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Exploration and comparison of traditional financial performance measures of Indian manufacturing industries

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Abstract
Purpose: The main objective of this study to compare and access the traditional financial performance measures such as Profits after Tax (PAT), Earnings per Share (EPS), Return on Assets (ROA), Return on Equity (ROE), and Return on Investment (ROI) in Indian manufacturing industries.
Design/Methodology: The total 534 Indian manufacturing companies considered for this study and grouped into various industries. Study period started from 1999-2000 to 2017-2018 financial years. Descriptive analysis including t-test is used in research to compare and access traditional financial performance measures of Indian manufacturing industries.
Findings: Financial performance measured by traditional accounting-based financial performance measures exhibits sound financial health of Indian manufacturing companies. Though, the financial performance decreases in 2007-2008 but afterward sample companies able to revive the sound financial vitality. Some industries outperform the other as well as aggregate sample companies' *vis-à-vis* traditional financial performance measures. The average matrices of industries presents mix results as some are not significantly different whereas, some are significantly different.
Originality: This is the first paper which examines the comparison and accessibility of the Traditional Financial Performance Measures in Indian manufacturing industries.

Keywords: profits after tax, earnings per share, return on assets, return on equity, return on investment, traditional accounting-based financial performance measures

Introduction
Financial performance can be explored using different techniques or methods. Conventionally, accounting-based financial performance techniques such as profits after tax (PAT), earnings per share (EPS), return on assets (ROA), return on equity (ROE), and return on investment (ROI) are used to find out the information regarding the financial performance of the firm. These traditional accounting-based techniques establish and analyse various ratios to find out the information regarding the financial health of the firm. This information is used by the stakeholders of the firm to measure and predict current as well as future financial performance of the firm. Literature on financial performance reveals that the advanced and developed countries like USA, Japan, UK, France, and Germany mainly focuses on shareholder value maximise model of corporate governance, whereas, majority of India corporate promotes profit maximisation as a mantra of success, because number of corporate are possessed and run by the few corporate houses.

The accounting-based traditional financial performance measures are over saluted by various researchers' like Biddle, Bowen, and Wallace (1998) [1], Chen and Dodd (2001) [2], Ismail (2006 and 2008) [4, 5], Kim (2006) [6], and Maditinos, Sevic, and Theriou (2009) [9] *vis-à-vis* value-based financial performance metrics. These studies supported the supremacy of traditional accounting performance measures. The results of the studies presented weak relationship of value-based performance metrics with stock returns.

Literature review
Ismail (2006) [4] examined the relative and incremental information content of traditional accounting-based performance measures (NOPAT, and NI) and EVA with using panel data regression. The study indicated that net operating income after taxes (NOPAT) and net income (NI) are superior to EVA and residual income and contradicted the Stern Stewart

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hypothesis.

Chen and Dodd (2001) [2] stated that financial market may put more confidence on accounting earnings that EVA measure. This study examined the value relevance three measures such as EVA, residual income (RI), and operating income (OI).The results presented that claim failed that is supporting the EVA for best measure for valuation purpose. In this study, operating income has highly association with value of company.

Biddle *et al.* (1998) [1] examined the claim that EVA is superior performance measure than traditional accounting-based performance measure (NOPAT) and EVA has more extreme relationship with stock return and company's value rather than accrual earnings. The results of study presented that accrual earnings were more highly associated with stock returns than EVA. This study suggested that traditional accounting-based performance measure or accrual earnings do better than residual income or EVA. Similar Kramer and Pusher (1997) [7] exposed that even if MVA and NOPAT were positive on average but the average of EVA is negative during the study period by investigate the relationship between MVA and EVA with 1000 companies of Stern Stewart from the period 1982 to 1992 year. The study presented that EVA is not best internal measure of corporate achievement in adding up value to shareholders' asset.

In the same way, Kim (2006) [6] presented the experimental support on the incremental and relative information content of EVA and traditional accounting-based performance measure such as earnings in the US hospitality industry. The study highlighted more stress on relevance of traditional accounting-based performance measure rather than EVA in explaining the hospitality firms' market value. It found that accounting earnings are more helpful than EVA.

Similarly, Kyriazis, and Anastassis (2007) [8] examined the claim of superiority of EVA with stock returns and market value of company with traditional accounting-based performance measures such as net operating profit after taxes (NOPAT) and operating profit (OP). The study concluded that NOPAT and OP are more reliable than EVA in explaining the stock return of companies that are listed on the Athens Stock Exchange (ASE)

Ismail (2008) [5] stated that traditional tools outperformed in explaining measure performance in Malaysia during different economic conditions. In this study, traditional tool EPS is superior to EVA in explaining the association and relationship with stock return.

Maditinos *et al.* (2009) [9] observed the explanatory ability of three traditional accounting-based performance measures such as earnings per share (EPS), return on investment

(ROI), and return on equity (ROE), compared with two value-based financial performance measures such as EVA and SVA in describing stock market returns in the Athens Stock Exchange (ASE). The study found that relative information content test disclosed that EPS has more association with stock market returns rather than EVA and SVA. Yet, incremental information content test presented that pair-wise combination of EPS and EVA increase the explanatory power in explaining the association and relationship with stock return.

The assessment of literature on the effectiveness of a variety of performance measures conveys the main problems. First and main is that most of study on traditional accounting-based performance measure as well as value-based performance measures conducted in developed countries such as USA and UK. But in recent years, developing countries like India and China boost their economy and compete with developed countries in the area of trade and services. But research on performance measures is less than developed countries. So this study is necessity for India like developing country to explore the financial performance measure. Secondly, most of studies, selected only one or two variables of earnings-based. So there is a clear requirement to examine the importance of traditional accounting-based performance measures in Indian manufacturing industries.

Sampling and database

A sample of 534 Indian manufacturing companies listed on Bombay Stock Exchange limited are taken from PROWESS database maintained by Centre for Monitoring Indian Economy (CMIE) barring banking and financial services companies. The sample grouped into various industries. The sample was created using the criteria (a) only those companies considered which were to be top in the criteria of the market capitalization of the year 2016. (b) Only Indian manufacturing companies considered (c) and the sample companies' data must exist during this time period. The study period started from 1999-2000 to 2017-2018.

Selection of variables

This study compared and accessed of traditional accounting financial performance measures of Indian manufacturing companies. The reviewed literature enabled to identify a number of key financial variables for the purpose of achieving stated objective. These variables consist of return on assets (ROA), return on equity (ROE), earnings per share (EPS), return on investment (ROI), and profits after tax (PAT). Table No-1 précised the computation of selected variables of study.

Table 1: Explanation of Study Variables

Variables	Computation	Symbols
Profits after Tax	PAT=Revenue -Expenses	PAT
Return on Assets	ROA= Net Income/ Book Value of Assets	ROA
Return on Equity	ROE= Net Income/ Book Value of Equity	ROE
Earnings per Share	EPS= Net Income/ number of share	EPS
Return on Investment	$\dfrac{\text{Profit before Intrest and Taxes} \times (1\text{-}\,\text{Tax Rate})}{\text{Total Assets}} \times 100$	ROI

Objectives and hypothesis

The main objective of this study is to compare and access

the traditional accounting financial performance measures of Indian manufacturing companies. To complete this,

traditional accounting financial performance measures are analysed and accessed. On the other hand, this study provides industry-wise comparison among these measures. On the basis of existing literature the following hypothesis was created as there is no significant difference of Traditional Financial Performance Measures among Indian Manufacturing industries.

Empirical results and discussion

Profit after Taxes (PAT) is the accounting variable which is a sum value after subtracting all the expenses form the revenue of a company. The average PAT registered by all sample companies ranges from 35.33 Crore Rs in 1999-2000 to 385.47 Crore Rs in 2017-2018. The average PAT shows upward increasing trend as depicted in Table -2. Chemical and Chemical Product industry depicting higher average profit from aggregate profit of all sample companies as well from the average profit of rest of industries through the study period. Metal and metal Product industry and Textile industry registered negative average profit in the initial study period but afterward demonstrated positive performance in term of PAT.

Figure-1 presents upward increasing trends by all industries through the study period. PAT shows downfall in years 2008-2009 may be due to beginning of recession which was continued up to 2014-2015 thereafter the sample companies and the industries registered increasing trend because of eradication of recession period.

Table 2: Average Profits after Tax (PAT) of All Sample Indian Manufacturing Companies

Figures are in Crore Rs.

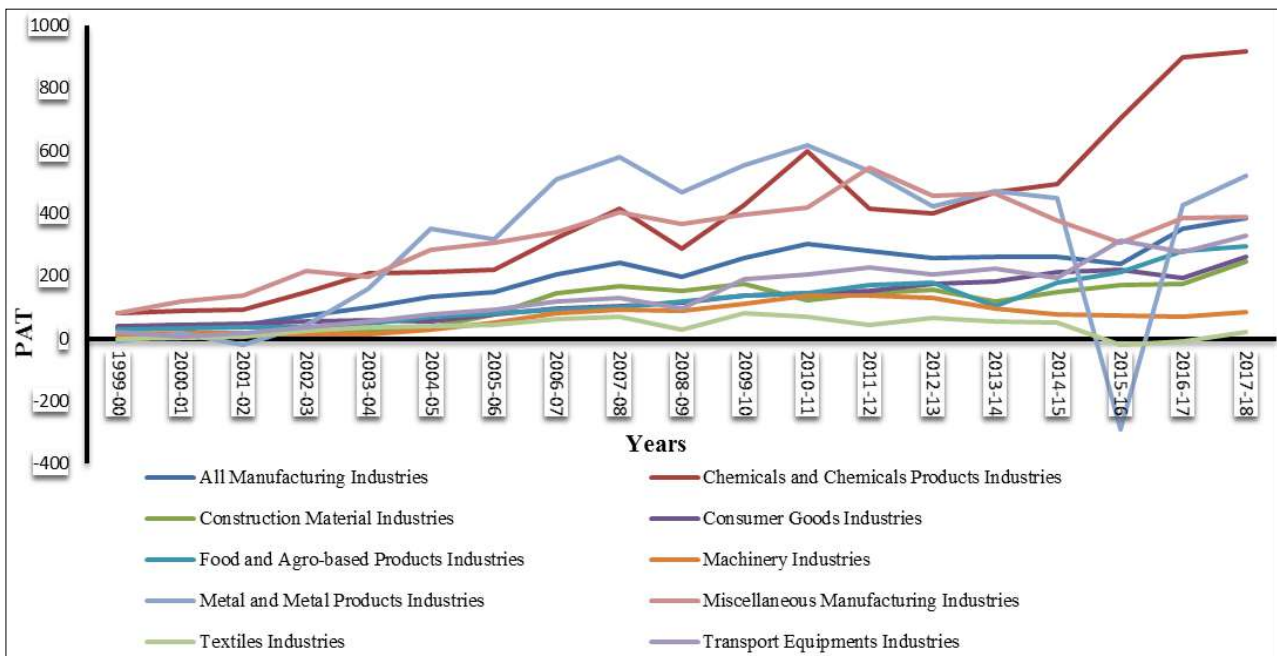| Years	All Manufacturing Industry	Chemicals and Chemicals Products Industry	Construction Material Industry	Consumer Goods Industry	Food and Agro-based Products Industry	Machinery Industry	Metal and Metal Products Industry	Miscellaneous Manufacturing Industry	Textiles Industry	Transport Equipments Industry
1999-00	35.33	82.53	9.28	39.44	28.43	14.57	-9.47	81.78	-1.76	22.78
2000-01	43.18	88.13	11.11	44.57	32.62	18.30	17.86	118.11	1.78	6.61
2001-02	45.37	92.99	14.31	48.57	36.61	18.74	-18.72	136.78	5.16	17.77
2002-03	74.45	150.2	14.30	55.55	37.18	14.50	43.02	215.63	24.64	38.25
2003-04	99.40	208.11	26.66	57.82	48.87	15.80	161.45	197.63	35.41	55.75
2004-05	135.26	212.35	37.86	56.45	69.71	28.95	352.71	285.34	38.68	76.43
2005-06	147.79	219.87	77.06	79.21	82.54	50.18	317.33	308.25	43.32	93.76
2006-07	205.32	323.34	144.11	96.72	92.6	80.73	510.18	341.82	62.9	118.13
2007-08	242.86	415.59	166.93	104.76	99.38	92.04	581.8	403.39	69.58	129.64
2008-09	199.13	287.62	152.46	115.36	119.74	90.55	469.52	365.75	30.25	95.70
2009-10	259.44	427.85	176.94	136.07	137.29	110.88	555.83	396.47	79.94	189.76
2010-11	302.27	599.8	122.92	145.96	144.17	138.89	616.83	417.98	71	203.7
2011-12	280.44	414.77	147.01	153.92	172.12	137.45	534.89	546.41	45.3	227.66
2012-13	258.5	400.18	155.93	174.94	179.85	128.68	423.62	457.83	67.76	204.74
2013-14	262.1	467.56	117.85	182.36	105.76	96.13	472.25	463.45	55.05	225.34
2014-15	260.87	492.65	149.21	214.46	180.97	77.24	448.28	378.37	51.17	192.45
2015-16	237.51	706.15	173.04	222.33	213.36	73.45	-290.19	307.70	-20.53	314.46
2016-17	350.02	900.74	174.71	194.03	278.69	70.66	428.35	384.49	-8.8	278.00
2017-18	385.47	918.49	246.41	263.22	294.05	87.12	519.39	390.54	21.22	329.41

*Source***:** Prowess IQ

Fig 1: Average Profits after Tax (PAT) of All Samples Indian Manufacturing Companies

To test the assumption of no significant difference in the average PAT of overall sample companies and the average PAT of different industries To test this claim an independent sample t-test has been applied on the average pooled data of PAT of all sample companies and industries

Table 3: The Independent Samples t-test matrix of PAT of Samples Companies and Industries

	Chemicals and Chemicals Products Industries	Construction Material Industries	Consumer Goods Industries	Food and Agro-based Products Industries	Machinery Industries	Metal and Metal Products Industries	Miscellaneous Manufacturing Industries	Textiles Industries	Transport Equipments Industries	All Manufacturing Industries
Chemicals and Chemicals Products Industries	t-value p-value	4.629 0.000*	4.410 0.000*	4.386 0.000*	5.442 0.000*	0.809 0.424	0.986 0.331	6.090 0.000*	3.875 0.000*	3.010 0.005*
Construction Material Industries			-0.614 0.543	-0.502 0.619	2.111 0.042*	-3.426 0.002*	-6.440 0.000*	4.243 0.000*	-1.293 0.204	-3.063 0.004*
Consumer Goods Industries				0.069 0.945	2.943 0.006*	-3.208 0.003*	-6.086 0.000*	5.236 0.000*	-0.813 0.422	-2.621 0.013*
Food and Agro-based Products Industries					2.554 0.015*	-3.199 0.003*	-5.908 0.000*	4.525 0.000*	-0.829 0.413	-2.551 0.015*
Machinery Industries						-4.184 0.000*	-8.363 0.000*	2.964 0.005*	-3.076 0.004*	-5.001 0.000*
Metal and Metal Products Industries							-0.050 0.960	4.805 0.000*	2.733 0.010*	1.895 0.066
Miscellaneous Manufacturing Industries								9.788 0.000*	4.789 0.000*	3.313 0.002*
Textiles Industries									-4.664 0.000*	-6.604 0.000*
Transport Equipments Industries										-1.575 0.124

Table - 3 contains two statistics, t-value and their p-value. The null hypothesis is accepted in case of all samples average PAT and the average PAT of Transport Equipments Industry where p-value is 0.124, means that the average PAT of all samples is not different than the average PAT of Transport Equipments Industry because p-value is insignificant at five percent Further, as depicted by the table the pair of all samples companies-Transport Equipment Industry; Food and Agro-based Products Industries-Transport Equipments Industries; Consumer Goods Industries - Food and Agro-based Products Industries; Consumer Goods Industries- Transport Equipments Industry; Construction Material Industries- Consumer Goods Industries; Construction Material Industries- Food and Agro-based Products Industries; Construction Material Industries- Transport Equipments Industries; and Chemicals and Chemicals Products Industries- Metal and Metal Products Industries accept the null hypothesis of equality of average PAT because p-value is insignificant at the level of five percent.

Further, rest of pairs of different industries rejected the null hypothesis that average PAT of inter industries is not different as p-value is not significant at five percent means there a significant difference in the average PAT of the pairs.

Return on Assets is the quotient of Net Income divided by Book Value of Assets. The average ROA registered by all sample companies ranges from 4.08 percent in 1999-2000 to 2.06 percent in 2017-2018. The average ROA shows zigzag (upward and downward) trend through the study period as presented by Table – 4.

Table 4: Return on Assets (ROA) of All Samples Companies and Industries

Figures are in %

Years	All Manufacturing Industry	Chemicals and Chemicals Products Industry	Construction Material Industry	Consumer Goods Industry	Food and Agro-based Products Industry	Machinery Industry	Metal and Metal Products Industry	Miscellaneous Manufacturing Industry	Textiles Industry	Transport Equipments Industry
1999-00	4.08	5.16	0.93	9.09	4.78	4.31	3.22	2.32	0.01	5.39
2000-01	2.80	4.69	1.07	5.26	5.13	1.3	2.13	2.29	-0.78	2.68
2001-02	2.45	3.7	0.92	3.9	3.42	1.9	1.48	2.55	0.03	2.71
2002-03	2.99	4.14	0.1	3.81	2.88	1.79	3.27	1.86	2.59	5.56
2003-04	4.46	5.48	2.64	4.35	4.36	2.96	6.68	3.17	2.47	7.37

2004-05	5.19	5.71	4.14	4.65	6.12	2.72	10.3	3.34	3.4	7.17
2005-06	5.57	5.64	5.10	6.31	5.75	5.78	8.89	4.32	3.22	5.02
2006-07	6.38	6.02	11.28	6.47	5.15	6.46	10.04	5.04	2.89	5.48
2007-08	5.92	6.17	10.04	6.1	4.57	5.75	9.61	5.44	1.10	4.96
2008-09	3.66	3.72	7.59	4.28	4.2	3.77	4.8	3.46	-1.12	2.46
2009-10	5.88	5.3	8.45	7.19	5.9	5.68	7.01	6.23	2.83	5.33
2010-11	5.38	6.34	5.01	6.71	2.97	6.03	6.56	4.74	3.35	5.55
2011-12	4.14	5.41	5.77	4.76	4.26	3.34	3.91	4.23	-0.56	5.05
2012-13	3.3	4.03	5.95	4.6	3.24	2.09	2.6	3.15	0.91	3.58
2013-14	2.84	3.86	2.66	5.8	3.06	1.39	2.56	1.82	1.15	3.77
2014-15	2.19	3.32	3.84	6.22	1.15	0.79	2.81	-1	-0.71	4.38
2015-16	2.05	4.19	1.72	5.15	1.75	0.35	-0.2	-0.76	0.88	4.88
2016-17	1.97	4.75	1.52	4.18	2.43	0.69	-0.05	-2.24	1.31	4
2017-18	2.06	5.41	3.57	2.29	3.57	1.03	1.1	-2.27	-1.7	3.23

*Source***:** Prowess IQ

Table - 4 shows that Chemicals and Chemicals Products Industry, Consumer Goods Industry, and Food and Agro-based Products Industry, and Transport Equipment industry outperform in term of ROA to the aggregate ROA of all sample companies and rest of industries as these industries registered higher ROA. Whereas, Construction Material Industry, Metal and Metal Product Industries, and Textile Industry on performed well as compares to other industries because these registered less average ROA than the average ROA of all sample companies throughout the study period.
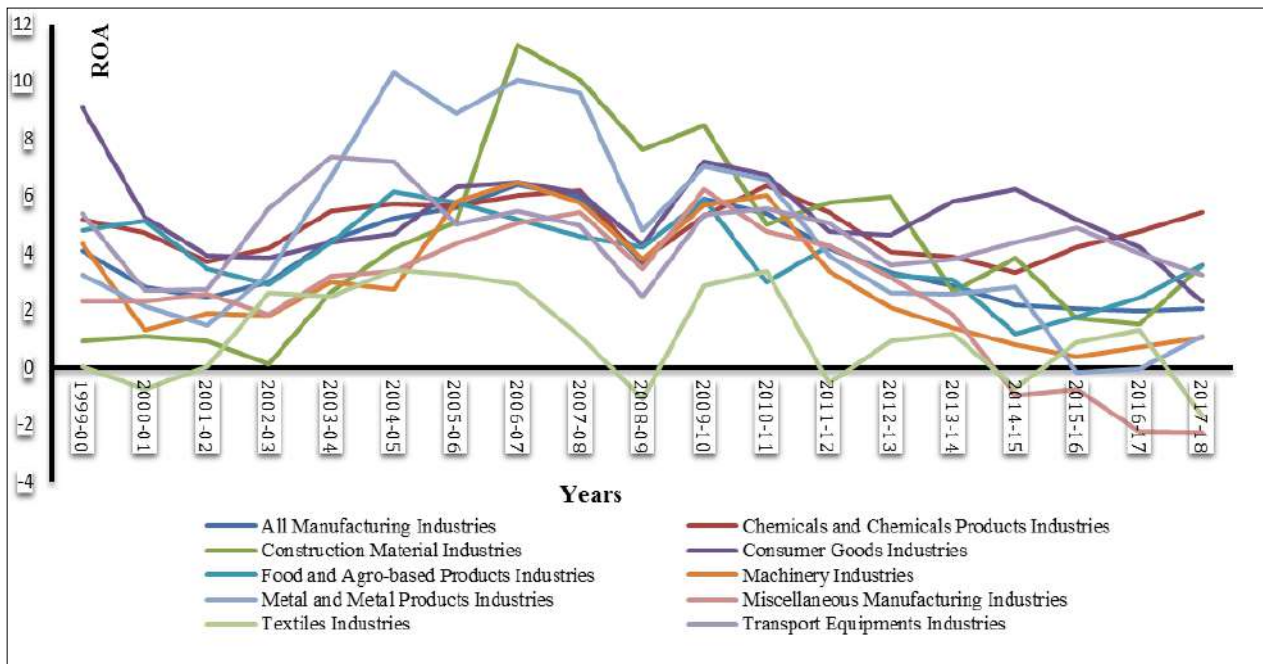

Fig 2: Average ROA of All Samples Indian Companies and Industries

Table 5: The Independent Samples t-test matrix of ROA of All Samples and Industry-Wise

	Chemicals and Chemicals Products Industry	Construction Material Industry	Consumer Goods Industry	Food and Agro-based Products Industry	Machinery Industry	Metal and Metal Products Industry	Miscellaneous Manufacturing Industry	Textiles Industry	Transport Equipments Industry	All Manufacturing Industry
Chemicals and Chemicals Products Industry	t-value p-value	0.734 0.468	-1.039 0.306	2.517 0.016*	3.548 0.001*	0.412 0.683	3.910 0.000*	8.633 0.000*	0.901 0.373	2.570 0.014*
Construction Material Industry			-1.211 0.234	0.497 0.622	1.450 0.156	-0.216 0.830	1.948 0.059	3.858 0.000*	-0.410 0.684	0.580 0.565
Consumer Goods Industry				2.941 0.006*	3.854 0.000*	0.887 0.381	4.196 0.000*	8.119 0.000*	1.400 0.170	2.989 0.005*

Food and Agro-based Products Industry				1.530 0.135	-0.752 0.457	2.170 0.037*	5.649 0.000*	-1.624 0.113	0.155 0.878
Machinery Industry					-1.651 0.107	0.741 0.463	3.195 0.003*	-2.818 0.008*	-1.369 0.179
Metal and Metal Products Industry						`2.125 0.041*	3.968 0.000*	-0.116 0.909	0.829 0.413
Miscellaneous Manufacturing Industry							2.022 0.050	-3.290 0.002*	-2.021 0.050
Textiles Industry								-7.133 0.000*	-5.332 0.000*
Transport Equipments Industry									1.718 0.094

Figure - 2 depicts decrease ROA in year 2008-2009 that may be due to beginning of recession which was continued up to 2014-2015 thereafter the sample all Industries companies and the companies of different industries registered increasing trend of ROA that may be due to end of recession period.

To test the assumption of that there is no significant difference in the average ROA of overall sample companies and the average ROA of different industries as well. To test this claim an independent sample t-test has been implied on the average pooled data of ROA. As presented by Table - 5 the null hypothesis is accepted in case of all samples and average ROA of Transport Equipments Industry where p-value is more than five percent which is 0.094 Further, matrix table value presented in bold, these pair's null hypothecs accepted because p-values of these pairs are not significant at five percent. The rest of pairs of different industries rejected the null hypothesis that average ROA of inter industries is different as p-value is significant at 5 percent.

Return on Equity is a financial ratio of net income to the book value of equity provide financial information about the how efficiently a company engendering the income from the equity capital. The Table - 6 and Figure – 3 presents the average ROE registered by all sample companies which ranges from 0.79 percent in 1999-2000 to 4.42 percent in 2017-2018. It showed continuous increasing trend during the study period. The table showed that Food and Agro-based Products Industry, Transport Equipments Industry, Consumer Goods Industry, and Construction Material Industry registered higher average ROE as compare the average ROE of all sample companies whereas rest of the industries registered less average ROE than the average ROE of all sample companies throughout the study period. Metal and Metal Products Industry, and Textiles Industry have decreasing trend in average ROI in last phase of the study period.

To test the proposition that no significant difference between the average ROE of overall sample companies and the average ROE of industries independent sample t-test has been implied on the average pooled data of ROE. The table-7 presents the results of independent t-test. The null hypothesis is accepted in case of all samples Indian manufacturing companies and average ROE of Chemicals and Chemicals Products Industry where p-value is 0.206 means that the average ROE of all samples Indian manufacturing companies does not significantly different than the average ROE of Chemicals and Chemicals Products Industry because p-value is insignificant at 5 percent.

Table 6: Return on Equity (ROE) of All Samples Companies and Industries.

Figures are in %

Years	All Manufacturing Industry	Chemicals and Chemicals Products Industry	Construction Material Industry	Consumer Goods Industry	Food and Agro-based Products Industry	Machinery Industry	Metal and Metal Products Industry	Miscellaneous Manufacturing Industry	Textiles Industry	Transport Equipments Industry
1999-00	0.79	0.85	1.01	0.49	1.08	0.68	0.8	0.56	0.15	1.28
2000-01	0.73	0.9	0.98	0.34	0.77	0.76	0.6	0.63	0.42	0.82
2001-02	0.73	0.92	1.00	0.36	0.79	0.58	0.52	0.7	0.22	1.13
2002-03	0.92	0.76	1.22	0.34	0.87	0.53	0.86	0.77	0.88	1.86
2003-04	1.29	1.12	1.75	0.95	1.03	1.00	1.73	1.01	0.89	1.78
2004-05	1.6	1.76	1.68	0.88	1.26	1.37	2.98	1.26	0.94	2.04
2005-06	1.95	2.25	2.15	1.19	1.46	1.82	3.04	1.5	1.16	2.52
2006-07	2.67	2.08	2.7	2.38	1.79	3.07	4.23	2.29	1.39	3.53
2007-08	2.93	1.87	3.45	2.59	2.13	2.92	5.59	2.7	1.21	3.2
2008-09	2.44	2.77	2.25	2.74	2.19	2.25	4.4	1.93	0.42	3.06
2009-10	3.06	2.68	3.31	3.03	3.1	2.37	3.53	2.59	1.65	5.17

| 2010-11	3.87	1.96	3.73	2.26	3.14	2.7	3.94	1.69	1.84	6.53
2011-12	2.96	2.27	3.02	2.94	2.81	1.88	3.05	2.14	0.46	7.98
2012-13	2.76	2.38	2.57	3.04	3.13	1.77	2.11	1.64	1.09	7.48
2013-14	2.79	1.37	2.93	2.24	3.45	1.66	2.26	1.62	1.3	8.37
2014-15	3.82	2.08	4.07	2.9	4.34	1.67	1.21	1.03	0.92	15.95
2015-16	4.13	2.46	4.54	3.72	4.03	2.25	-0.92	1.38	1.57	17.46
2016-17	4.26	4.31	4.81	3.78	3.98	2.37	1.65	1.64	1.61	13.68
2017-18	4.42	4.29	5.01	5.33	4.4	2.56	2.31	2.44	1.32	11.93

Source: Prowess IQ
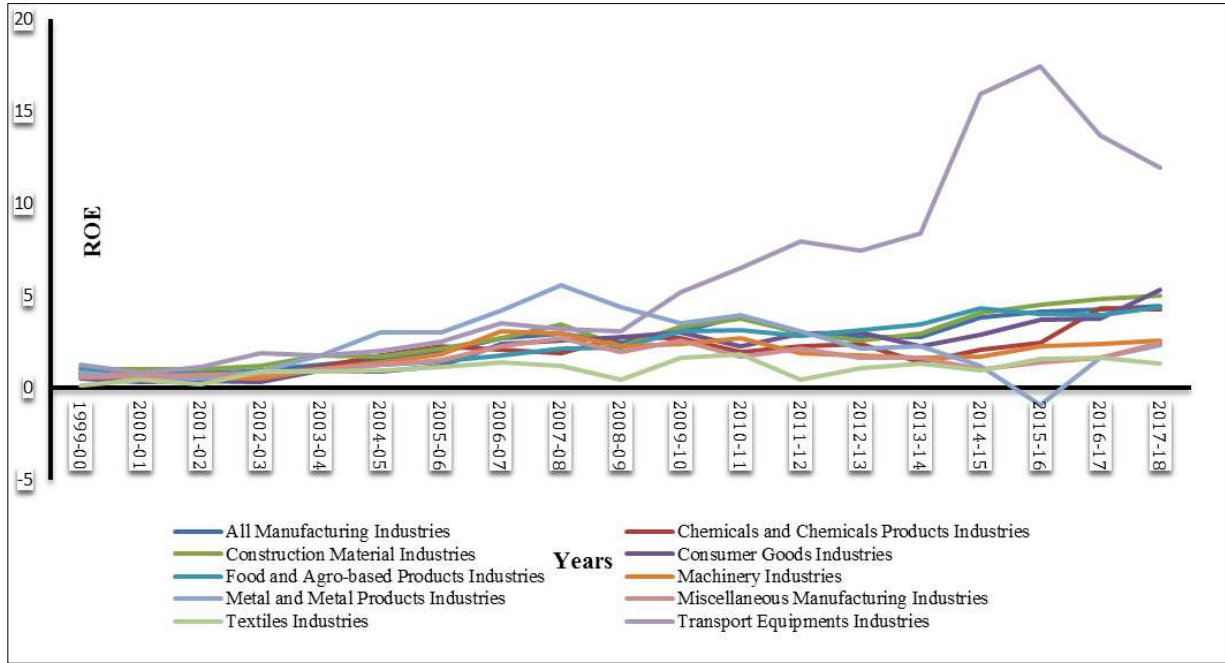
Fig 3: Average ROE of All Samples Indian Companies and Industries

Table 7: The Independent Samples t-test matrix of All Sample Companies and Industry-Wise

	Chemicals and Chemicals Products Industry	Construction Material Industry	Consumer Goods Industry	Food and Agro-based Products Industry	Machinery Industry	Metal and Metal Products Industry	Miscellaneous Manufacturing Industry	Textiles Industry	Transport Equipments Industry	All Manufacturing Industry
Chemicals and Chemicals Products Industry	t-value p-value	-1.820 0.077	-0.322 0.750	-0.935 0.356	0.863 0.394	-0.576 0.568	1.802 0.080	3.975 0.000*	-3.293 0.002*	-1.287 0.206
Construction Material Industry			1.284 0.207	0.807 0.425	2.694 0.011*	0.914 0.367	3.549 0.001*	5.380 0.000*	-2.700 0.011*	0.516 0.609
Consumer Goods Industry				-0.514 0.610	1.039 0.306	-0.256 0.799	1.775 0.084	3.411 0.002*	-3.139 0.003*	-0.810 0.423
Food and Agro-based Products Industry					1.749 0.089	0.206 0.838	2.571 0.014*	4.378 0.000*	-2.975 0.005*	-0.303 0.763
Machinery Industry						-1.226 0.228	1.028 0.311	3.573 0.001*	-3.526 0.001*	-2.146 0.039*
Metal and Metal Products Industry							1.876 0.069	3.299 0.002*	-3.003 0.005*	-0.473 0.639
Miscellaneous Manufacturing Industry								2.755 0.009*	-3.742 0.001*	-3.004 0.005*
Textiles Industry									-4.194 0.000*	-4.877 0.000*
Transport Equipments Industry										2.878 0.007*

Further, as depicted by the table the pair of all samples companies-Construction Material Industry, all samples companies- Consumer Goods Industry, all companies- Food and Agro-based Products, and all samples companies-Metal and Metal Products Industry accept the null hypothesis of equality of average ROE because p-value is not significant at the level of five percent. The rest of pairs of different industries rejected the null hypothesis that average ROE of inter industries is different as p-value is significant at five percent.

Earnings per Share (EPS) is also a quotient of net income divided by number of equity shares of a company. This is an important financial indicator depicting the profitability of a

company. The Table-8 provides the average EPS of all sample companies along with the average EPS of different industries. The table shows that Chemicals and Chemicals Products Industry, Construction Material Industry, and Transport Equipments Industry registered higher average EPS as compare the average EPS of all sample companies whereas rest of the industries registered less average EPS than the average EPS of all sample companies throughout the study period. The average EPS registered by all sample companies ranges from 9.24 Rs in 1999-2000 to 21.46 Rs in 2017-2018. The EPS of all aggregate sample companies and industries increases through the study period.

Table 8: Earnings per Share (EPS) of All Samples Companies and Industries

Figures are in Rs.

| Years	All Manufacturing Industry	Chemicals and Chemicals Products Industry	Construction Material Industry	Consumer Goods Industry	Food and Agro-based Products Industry	Machinery Industry	Metal and Metal Products Industry	Miscellaneous Manufacturing Industry	Textiles Industry	Transport Equipments Industry
1999-00	9.24	10.51	3.71	11.22	6.97	10.11	8.27	6.46	3.27	18.82
2000-01	6.92	7.53	2.85	6.30	8.18	6.83	6.51	5.16	3.50	12.90
2001-02	5.58	6.87	2.95	5.36	8.15	3.23	5.08	4.83	1.95	10.27
2002-03	8.37	9.47	3.20	6.35	6.14	6.30	7.08	7.18	7.89	19.71
2003-04	11.78	11.71	6.47	6.68	8.62	13.06	12.99	8.19	9.08	25.51
2004-05	12.19	10.88	8.17	7.76	13.46	11.64	22.53	11.88	10.03	13.30
2005-06	14.42	11.09	11.16	9.18	12.76	25.05	19.97	11.12	13.10	12.01
2006-07	15.33	15.00	17.20	8.64	13.29	15.32	26.25	14.72	13.78	13.36
2007-08	16.23	17.37	19.90	7.92	10.19	15.53	28.46	13.04	10.83	21.12
2008-09	10.94	11.25	20.21	5.58	12.11	11.44	12.03	11.55	1.26	11.05
2009-10	17.87	16.03	22.81	11.74	17.69	13.04	16.61	16.07	12.12	36.19
2010-11	16.64	16.22	11.87	11.99	11.74	15.93	15.79	14.56	13.71	34.68
2011-12	13.45	15.29	16.22	6.62	14.10	11.69	11.78	11.22	1.87	27.31
2012-13	14.69	10.72	19.04	6.13	18.07	5.98	11.47	10.74	9.69	44.75
2013-14	14.43	12.17	11.83	9.19	13.92	6.50	8.75	7.56	11.22	51.14
2014-15	16.69	11.62	15.31	13.29	9.89	6.58	8.83	6.83	9.57	73.48
2015-16	20.89	18.21	18.13	13.76	11.47	9.06	-4.30	6.20	10.94	104.63
2016-17	23.22	21.83	20.01	12.24	20.64	11.44	-0.22	11.27	9.81	99.19
2017-18	21.46	23.13	27.65	6.11	18.90	11.62	-0.40	14.49	1.24	84.08

*Source***:** Prowess IQ
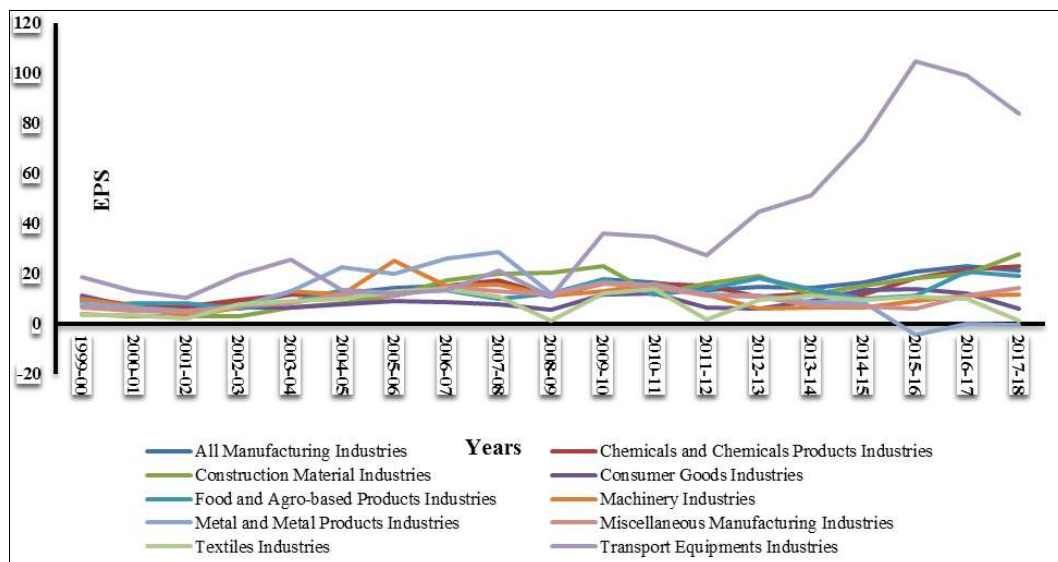
Fig 4: Average EPS of All Samples Indian Companies and Industries

Figure - 4 depicts earning per share was stable through some initial study periods but it decreases 2008-2009 that may be due to beginning of recession which was continued up to 2014-2015 thereafter the sample companies again demonstrated stability in EPS. Transport equipment industry out perform all the industries as well aggregate sample companies in term of profitability particularly after 2008-

2009.
To test the stated hypotheses of no significant difference in the average EPS of overall sample companies and the average EPS of different industries, t-test has been applied on the average data of EPS of all sample companies and industry-wise.

Table 9: The Independent Samples t-test matrix of Companies and Industries.

	Chemicals and Chemicals Products Industry	Construction Material Industry	Consumer Goods Industry	Food and Agro-based Products Industry	Machinery Industry	Metal and Metal Products Industry	Miscellaneous Manufacturing Industry	Textiles Industry	Transport Equipments Industry	All Manufacturing Industry
Chemicals and Chemicals Products Industry	t-value p-value	-0.047 0.963	3.959 0.000*	0.777 0.442	1.604 0.117	0.919 0.364	2.577 0.014*	3.715 0.001*	-3.366 0.002*	-0.470 0.641
Construction Material Industry			2.661 0.012*	0.601 0.552	1.237 0.224	0.820 0.418	1.820 0.077	2.736 0.010*	-3.292 0.002*	-0.300 0.766
Consumer Goods Industry				-3.221 0.003*	-1.787 0.082	-1.281 0.208	-1.375 0.178	0.488 0.628	-4.061 0.000*	-4.294 0.000*
Food and Agro-based Products Industry					0.922 0.362	0.168 0.867	1.822 0.077	3.070 0.004*	-3.523 0.001*	-1.230 0.227
Machinery Industry						-0162 0.872	0.653 0.518	1.912 0.064	-3.701 0.001*	-1.994 0.050*
Metal and Metal Products Industry							0.592 0.557	1.460 0.153	-3.554 0.001*	-1.212 0.233
Miscellaneous Manufacturing Industry								1.542 0.132	-3.852 0.000*	-2.970 0.005*
Textiles Industry									-4.119 0.000*	-4.039 0.000*
Transport Equipments Industry										3.262 0.002*

Table – 9 presents the comparisons of the average EPS of all samples with average EPS of different industries. The null hypothesis is accepted in case of all companies and average EPS of Chemicals and Chemicals Products Industry, the pair of all samples companies- Construction Material Industry, all samples companies- Food and Agro-based Products, and all samples companies- Metal and Metal Products Industry accept the null hypothesis of equality of average EPS because p-value is insignificant at the level of five percent. Further the study compared the assumption of the equality

average EPS of industry-wise as depicted by the table -9 the rest of pairs of different industries rejected the null hypothesis that average EPS of inter industries is different as p-value is significant at five percent.
Return on Investment (ROI) is the ratio used to calculate to measure the financial efficiency on the invested capital. The average ROI registered by all sample companies as presented by the Table – 10 is ranges from 5.40 percent in 1999-2000 to 0.79 percent in 2017-2018. The average ROI shows downward increasing trend through the study period.

Table 10: Returns on Investment (ROI) of All Samples Companies and Industries

Figures are in %

Years	All Manufacturing Industry	Chemicals and Chemicals Products Industry	Construction Material Industry	Consumer Goods Industry	Food and Agro-based Products Industry	Machinery Industry	Metal and Metal Products Industry	Miscellaneous Manufacturing Industry	Textiles Industry	Transport Equipments Industry
1999-00	5.40	6.71	-1.26	9.09	6.65	5.24	3.99	3.19	-0.28	7.87
2000-01	3.68	6.20	-0.37	5.26	7.11	1.33	2.59	2.78	-1.23	4.10

2001-02	3.47	5.00	0.34	3.9	5.27	2.49	1.97	3.12	0.18	4.41
2002-03	4.33	5.61	-1.34	3.81	5.00	2.57	4.9	2.45	3.34	9.08
2003-04	6.63	8.11	1.1	4.35	7.17	4.91	10.17	3.74	3.2	11.97
2004-05	7.52	8.47	4.18	4.65	10.17	3.11	15.23	2.97	4.36	11.42
2005-06	7.65	8.04	5.72	6.31	9.72	7.21	12.52	4.32	3.84	5.13
2006-07	9.70	8.59	15.32	6.47	9.55	11.85	13.69	6.34	3.38	7.39
2007-08	8.88	8.52	13.81	6.1	7.52	9.33	13.4	8.28	1.25	4.62
2008-09	5.34	4.24	9.89	4.28	6.99	5.46	6.74	5.03	-1.97	0.76
2009-10	8.41	7.85	11.46	7.19	8.34	6.44	9.77	8.82	3.93	5.71
2010-11	7.68	9.43	5.91	6.71	5.69	6.94	8.57	6.5	4.27	6.31
2011-12	5.45	7.98	6.82	4.76	7.82	1.9	4.66	5.6	-0.96	4.64
2012-13	4.01	5.67	7.62	4.6	5.04	-1.65	3.27	6.77	1.17	1.49
2013-14	3.00	5.73	2.77	5.8	3.9	-2.52	3.08	4.84	1.89	2.22
2014-15	2.59	5.02	5.27	6.22	0.31	-1.46	3.42	2.49	-0.71	3.42
2015-16	2.53	6.29	5.04	5.15	1.08	-1.47	-2	1.95	1.48	5.08
2016-17	1.32	6.88	3.85	4.18	2.98	-2.13	-16.54	4.19	0.89	3.33
2017-18	0.79	7.11	6.69	2.29	2.23	-2.13	-16.12	3.97	-5.26	2.31

Source: Prowess IQ

The table also gives the average ROI of all sample companies along with the average ROI of industries. The table showed that Chemicals and Chemicals Products Industry, Construction Material Industry, Miscellaneous Manufacturing Industry, Transport Equipments Industry, and Metal and Metal Products Industry registered higher average ROI as compare the average ROI of all sample companies whereas rest of the industries registered less average ROI than the average ROI of all sample companies throughout the study period. Metal and Metal Products Industry, Machinery Industry, and Textiles Industry negatively performed in the last phase of the study period.
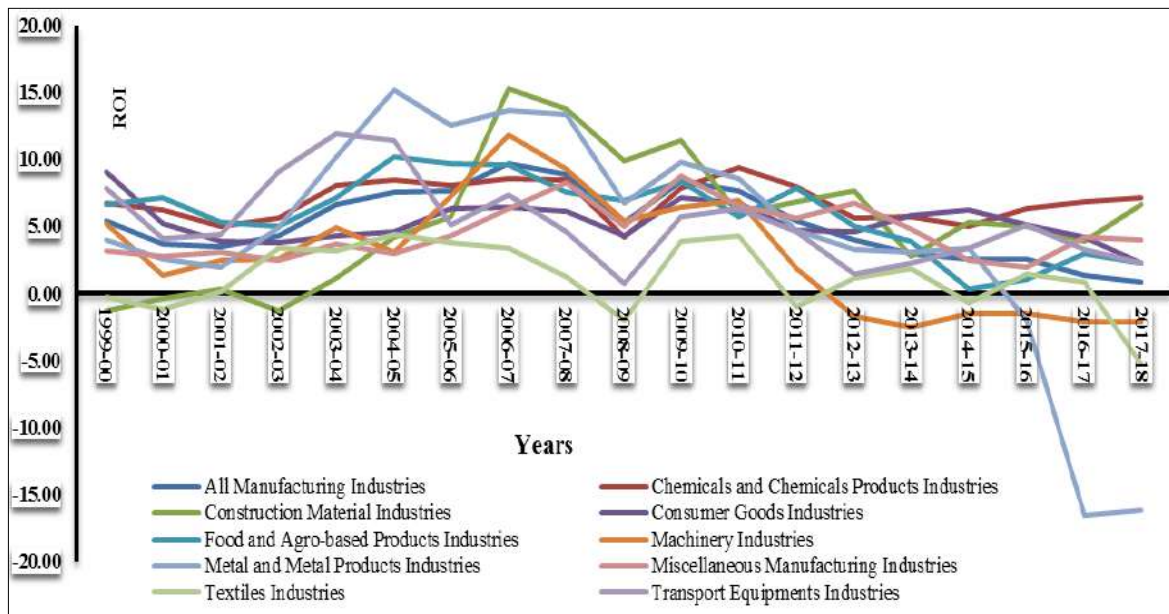

Fig 5: Average ROI of All Samples Indian Companies and Industries

Figure-5 also endorses and clearly presents the observations of the table – 10. Further, the figure shows decreasing trends in average ROI in 2008-2009 that may be due to beginning of recession which was continued up to the end of the study period.

An attempt has been made to test the hypotheses that there is no significant difference in the average ROI of overall sample companies and the average ROI of different industries To test this claim an independent sample t-test has been applied on the average data of ROI of all sample companies industries.

The table - 11 contains two statistics, t-value and p-value. The null hypothesis is accepted in case of all samples companies and average ROI industries except Textile and Chemical industry because p-value is more than five percent mean average ROI of all sample companies and theses industries do not differ significantly

Further, study compared the assumption of the equality of average ROI of industries, the table shows that the pair of Chemicals and Chemicals Products - Construction Material, Chemicals and Chemicals Products - Food and Agro-based Products, Chemicals and Chemicals Products I-Metal and Metal Products, Construction Material-Consumer Goods, Construction Material-Food and Agro-based Products, Construction Material-Machinery, Construction Material-Metal and Metal Products, Construction Material-Miscellaneous Manufacturing, Construction Material-

Table 11: The Independent Samples t-test matrix of All Sample and Industries

	Chemicals and Chemicals Products Industry	Construction Material Industry	Consumer Goods Industry	Food and Agro-based Products Industry	Machinery Industry	Metal and Metal Products Industry	Miscellaneous Manufacturing Industry	Textiles Industry	Transport Equipments Industry	All Manufacturing Industry
Chemicals and Chemicals Products Industry	t-value p-value	1.311 0.198	3.289 0.002*	1.355 0.184	3.766 0.001*	1.257 0.217	4.084 0.000*	8.471 0.000*	2.021 0.050*	2.517 0.016*
Construction Material Industry			0.078 0.939	-0.400 0.691	1.624 0.113	0.452 0.654	0.684 0.498	3.384 0.002*	0.063 0.950	0.186 0.854
Consumer Goods Industry				-0.812 0.422	2.214 0.033*	0.465 0.645	1.259 0.216	6.052 0.000*	-0.009 0.993	0.206 0.838
Food and Agro-based Products Industry					2.467 0.019*	0.736 0.467	1.663 0.105	5.390 0.000*	0.615 0.542	0.838 0.408
Machinery Industry						-0.615 0.542	-1.459 0.153	1.600 0.118	-1.909 0.064	-1.876 0.069
Metal and Metal Products Industry							-0.104 0.918	1.539 0.133	-0.448 0.657	-0.382 0.705
Miscellaneous Manufacturing Industry								4.577 0.000*	-0.867 0.392	-0.767 0.448
Textiles Industry									-4.489 0.000*	-4.735 0.000*
Transport Equipments Industry										0.163 0.872

Transport Equipments, Consumer Goods-Food and Agro-based Products, Consumer Goods-Metal and Metal Products, Consumer Goods - Machinery, Consumer Goods - Miscellaneous Manufacturing, Consumer Goods-Transport Equipments, Food and Agro-based Products -Metal and Metal Products, Food and Agro-based Products-Miscellaneous Manufacturing, Food and Agro-based Products -Transport Equipments, Machinery Industry-Metal and Metal Products, Machinery - Miscellaneous Manufacturing, Machinery -Textiles, Machinery -Transport Equipments, Metal and Metal Products -Miscellaneous Manufacturing, Metal and Metal Products -Textiles, Metal and Metal Products -Transport Equipments, and Miscellaneous Manufacturing -Transport Equipments reject the null hypothesis of equality of average ROI because p-value is significant at the level of five percent. The rest of pairs of different industries accept the null hypothesis that averages ROI of inter industries is not significant at five percent.

Findings and conclusion
A sample of 534 Indian manufacturing companies listed on Bombay Stock Exchange limited are taken from PROWESS database maintained by Centre for Monitoring Indian Economy (CMIE) barring banking and financial services companies. The study period started from 1999-2000 to 2017-2018. Number of research studies supported the supremacy of traditional accounting performance measures for measuring the financial performance of the companies.

Therefore, the objective of this study is to compare and access the traditional accounting financial performance measures of Indian manufacturing companies.
The study find that Chemical and Chemical Product industry depicting higher average profit from aggregate profit of all sample companies as well from the average profit of rest of industries through the study period. Metal and metal Product industry and Textile industry registered negative average profit in the initial study period but afterward demonstrated positive PAT.
The average PAT of Transport Equipments Industry and all samples companies is not different and also all samples companies-Transport Equipment Industry; Food and Agro-based Products - Transport Equipments; Consumer Goods - Food and Agro-based Products; Consumer Goods - Transport Equipments; Construction Material - Consumer Goods; Construction Material - Food and Agro-based Products; Construction Material - Transport Equipments; and Chemicals and Chemicals Products - Metal and Metal Products not significantly different and accept the null hypothesis of equality of average PAT because p-value is insignificant at the level of five percent.
Chemicals and Chemicals Products Industry, Consumer Goods Industry, and Food and Agro-based Products Industry, and Transport Equipment industry outperform in term of ROA as the aggregate ROA of all sample companies and rest of industries was higher. Whereas, Construction Material Industry, Metal and Metal Product Industries, and Textile Industry were not well performed as compares to

other industries because these registered less average ROA than the average ROA of all sample companies throughout the study period. And these industries and pairs average ROA is significantly different as the t-value is significant at five percent.

Results also shows that Food and Agro-based Products Industry, Transport Equipments Industry, Consumer Goods Industry, and Construction Material Industry registered higher average ROE as compare the average ROE of all sample companies whereas rest of the industries registered less average ROE than the average ROE of all sample companies throughout the study period. Metal and Metal Products Industry, and Textiles Industry have decreasing trend in average ROI in last phase of the study period. samples companies-Construction Material Industry, all samples companies- Consumer Goods Industry, all companies- Food and Agro-based Products, and all samples companies-Metal and Metal Products Industry accept the null hypothesis of equality of average ROE because p-value is not significant at the level of five percent.

Chemicals and Chemicals Products Industry, Construction Material Industry, and Transport Equipments Industry registered higher average EPS as compare the average EPS of all sample companies whereas rest of the industries registered less average EPS than the average EPS of all sample companies throughout the study period. Transport equipment industry out perform all the industries as well aggregate sample companies in term of profitability particularly after 2008-2009. Average EPS of Chemicals and Chemicals Products Industry, the pair of all samples companies- Construction Material Industry, all samples companies- Food and Agro-based Products, and all samples companies- Metal and Metal Products Industry accept the null hypothesis of equality of average EPS because p-value is insignificant at the level of five percent.

The average ROI of aggregate sample companies shows downward trend through the study period. Chemicals and Chemicals Products Industry, Construction Material Industry, Miscellaneous Manufacturing Industry, Transport Equipments Industry, and Metal and Metal Products Industry registered higher average ROI as compare the average ROI of all sample companies whereas rest of the industries registered less average ROI than the average ROI of all sample companies throughout the study period. Metal and Metal Products Industry, Machinery Industry, and Textiles Industry negatively performed in the last phase of the study period.

Therefore, the study concludes that financial performance measured by traditional accounting-based financial performance measures exhibits sound financial health of Indian manufacturing companies. Though, the financial performance decreases in 2007-2008 but afterward sample companies able to revive the sound financial vitality. Some industries outperform the other as well as aggregate sample companies' *vis-à-vis* traditional financial performance measures. The average matrices of industries presents mix results as some are not significantly different whereas, some are significantly different.

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