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Uncovering Earning Manipulation in Automobile Companies in India: A Study using Beneish M-Score Model

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Abstract

Financial reports of a company provide valuable insight of financial strength which helps various stakeholders in decision making. Manipulation of these reports are termed as financial shenanigans which is often termed as branch of forensic accounting. This study aims to detect earning manipulation of selected eight automobile companies listed on both BSE and NSE from 2020-21 to 2023-24. To uncover earning manipulation (EMN) Beneish M-score model is applied. The study finds that out of eight selected companies, five companies were engaged in misleading financial performance. It highlights the pattern of malpractices. This study provides guidance to investors regarding detection of fraudulent activities carried out by the company.

Keywords: Financial Shenanigans, Earning Manipulation (EMN), Beneish M-score Model.

Introduction

The stakeholders of the company rely on the financial statements of the entity for decision making. So, Financial reporting is playing a pivotal role and it becomes necessary to showcase the real picture of the company's soundness. But sometimes management create a rosy picture by manipulating its statements through financial shenanigans and cheating their stakeholders. To detect these fraudulent activities various techniques are used. When the company is struggling to survive, or it is in a financial trouble then management try to inflate profit or try to avoid loss or try to maintain its consistency by using some tricks (Gnyana Ranjan Bal)

Financial shenanigans are actions taken by management that mislead investors about a company's financial performance or economic health. Financial shenanigans can be classified into four broad groups: Earnings Manipulation Shenanigans, Cash Flow Shenanigans, Key Metrics Shenanigans and Acquisition Accounting Shenanigans. (Howard M. Schilit)

Earning Manipulation Shenanigans

The stakeholders of the company are relying on the financial reporting of the company for decision making. They expect true and accurate picture of financial health to be presented.

But many a time the company misguides them by indulging itself in manipulating of financial results. It results in misrepresentation of sustainable earnings of the company. The Earning manipulation (EMN) shenanigans are as under.(Howard M. Schilit)

- Recording Revenue Too Soon
- Recording Bogus Revenue
- Boosting Income Using One-Time or Unsustainable Activities
- Shifting Current Expenses to a Later Period
- Employing Other Techniques to Hide Expenses or Losses
- Shifting Current Income to a Later Period
- Shifting Future Expenses to an Earlier Period

Cash flow shenanigans

A company's real cash profitability can be manipulated by various cash flow shenanigans techniques. There are three categories of it;

- Shifting of financial cash inflows to the operating section
- Moving cash outflows from the operating section to the other section
- Boosting operating cash flow using unsustainable activities shenanigans

Key Metrics Shenanigans

Shenanigans in the conventional financial accounts have been covered thus far. However, business outcomes are increasingly displayed outside of this structure to accommodate a greater variety of industry-specific and company-specific indicators. These include metrics like Average Revenue per User (ARPU), Same-Store Sales, Bookings, Return on Invested Capital (ROIC), Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA), and many more. Businesses have far more flexibility in determining and disclosing important KPIs because they are not subject to GAAP. This, of course, opens the door for mischief. There are two categories of this kind of shenanigans;(Howard M. Schilit)

- Showcasing misleading metrics that overstate performance
- Distorting Balance sheet metrics to avoid showing deterioration

Acquisition Accounting Shenanigans

- Artificially boosting revenue and earnings
- Inflating reported cash flow
- Manipulating key metrics

Literature Review

(Annisa Nurbaiti)aimed to evaluate influence of Hexagon theory on financial shenanigans of companies of primary consumer goods sector which are listed on Indonesian Stock Exchange in 2017-2021 through quantitative research approach and by adopting logistic regression technique. Pressure, opportunity, rationalisation, capability and arrogance were taken as the component of hexagon theory i.e. the predictor variables whilst a financial shenanigan was dependent variable. The logistic regression result revealed that Pressure,

capability, arrogance had influence on financial shenanigans, whilst, the opportunity, rationalisation and collusion were not influenced on financial shenanigans.

(P. E.-I. Tarjo) tried to use cash flow shenanigans to uncover the phony financial statements. 470 data mining companies in Indonesia, China, Malaysia, and Japan were analysed through multiple linear regression from 2010-2019. The fraud in financial statements was measured by using F-score and M-score models. Financial shenanigans in statements were demonstrated by the F-score model employing the Days Payable Outstanding (DPO), Inventory to Cash Flow Operations Ratio (CICFO), and Receivables to Cash Flow Operations change. The M-score model result revealed that cash flow operation to current liability ratio, Operating Cash Flow Ratio, Free cash flow, cashflow operation to total liability ratio had affected financial statement fraud. Whilst the ratios i.e. Days payable outstanding, and change in inventory to cash flow Operations ratio, had significant effect on financial statement fraud in context to both models i.e. F-score and M-score model.

(Sanjeeb Kumar Dey) tried to light on concept of financial shenanigans, its classification and motives. The researcher examined the financial shenanigans practices in India and abroad. The companies which had used financial shenanigans were discussed and concluded that as compared to big giant company small companies were also indulged in this practices which ultimately be harmful to investors. So, the investors should gain the knowledge regarding this so that they can protect themselves from this warning signs.

(H. P. Susanto Salim) investigated the factors that affected financial shenanigans. This study attempted to study the effectiveness of fraud triangle of 78 samples of manufacturing companies of Indonesia during 2017-18. Impact of fraud triangle factors i.e. pressure, opportunity and rationalisation on financial shenanigans were examined by Logistic regression method. Financial shenanigans were measured by Beneish M-score model. The result revealed significant impact of external pressure, financial stability and monitoring effectiveness on financial shenanigans whilst, auditor change and financial target had not influence on financial shenanigans tendency.

(Majidah) examined 49 manufacturing companies listed on Indonesia Stock Exchange using F score model to detect financial shenanigans in 2019-20. Descriptive analysis, paired sample t-test and regression analysis of the independent variables namely characteristics of the CFO, financial targets and financial stability were carried out and the result revealed that the financial target was a positive determinant of financial shenanigans whilst financial stability and characteristics of the CFO did not cause financial shenanigans.

Research Gap

Detection of fraudulent activities regarding manipulation of financial statements has not been considerably discovered. Though there is research work carried out financial shenanigans focusing on conceptual framework or model-based study and considering majorly those companies which had faced allegations regarding manipulation. This motivates the researcher to conduct a study on the particular companies of NIFTY 100 and focuses on uncovering earning manipulation using Beneish M-score model.

Objectives

- To study the concept of Financial Shenanigans

- To explore the components of Beneish M-score model
- To detect the earning manipulation among selected companies based on M-score model

Hypothesis

H₀ 1: There is no Earning manipulation among selected companies during the study period based on M-score model.

H₀ 2: There is no significant difference in M-score value among the selected companies.

Research Methodology

This study is analytical. The researcher aims to detect fraudulent activities of selected automobile companies during the years 2020-21 to 2023-24. Eight Automobile companies are selected by using the purposive sampling technique from the non-probable sampling method. The selection of companies is based on certain criteria such as; being listed on Both NSE and BSE, availability of data throughout the study period and constituent of the NSE 100 index. The selected companies are as under:

Table 1: List of Sample Companies

Sr. No.	Company
1	Bajaj Auto Ltd.
2	Bosch Ltd.
3	Eicher Motors Ltd.
4	Hero MotoCorp Ltd.
5	Mahindra & Mahindra Ltd.
6	Maruti Suzuki India Ltd.
7	Tata Motors Ltd.
8	TVS Motor Company Ltd.

Source: www.nseindia.com

To identify financial statement fraud caused by earnings manipulation, the Beneish M-Score model, developed by Professor Messod Beneish, is applied. It is exerted as a tool of financial forensic to evaluate possible earnings manipulation in companies' financial statements. It is a potent technique for differentiating between earnings manipulators and nonearning manipulators using eight financial ratio-related indicators which are; DSRI, GMI, AQI, SGI, DEPI, SGAI, TATA and LVGI.

- **DEPI- Day Sales in Receivable Index:** It ascertains whether revenues and receivables are balanced over two consecutive years. If the value of DSRI is greater than 1, it shows higher percentage of receivables to sales in year t than in year $(t - 1)$. A significant rise in DSRI indicates a high probability of exaggerated revenues.
- **GMI- Gross Margin Index:** It measures the ratio of the gross margin in year $(t-1)$ to the gross margin in year t . If the value of this ratio is greater than 1, it shows deterioration of gross margin and a negative indication of company's prospect.
- **AQI- Asset Quality Index:** It measures the risk of change in asset realisation. When the AQI index is more than 1, it indicates that the company's cost deferral involvement is growing.

- **SGI-Sales Growth Index:** The indicator shows how much revenue increased in a given year compared to the previous year. A year under evaluation is considered to have had positive growth if the index is greater than 1.0, and negative growth if it is less than 1.0.
- **DEPI-Depreciation Index:** A DEPI of greater than one suggests that the rate of depreciation of tangible assets has reduced, which could mean that the business has raised its estimates of the assets' useable lives or adopted a novel strategy that boosts revenue.
- **SGAI- Sales General and Administrative Expense Index:** It measures ratio of SGAI to sales in t year over $(t-1)$ year.
- **LVGI-Leverage Index:** It measures the ratio of total debt to total assets.
- **TATA- Total accruals to Total Assets:** The difference between working capital accounts other than cash less depreciation is the total accruals. Higher positive accruals, or less cash, are thought to be linked to a higher risk of earnings manipulation.

The formula of these variables is as under:

Table 2: Formula of variables of M-score model

Sr. No.	Variables	Formula
1	DSRI	$(\text{Net Receivables}_t / \text{Sales}_t) / (\text{Net Receivables}_{t-1} / \text{Sales}_{t-1})$
2	GMI	$(\text{Gross profit}_{t-1} / \text{Sales}_{t-1}) / (\text{Gross profit}_t / \text{Sales}_t)$
3	AQI	$[\text{TA}_t - (\text{CA}_t + \text{PPE}_t) / \text{TA}_t] / [\text{TA}_{t-1} - (\text{CA}_{t-1} + \text{PPE}_{t-1}) / \text{TA}_{t-1}]$
4	SGI	$\text{Sales}_t / \text{Sales}_{t-1}$
5	DEPI	$[\text{Depreciation}_{t-1} / (\text{Depreciation}_{t-1} + \text{PPE}_{t-1})] / [\text{Depreciation}_t / (\text{Depreciation}_t + \text{PPE}_t)]$
6	SGAI	$(\text{Selling General \& Administrative Expense}_t / \text{Sales}_t) / (\text{Selling General \& Administrative Expense}_{t-1} / \text{Sales}_{t-1})$
7	LVGI	$(\text{Total Debt}_t / \text{Total Assets}_t) / (\text{Total Debt}_{t-1} / \text{Total Assets}_{t-1})$
8	TATA	$(\text{Change in Working Capital} - \text{Change in Cash} - \text{Change in Income tax payable} - \text{Depreciation Expense}_t) / \text{Total Assets}_t$

Source: (H. P. Susanto Salim)

After calculating these ratios Beneish M-score model is measured with following formula.

$$\text{M score} = -4.84 + 0.920(\text{DSRI}) + 0.528(\text{GMI}) + 0.404(\text{AQI}) + 0.892(\text{SGI}) + 0.115(\text{DEPI}) - 0.172(\text{SGAI}) + 4.679(\text{TATA}) - 0.327(\text{LVGI})$$

If the value of M-score model is greater than benchmark value of (-2.22) , the company should be engaged in earning manipulation and vice versa.

Data Analysis, Interpretations and Findings

The study is based on secondary data which are collected from the annual reports of selected companies, the website of money control and the website of the National Stock Exchange (NSE). The extracted data are analysed through Microsoft Excel and SPSS.

Table 3 depicts the value of M-score of selected Automobile companies from 2020-21 to 2023-24. It represents the value of eight variables too which are the constituents of M-score model. The ratios are calculated first and then put its value in Beneish M-score model. The M-score value of M & M Ltd., Maruti Suzuki India Ltd. and TVS Motor company Ltd. Show indication of non-manipulation of Earning Manipulation (EMN) throughout the study period as it is beyond the threshold limit of -2.22. Whilst the other selected companies had indicative of earning manipulation. Bajaj Auto Ltd. had a history of earning manipulation in the year 2020-21 as the M-score value is greater than the cut off value of -2.22 i.e. (-1.731). Bosch Ltd., Eicher Motors Ltd., Hero MotoCorp Ltd, and TATA Motors Ltd. fall in earning manipulation region as the value of M-score is (-1.9765) in 2021-22, (-0.360) in 2020-21, (-1.563) in 2020-21, (-2.1207) in 2021-22 respectively, which is more than -2.22 threshold limit.

The indication of Earning manipulation of Bosch Ltd. in the year 2020-21 points out the problem of AQI and DEPI as these ratios show cost deferral and changing of asset depreciation approach to boost the earning. Hero MotoCorp Ltd. indulging in EMN in the year 2020-21, as out of eight indicators of M-score model, five indicators namely DSRI, GMI, AQI, DEPI and LVGI show the possibility of manipulation as the value of these indicators signaling improved financial performance on paper only. EMN of the majority of companies from sample companies has been seen in the year 2020-21.

The findings revealed that by manipulating financial statements, the companies are trying to create an artificial picture of improved performance. The present study focuses on the selected companies of NIFTY 100 and the expectations of stakeholders on these companies are much more than others. So, the responsibility of companies engaging in EMN is increasing and they have to adherence fair financial reporting practices and show the true picture of the financial strength of a firm. The study suggests that M & M Ltd, Maruti Suzuki Ltd. and TVS Motors Ltd. are a better choice for investing. These companies had no record of EMN throughout the study period. It can be said that they are trustworthy about their earning management practices.

H₀2: There is no significant difference in M-score value among the selected companies.

Table 4: ANOVA Test Result

ANOVA					
Source of variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.147	7	2.45	2.061	0.088
Within Groups	28.52	24	1.188		
Total	45.667	31			

Table 4 represents the result of one-way ANOVA test. The p value is more than significant level i.e. $0.088 > 0.05$. Hence the Null hypothesis is not rejected and it is said that there is no significant difference in M-score value among the selected companies.

Table 3: M-score value of selected companies

Company	Year	DSRI	GMI	AQI	SGI	DEPI	SGAI	TATA	LVGI	M-Score
Bajaj Auto Ltd.	2023-24	0.97414	0.907173	1.100328	1.226686	0.965049	0.91045	-0.08379	1.359212	-2.80821
	2022-23	1.065732	0.875	0.975119	1.099047	1.371979	1.075478	-0.04713	1.093803	-2.62863
	2021-22	0.467145	1.118272	1.012429	1.194788	1.069967	0.833143	-0.01194	0.815405	-2.68778
	2020-21	1.698517	0.962567	1.272746	0.927217	0.938177	0.881114	0.016771	1.035482	-1.73165
Bosch Ltd.	2023-24	1.023335	0.955779	1.067372	1.120421	0.878983	1.035278	-0.02596	0.94481	-2.47067
	2022-23	0.983619	1.010515	1.055094	1.267171	0.966363	0.836886	-0.14584	1.053089	-2.90451
	2021-22	0.906356	0.878252	1.043116	1.212348	1.056687	0.969758	0.087045	0.914352	-1.97659
	2020-21	0.995804	1.32346	1.109116	0.987441	3.661687	0.732602	-0.06028	1.102122	-2.24354
Eicher Motors Ltd.	2023-24	0.713701	0.861953	1.213174	1.142999	0.914178	1.077938	0.03291	0.987681	-2.46786
	2022-23	1.025014	0.804199	1.181401	1.389591	0.921337	0.871116	-0.18852	0.967403	-2.99786
	2021-22	1.638109	0.944141	1.131492	1.174477	1.002294	0.840333	-0.2424	1.056368	-2.83859

Hero MotoCorp Ltd.	2020-21	2.013926	1.293248	1.193402	0.949498	0.832956	1.086585	0.225036	1.062101	-0.36073
	2023-24	0.871982	0.811212	1.099234	1.107972	0.943538	1.021823	-0.08968	1.052236	-3.00801
	2022-23	1.050549	0.944106	1.071349	1.155928	0.951321	0.994415	-0.01332	1.032075	-2.37256
	2021-22	1.000017	1.167922	0.979829	0.949509	1.002282	1.122421	0.007922	0.869386	-2.38552
	2020-21	1.417199	1.002765	1.181954	1.068131	8.820409	0.910838	-0.09131	1.277001	-1.56356
M & M Ltd.	2023-24	0.968305	0.893639	1.105987	1.162466	0.972453	1.05076	-0.04476	0.8794	-2.55948
	2022-23	0.899377	0.932322	1.137724	1.478959	0.870637	0.752665	-0.04818	1.003159	-2.32423
	2021-22	1.016888	1.186483	1.117768	1.275416	1.303771	0.83088	-0.0631	1.013092	-2.30823
	2020-21	0.788965	0.829114	1.179929	0.990178	0.985819	1.011978	-0.0121	1.325999	-2.86734
Maruti Suzuki India Ltd.	2023-24	1.164208	0.733404	1.325879	1.199193	0.991471	0.979057	-0.35484	0.870215	-3.7756
	2022-23	1.21972	0.474138	1.133314	1.331016	1.089755	0.889485	-0.40211	1.041785	-4.07218

	2021-22	1.266717	0.993939	1.046088	1.255403	0.994913	0.942489	-0.3313	0.982103	-3.52635
	2020-21	0.594011	1.521341	1.11487	0.930194	0	1.0511	-0.44211	1.209746	-4.85512
TATA Motors Ltd.	2023-24	1.074878	0.550459	1.069822	1.114751	0.882937	0.953364	-0.04579	0.854815	-2.69011
	2022-23	0.785449	-0.13095	0.966681	1.391287	0.995016	0.817392	0.020893	0.92492	-2.78582
	2021-22	0.645863	1.654545	0.982175	1.566318	0.635177	0.719793	-0.03711	0.972825	-2.12076
	2020-21	1.53633	10.06593	1.03946	0.686918	1.830851	0.968386	-0.01682	1.001246	2.558809
TVS Motor Company Ltd.	2023-24	1.103787	0.874576	1.147933	1.20465	0.959472	0.791538	-0.1227	0.913534	-2.72308
	2022-23	0.811884	0.838501	1.18103	1.268756	1.061432	0.90757	-0.02288	0.957465	-2.49564
	2021-22	0.880427	0.859784	1.16185	1.241184	0.885179	0.926605	-0.07469	1.003414	-2.7347
	2020-21	0.665688	0.933692	1.089344	1.019923	1.032098	0.911809	-0.20771	0.964611	-3.71014

Conclusion

Financial reporting is one of the major events in corporate world. Every stakeholder is eagerly waiting for the financial results declared by a firm. The Balance sheet, Income statement and Cash Flow statement of any company provide clue to the users for decision making. Sometimes to show the efficiency of management, the financial results are

manipulated, which are termed as Financial Shenanigans. There are Earning manipulation technique, cash flow shenanigans technique, Key Metriks Shenanigans technique and Acquisition accounting shenanigans. This study aims to detect fraudulent activities of a company using Earning Manipulation Shenanigans (EMN). There are various models developed to detect Earning manipulation, out of which the Beneish M-score model is applied to detect EMN of selected Automobile companies in India. The result reveals that the prestigious company has also had manipulation history in past. The M-score value of Bosch Ltd., Bajaj Auto Ltd., Eicher Motors Ltd., Hero MotoCorp Ltd, and TATA Motors Ltd. shows Earning manipulation (EMN) in the year 2021-22, 2020-21, 2020-21, 2020-21, and 2021-22 respectively. Whilst M & M Ltd., Maruti Suzuki India Ltd., and TVS Motors Ltd. shows their honest gesture regarding financial reporting as the m-score value is beyond the threshold limit of -2.22.

This study is conducted only for the period of four years i.e. 2021-22 to 2023-24 and examine financial shenanigans using the Beneish M-score model only. It observes and analysed the data of only eight Automobile companies. Further study will be carried by adopting other models of Financial Shenanigans. Moreover, the study can be conducted in future on other companies of this sector or/and companies from other sectors too.

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