indian and foreign companies and to prove such manipulation, complaints filed against the company is provided as a basis for proving such manipulation.
- To suggest ways to improve transparency and reduce the scope of manipulation in the companies.

Sources of Data: Secondary Data has been used as the source of data,whereAnnual Reportscollected from official websites of the companies and financial statements from online websites like:

www.moneycontrol.com

www.bseindia.com

www.nseindia.com

The complaints filed against the companies have been collected from the website of SEC:

www.sec.gov

Data Analysis Tool: To calculate M-Score for the companies selected, M-Score calculator from the official webpage of Messod D. Beneish (creator of M-Score model) has been used as a tool for data analysis.

Limitations of the study:

1. Only 10 Indian Companies and 10 Foreign Companies which are randomly selected on the assumption that they are involved in manipulative activities have been selected for the study.
2. The study uses only M-Score model to find manipulations and any other fraud detection technique is not employed in the study.
3. The result states whether there is earnings manipulation or not, but there is no detailed study related to the causes of such manipulation.
4. In case of some companies, the results from M-Score will be inaccurate as the companies after finding out that there is a problem in the financial statements, change and restate the financial statements which do not give the actual data for calculation of M-Score and hence the results are inaccurate in such cases.

IV.   DATA ANALYSIS AND INTERPRETATION

From the financial statements collected from secondary source of data, the required data is put into the M-Score calculator and the results have been analysed.

A. Foreign Companies:

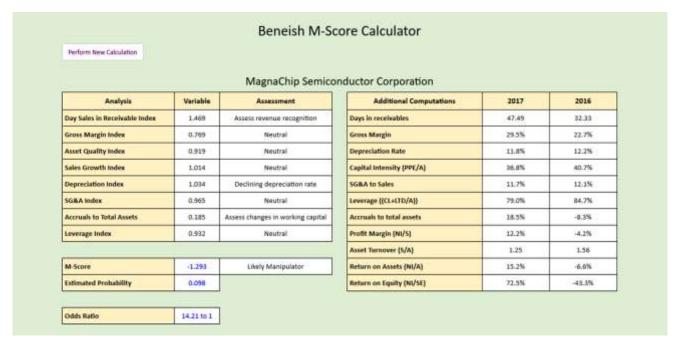After calculating M-Score for all the selected Foreign Companies, the companies have been divided into three categories:

- Companies with Manipulation and Complaints are Filed against the companies in SEC*(Securities and Exchange Commission)
- Companies with noManipulation but Complaints are filed against the companies in SEC*
- Companies with no Manipulation and no Complaints are against the companies in SEC*

*SEC – Securities and Exchange Commission strives to protect Investors and maintain fair, orderly and Efficient market conditions. SEC enforces any Accounting and Auditing related manipulations or frauds which may affect the investors and the market conditions.

Companies with manipulation and Complaints are filed against the companies in SEC:

MagnaChip Semiconductor Corporation: After computation of M-Score for the company, the results have stated that the company is likely to be involved in earnings manipulation in the financial year 2016-17 with a M-Score of -1.293. The result is shown below:

Beneish M-Score Calculator

Perform New Calculation

MagnaChip Semiconductor Corporation

Analysis	Variable	Assessment	Additional Computations	2017	2016
Day Sales in Receivable Index	1.469	Assess revenue recognition	Days in receivables	47.49	32.33
Gross Margin Index	0.769	Neutral	Gross Margin	29.5%	22.7%
Asset Quality Index	0.919	Neutral	Depreciation Rate	11.8%	12.2%
Sales Growth Index	1.014	Neutral	Capital Intensity (PPE/A)	36.8%	40.7%
Depreciation Index	1.034	Declining depreciation rate	SG&A to Sales	11.7%	12.1%
SG&A Index	0.965	Neutral	Leverage ((CL+LTD/A))	79.0%	84.7%
Accruals to Total Assets	0.185	Assess changes in working capital	Accruals to total assets	18.5%	-8.3%
Leverage Index	0.932	Neutral	Profit Margin (NI/S)	12.2%	-4.2%
			Asset Turnover (S/A)	1.25	1.56
M-Score	-1.293	Likely Manipulator	Return on Assets (NI/A)	15.2%	-6.6%
Estimated Probability	0.098		Return on Equity (NI/SE)	72.5%	-43.3%
Odds Ratio	14.21 to 1				

One more company in this category is Akron Inc. with a M-Score of -1.673. M-Score model has stated that both the companies have manipulated their earnings and to prove the result from such calculation, the complaints filed against the companies in SEC is taken as source. The Accounting and Auditing Enforcement Releases against MagnaChip Semiconductor Corporation and Akron Inc are AAER-3869 and AAER-3931 respectively.

Companies with no Manipulation but Complaints are filed against the companies in SEC:

General Cable Corporation and Subsidiaries: After computing the M-Score for the company, the results have stated that the company is not involved in any earnings manipulation in the financial year 2016-17 with a M-Score of -2.484. But however, complaints have been filed against the company in SEC. The result of the calculation is shown below:

The details of other companies in this category are given below:

COMPANY NAME	YEAR	M-SCORE	AAER NO.
General Cable Corporation and Subsidiaries	2016-17	-2.484	AAER-3840
Dow Chemical Company and Subsidiaries	2014-15	-2.684	AAER-3947
Axesstel Inc	2016-17	-2.656	AAER-3945
Kinross Gold Corporation	2013-14	-3.937	AAER-3930
General Motors	2014-15	-2.891	AAER-3850

For all the mentioned above companies, M-Score was calculated and the results state that there is no scope of manipulation in the companies. But however, there have been complaints filed against the companies in SEC which are related to accounting and auditing manipulations. The Accounting and Auditing Enforcement Release numbers (AAER NO.) of such complaints have also been mentioned in the table above. There is a limitation in case of a few companies, where the companies have restated the financial statements and the original statements have been deleted from the websites and reports which makes it difficult to find the manipulation accurately as there is no actual data about the financial statements. There have been complaints about such Restatement of financial statements, but M-Score doesn't show manipulation as the companies have restated the figures to maintain stability in the company.

Companies with no Manipulation and no Complaints filed against the companies in SEC:

ISUZU Motors ltd: After computing the M-Score for the company, the results have stated that there is no scope for manipulation in the company in financial year 2013-14 with a M-Score of -2.657 and there also have been no complaints filed against the company in SEC or any other regulatory body. The result of the calculation is shown below:

The details of other companies in this category are given below:

COMPANY NAME	YEAR	M-SCORE
ISUZU Motors ltd	2013-14	-2.657
Aluminium Corporation of China ltd	2016-17	-2.642
ArcelorMittal and Subsidiaries	2015-16	-2.425

The M-Score results state that the above companies are free from any earnings manipulation and there have been no allegations or complaints made against the companies in any regulatory body like SEC.

After analysis of 10 foreign companies, the number of companies in each category is stated below:

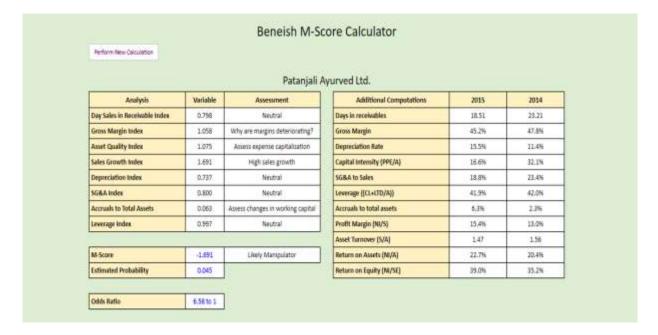| CATEGORY	NO OF COMPANIES
Manipulative companies with complaints	2
Non-Manipulative companies with complaints	5
Non-Manipulative companies with no complaints	3

B. INDIAN COMPANIES

After computing M-Score for all the selected companies, the companies have been classified into two categories:

- Manipulative Companies

- Non-Manipulative Companies

Manipulative Companies

Patanjali Ayurved ltd: After computing M-Score for the company, the results have stated that the company is likely to be involved in manipulating the earnings in financial year 2014-15with a M-Score of -1.691 but there is no body like SEC in India which provides transparency and enforces complaints against accounting and auditing manipulations. Hence, the result of manipulation in Patajali is not supported by any complaint or allegation against the company. The result of the calculation is shown below:
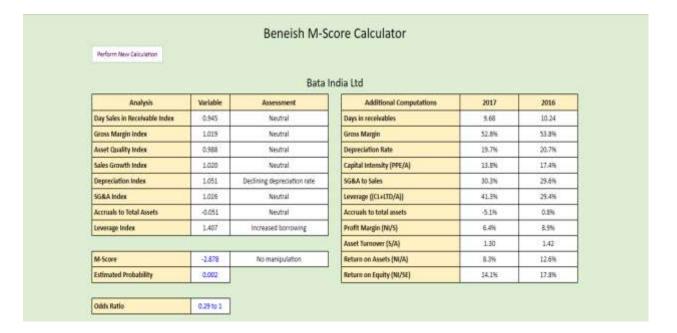

Beneish M-Score Calculator

Perform New Calculation

Patanjali Ayurved Ltd.

Analysis	Variable	Assessment	Additional Computations	2015	2014
Day Sales in Receivable Index	0.798	Neutral	Days in receivables	18.51	23.21
Gross Margin Index	1.058	Why are margins deteriorating?	Gross Margin	45.2%	47.8%
Asset Quality Index	1.075	Assess expense capitalization	Depreciation Rate	15.5%	11.4%
Sales Growth Index	1.691	High sales growth	Capital Intensity (PPE/A)	16.6%	32.1%
Depreciation Index	0.737	Neutral	SG&A to Sales	18.8%	23.4%
SG&A Index	0.800	Neutral	Leverage ((CL+LTD/A))	41.9%	42.0%
Accruals to Total Assets	0.063	Assess changes in working capital	Accruals to total assets	6.3%	2.3%
Leverage Index	0.997	Neutral	Profit Margin (NI/S)	15.4%	13.0%
			Asset Turnover (S/A)	1.47	1.56
M-Score	-1.691	Likely Manipulator	Return on Assets (NI/A)	22.7%	20.4%
Estimated Probability	0.045		Return on Equity (NI/SE)	39.0%	35.2%
Odds Ratio	6.58 to 1				

The details of other companies in this category are given below:

COMPANY NAME	YEAR	M-SCORE
Bajaj Auto ltd	2017-18	-1.934
Visaka Industries ltd	2017-18	-1.746
Patanjali Ayurved ltd	2014-15	-1.691

For all the above companies, the result has been manipulative but however, such manipulative resultsare not supported by any complaints or allegations against the companies as there is no regulatory body in India like SEC which provides details and enforces complaints against the companies relating to Accounting and Auditing manipulations.

Non-Manipulative Companies:

Bata India ltd: After computing the M-Score for the company, the results have stated that there is no scope for manipulation in the company for the financial year 2016-17 with a M-Score of -2.878. The result of the calculation is shown below:

The details of other companies in this category are given below:

COMPANY NAME	YEAR	M-SCORE
Bata India ltd	2016-17	-2.878
Bosch India ltd	2017-18	-2.379
Asian Paints ltd	2015-16	-2.759
Hero Motorcorp ltd	2015-16	-2.618
Tata Motors ltd	2017-18	-2.314
Essar Steel India ltd	2015-16	-2.653
Hindustan Unilever ltd	2017-18	-2.433

The result for all the above companies is Non-Manipulative in the respective financial years with the respective M-Scores stated above.

After analysis of all the 10 selected Indian companies, the number of companies in each category is given below:

CATEGORY	NO OF COMPANIES
Manipulative Companies	3
Non-Manipulative companies	7

V.   FINDINGS AND SUGGESTIONS

The application of M-Score as a tool for detecting earnings manipulation has stated that the eight indexs used in the M-Score help in detecting earnings manipulation by collecting data from financial statements of the company. But however, the results from M-Score is not accurate when the data in the financial

statements have been restated or changed in such a way that the company attains stability in the market. The same has been proved in case of foreign companies where, some foreign companies have restated their Financial Statements after complaints against the company have been filed. In such cases, even though there have been complaints on the companies, M-Score will be favourable to the company as the data used for calculating the M-Score is collected from the restated financial statements.

In case of Indian companies, some companies have a manipulative result in M-Score which is not supported by any legal document or allegation against the company. On the other hand in case of foreign companies, SEC provides transparency regarding the complaints filed against the companies about the manipulations in accounting and auditing and thus protects the investors by enforcing such accounting and auditing manipulations.

SUGGESTIONS: On the basis of the study conducted, we suggest that the companies must provide both the restated financial statements as well as the original financial statements in their annual report so that the stakeholders of the company get a fair and true veiw about the companies performance.

WealsosuggestthatICAI(Institute of Chartered Accountants of India) must provide transparency regarding the accounting and auditing manipulations in India by forming a new regulatory body which enforces all the Accounting and Auditing manipulations and maintain transparency regarding such enforcements so that it is made easy for the public to know the status of companies in India(or) ICAI on its own must enforce such manipulations and provide the details of such enforcements to the public, just like SEC (Securities and Exchange Commission) which provides all the details about Accounting and Auditing Manipulationsand also provides litigation and enforcement releases in order to maintain transparency for the public.

VI.   CONCLUSION

Forensic accounting helps in detecting fraud and earnings manipulation by employing different forensic accounting techniques like Beneish M-Score model, Benfords Law, Altman Z-Score etc; and provide a true and fair view of the financial statements of the company. Our study has used Beneish M-Score model and found manipulations in different companies with supportive evidence against the company for such manipulation in the financial statements. So, our study concludes by suggesting the companies to incorporate Forensic Accounting techniques into the internal and statutory audit procedures and functions to avoid any accounting manipulations in the company.

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