

USING DUPONT ANALYSIS TO ASSESS THE FINANCIAL PERFORMANCE OF THE SELECTED COMPANIES IN THE PLASTIC INDUSTRY IN INDIA

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ABSTRACT

Financial statement analysis using ratios has been one of the most commonly used primary models of assessing business performance. It is one of the primary models of assessment of a firm's performance over years and as well as comparing it to the rest of the players in the industry. During 2019, the plastic preparing part contains more than 30,000 units engaged with creating an assortment of things, increasing outstanding significance in various circles of movement with per capita utilization expanding. The review of literature revealed that many of the research done in the field of product and market analysis only few researches was undertaken in terms of financial aspect in the plastic industry. The studies have been made in the area of Researcher tried to innovate in analyzing the ratios by combining them with the paid-up capital, at respective point of time and working out composite ratios. This study suggested improving profitability & efficiency, to improve liquidity and to improve ROI to the players.

Keywords: *Financial performance, Ratios, Per capita, DuPont, ROI.*

1. INTRODUCTION OF THE STUDY

The financial performance of a company is a primary concern for every stakeholder especially for investors, both aspiring and current ones. The measurement of the financial health of a company through the reported financial statements gives a qualitative analysis of the company's position as well as an account of how the company has utilized its capital in production. According to Bhunia et al. (2011), financial performance analysis involves using reported results in a company's financial statements to obtain the quantitative performance characteristics of a company with the aim of determining how efficient the company has been in terms of the use of their resources according to the decisions made by the management. Financial statement analysis using ratios has been one of the most commonly used primary models of assessing business performance. It is one of the primary models of assessment of a

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firm's performance over years and as well as comparing it to the rest of the players in the industry. Due to limited time for those who do the analysis of financial statements and also given the fact that these ratios are mostly correlated, the number of ratios that are being evaluated has to be reduced so that focus is given to a few with minimum loss of data. Using principal component analysis (PCA), the study reduced the number of variables for any further regression analysis from 17 variables to 4 variables. Likewise, the numbers of ratios that are important have also been reduced with only significant ratios for each principal component now being used to analyze the performance of these companies as well as their industry.

2. INDUSTRY PROFILE

2.1 Plastic industry in Global

Industries like Construction, Textiles, Electronics, Healthcare, and FMCG etc., are significantly getting development and economic growth with a great contribution and support by the plastic industry. The global plastics market size was valued at USD 522.66 billion in 2018. It is poised to expand at a compounded annual growth rate of 4.0% during the forecast period. Day by day the consumption towards plastic in construction in the form interior, automotive and more in electronic & electrical industries is projecting to support market growth over the forecast period. Changes in legal regulations to reduce gross vehicle weight to improve fuel efficiency and ultimately reduce carbon emissions have indirectly increased the use of plastics as a substitute to metals for manufacturing of automotive components.

The growths of the construction industry in emerging markets such as Brazil, China, India, and Mexico have been instrumental in fueling the demand for plastics during 2018 and 2019. This notable growth of the can be attributed to invite foreign investment in these domestic construction markets, as a result of making suitable FDI norms, regulations and requirements for better investor and industrial infrastructure.

The Indian PVC Pipes Market size was valued at \$3,159 million in 2016 and is anticipated to expand at a compounded annual growth rate of 10.2% to reach \$6,224 million by 2023. Polyvinyl chloride (PVC) is reached the third place which is the largest selling plastic commodity after the other two former polyethylene & polypropylene. It is considered to be more beneficial over other materials, due to its resistance of the chemical substances, durability, low price, recyclability, and others. PVC pipes are manufactured by extrusion method in a variety of dimensions. These are qualified in corrosion resistant, cost-effective and benefited, resistant effect in flame, easy to installation & handle, and environmentally sound, with extended service life.

Upsurge in the demand for pipes in the irrigation sector and building & construction industry is the major driving factor for India PVC pipes market. However, availability of substitutes such as HDPE & ABS hampers the growth of the India PVC pipes market. In addition, toxicity of PVC pipes restricts the market growth. Conversely, rise in awareness towards clean water supply in rural areas and increase in investment in the developing regions of the country are anticipated to offer growth opportunities for the market. PVC pipes are applicable in drain-waste-vent (DWV), sewers, water mains, water service lines, irrigation, conduit, and various industrial installations.

Polyethylene is one of the key products. It had the global production of over 80 million tons in 2017. It is primarily used in the packaging sector, which includes containers and bottles, plastic bags, plastic films, and geomembranes. It finds use in various applications. Based on its molecular weight, there are different types of polymers of PE such as HDPE, LDPE, and LLDPE. For instance, low molecular weight polymers of PE find use in lubricants, medium molecular weight polymers are used as wax miscible with paraffin, and high molecular weight polymers are commonly used in the plastics industry.

2.2 Plastic Industry in India

The article advancements in the plastic hardware area are combined with improvements in the petrochemical segment, the two of which support the plastic preparing division. This has encouraged plastic processors to construct capacities with regards to the administration of both the local market and the business sector abroad. During 2019, the plastic preparing part contains more than 30,000 units engaged with creating an assortment of things, increasing outstanding significance in various circles of movement with per capita utilization expanding. The plastic processing industry has the potential to contribute in bringing foreign investments and thus India's vision of becoming a manufacturing hub.

Current low degrees of per capita utilization (11 Kg), expanded development in end use enterprises, higher entrance of plastics in different existing applications and ever-developing scope of new applications could further propel the growth of plastics in India.

Also, in the most recent decade, a few new utilizations of plastic items have risen in a few segments boosting the business further. For instance, long fiber strengthened thermoplastic for car industry, strands that can trap infra-red radiations, bundling that can build the timeframe of realistic usability of items and so forth have made interest for plastics which were in their beginning stage in India. Notwithstanding, regardless of having a decent development potential, the plastic preparing industry faces numerous difficulties as far as ecological fantasies, absence of cutting edge innovation, restricted framework, and high instability in feedstock costs. To overcome these challenges, significant efforts will have to be made by all the stakeholders to realize the real potential of this industry. The Government of India is taking every possible initiative to boost the infrastructure sector with investments of INR 25 lakh crore over the next 3 years in roads, railways and shipping infrastructure. Investments in water and sanitation management, irrigation, building & construction, power, transport and retail have been encouraged. Plastics play an important role in these sectors through various products like pipes, wires & cables, water proofing membranes, wood PVC composites and other sectors. Consequently, higher investments in these sectors will drive the demand for plastics.

Mbona, R.M. and Yusheng, K. (2019), paper aims to discuss the issue to know how many ratios can be used best with little information loss. A total of 18 financial ratios were calculated based on the financial statements for three companies, namely, China Mobile, China Unicom and China Telecom for a period of 17 years. A principal component analysis was run to come up with variables with significance value above 0.5 from each component the authors conclude how financial performance can be analysed using 12 ratios instead of the costly analysis of too many ratios that may be complex to interpret.

Mohammed Musah (2019) This study examines the relationship between growth and the financial performance of non-financial firms listed on the Ghana Stock Exchange (GSE). The data is collected from published annual reports of fifteen (15) non-financial firms for the period 2008 to 2017 was used for the study. For the data analysis he used Pearson Product-Moment Correlation Coefficient technique and he found that growth had a significantly positive connection with the firms' financial performance as measured by ROA.

Dr. E Palanivel (2017) this paper analyses the financial performance of EVA, MVA and SVA and also suggest suitable measures to improve plastic companies in India. The tool used in this analysis is trend analysis, Anova., From the analysis researcher found there is significant difference in the mean net sales among the Companies.

Dr. Hardeep (2017) In this study, ICICI Bank from Private Sector and SBI from Public Sector have been taken for their financial comparison. Those two banks are biggest banks in their corresponding sectors. Ratio used is Credit Deposit Ratio, Operating Expenses to Total Funds Ratio, Cash Deposit Ratio, Return on Equity and Net Profit to Total Funds Ratio have been used for the comparative financial analysis. The study covers the period of 8 years from year 2008-09 to year 2015-16. He found that ICICI Bank is superior than compared to SBI

A Geethalakshmi and Dr. K Jothi (2016) This study attempts basically to measure the financial performance of the Pharmaceutical companies taking Cipla, Dr. Reddy's Laboratories, for the period 2006-2007 to 2015-2016. The tool used in this study was DuPont analysis. From the analysis she found that Cipla pharmaceutical ROE and ROI has highest returns on equity and Investment by 34.18 and 0.19 followed by Dr. Reddy's Laboratories ROE is 25.43 and ROI is 0.18.

P Jeyalakshmi and Dr. N Ravichandran (2016). This study concentrates on empirical approach towards measuring deals with financial performance of the telecommunication companies. The analytical tool used for analysis and testing hypothesis is one-way ANOVA. The period of study was 2011-2015 from the study she found that Bharti Airtel has more efficient management in utilizing its equity base and the better return to the people who have invested as compared with Reliance Communication (0.51) and Idea cellular (8.164).

S Sathya (2016) This study was carried out for the period of five year to analyze the financial performance of the company. The main aim of this study is to find out the Financial Performance of selected Sugar Companies in India. The sample for the study collected from 20 sugar companies in India. The present study would reveal the financial performance of the selected sugar companies in the elaborate from the study she found that some of the sugar companies selected for the study is not efficient in maintaining its liquidity, leverage, profitability and activity ratios.

Rohit Bansal(2015) The present paper attempts to measure the financial and accounting performances of leading Indian IT companies for the period 2010-2014. The comparative financial ratios and DuPont analysis used for analysis.

P Jayasubramanian and R Tamilselvi (2015) To identify Fiscal year financial stability of the firm This study used ratio analysis, comparative balance sheet, trend analysis and cost sheet analysis. The period of study 2007 to 2011. From the study it found out that the company's growth had slow down and the management wants to take a remedy measure

for further development.

N. Sivakumar(2015) present work focuses on the selected financial parameters and performance of selected BSE/NSE listed hotels in India. The tool used in this study is Compound Annual Growth Rate Analysis (Compounded Annual Growth Rate), Linear Regression Analysis, ANOVA, Multiple Regression Analysis, Correlation Analysis, Factor Analysis.

Sarvanan and Abarna (2014) conducted study on liquidity analysis of selected automobile companies in India using Anova and found that there is significant difference among the absolute liquid ratios of the selected automobile companies.

Neeraj and Devesh (2013) examined liquidity position and effect on productivity of Tata Steel and steel authority of India. The investigation found that liquidity position can be improved with the assistance of low normal assortment period and normal assortment can be diminish by legitimate coordination between deal, creation and money office, ultimately infer that review discovered positive effect of liquidity position on benefit with the assistance of different procedures.

Ashok Kumar (2013) examined liquidity position of five driving organizations which spread time of 10 years from 2000-2010. It has been discovered that the liquidity position of little organizations is better when contrasted with huge ones. Ultimately, it is inferred that organizations ought to keep up a perfect current and fluid proportion.

R.Amsaveni and Gomathi (2013) dissected the basic investigation of BSE recorded FMCG organizations for a period 2006-07 to 2011-2012. Researcher has examined financial, industry and friends examination and found that from monetary investigation, GNP, Inflation, Interest rates, Exchange rate outside trade saves, Agricultural Production ,Government Receipts and use has a positive development rate during the examination time frame and total national output, net local capital arrangement reserve funds and parity of installments has negative development rate during the investigation time frame.

Sandhar et.al (2013) analyzed the connection among liquidity and productivity of chose Indian concrete organizations utilizing relapse investigation and uncovered that current proportion and fluid proportion are adversely connected with return on resources (ROA), quantifiable profit (ROI) and money turnover proportion is contrarily connected with ROI and ROA.

Dhulia Hiren kumar Kantilal (2012) concentrated on investigation of gross benefit to deals proportion of top ten pharmaceutical organizations and shows that there is hugeness contrast between in the gross benefit to deals proportion among various organizations under examination just as various long periods of each organization ultimately the scientist reasoned that Gross Profit to deals proportion among various organizations and among various years under examination isn't same.

Priya P and Shanmugham R (2011), contributed from their research about the overall ownership and corporate performance to maintain the effective rate of return, solvency ratios towards the foreign direct investments.

Melvin, J., Boehlje, M., Dobbins, C. furthermore, Gray, A. (2004), investigate the utilization of an e-learning apparatus to assist makers with understanding the effects of various creation, evaluating, cost control, and speculation choices on their homestead's money related execution he aftereffects of the two trials demonstrate that the program was

powerful for instructing strategies of productivity examination contained inside the DuPont model.

3. STATEMENT OF THE PROBLEM

The plastic industry is taken into the study because many research works is available on this relationship in different sectors of India. Plastics industry has not been under much consideration regarding the financial performance. So many equity investors look into return on equity for judging whether company is generating good return on the investment of the shareholders. Stakeholder of a company wants an adequate return on their investment. For doing as such, it turns out to be extremely fundamental for the administration to examine their budgetary exhibition by applying different procedures. Productive administration of fund is significant for the achievement of an undertaking.

Research Gap

The review of literature revealed that many of the research done in the field of product and market analysis only few researches was undertaken in terms of financial aspect in the plastic industry. The studies have been made in the area of

- Researcher tried to innovate in analyzing the ratios by combining them with the paid-up capital, at respective point of time and working out composite ratios. He used analysis of variance.
- Researcher analyzed the financial performance of EVA, MVA and SVA and also suggested suitable measures to improve plastic companies in India.

So, researcher decided measure the performance using comparative ratios, DuPont Analysis and find the significant difference using one-way ANOVA.

4. OBJECTIVE OF THE STUDY

Primary Objective:

- To compare financial performance of Selected Listed Indian PVC pipe companies in the stock exchanges in India.
- To find ratio mix which is best to analysis the financial performance of the companies by using PCA approach

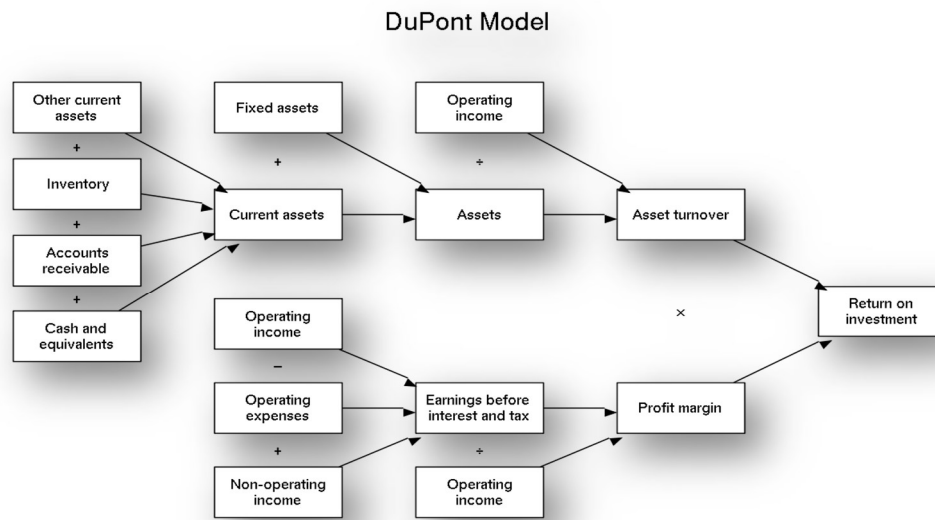
Secondary objective:

- To judge the earning capacity, financial soundness and operating efficiency of a business organization using comparative financial ratios.
- To examine the ratios with highest variation and assess their impact on the industry.

5. RESEARCH DESIGN:

The researcher has also utilized the facts and information available in various secondary sources to make critical evaluation and thus from this point of view, the nature of the study becomes analytical. This study involves DuPont computation, comparative ratio analysis and Principal component analysis approach is used for finding the best ratios for measuring the financial performance.

5.1 The Proposed Research Model



5.2 Sample Design

The study is based mainly on secondary data relating to the study was obtained from annual reports, CMIE (prowest), Money control. In addition, magazines, journals were also referred for finalizing the methodology for the study. The study covers the period of 5 years covering period from 2014-2015 to 2019. It is also decided by taking into consideration of availability of data.

5.3 Data Collection

The researcher has selected only 5 plastic companies in terms of size, market capitalization and net sales. The secondary data is collected from selected companies. The selected plastic companies for the study are: Astral Poly Technik, Supreme Industries Ltd., Finolex Industries Ltd., Jain Irrigation Ltd. and Prince Pipes & Fitting Ltd.

5.4 DuPont Analysis

A method of performance measurement - DuPont Analysis - was started by the DuPont Corporation in the 1920s. With this technique, resources are estimated at their gross book esteem as opposed to at net book an incentive so as to deliver a better yield on Equity (ROE). The higher the outcome, the higher is the arrival on the value. The DuPont investigation is significant as it figures out what is driving an organization's ROE. Overall revenue shows the working effectiveness, resource turnover shows the benefit use proficiency, and influence factor shows how much influence is being utilized. DuPont investigation permits experts to dismember an organization by productively figuring out where the organization is feeble and solid and to rapidly recognize what zones of the business to be concentrated upon (for example stock administration, obligation structure, edges) for additional answers. The DuPont framework encourages the expert to perceive how the company's choices and exercises through the span of a bookkeeping period interface to create a general come back to association's investors, the ROE (Fraser and Ormiston, 2004). In addition, as indicated by Brigham and Houston (2009), it is an equation that shows that the pace of profit for value can be found as the result of net revenue, complete resources turnover, and the value multiplier.

5.5 DuPont Analysis Computation

The DuPont analysis computes variables from the income statement and balance sheet to determine a firm’s return on equity (ROE) & return on Investment (ROI). The formula is as follows:

$$ROE = \text{Profit Margin (Net Profit/Sales)} \times \text{Asset Turnover (Sales/Total Assets)} \times \text{Equity Multiplier (Total Assets/Total Equity)}$$

$$ROI = \text{Assets Turnover (Operating Income} \times \text{Total Assets)} \times \text{Profit Margin (EBIT} \times \text{Operating Income)}$$

5.5.1 DuPont Computation of ROE:

	Mar-19	Mar-18	Mar-17	Mar-16	Mar-15	AVG
Astral pipes	1.99	1.71	1.78	1.8	1.99	1.854
Jain irrigation	0.96	0.95	0.94	1.7	1.81	1.272
Supreme pipes	2.82	2.87	2.87	2.44	3.79	2.958
Finolex pipes	1.23	0.99	1.14	2.6	3.17	1.826
Prince pipes	3.945	4.181	5.178	5.27	5.98	4.9108

From the table and chart below its clearly shows that prince pipes have high ROE at average of compared with other companies followed by supreme pipes at 2.958, Finolex at 2.958, astral at 1.854 and at last Jain irrigation at 1,272. The astral pipes and supreme pipes constant maintaining their value at 1.8 to 1.9 and 3.8 to 2.82. A good return on equity ranges from 15-20% all the companies have low return on equity compare with other sectors.

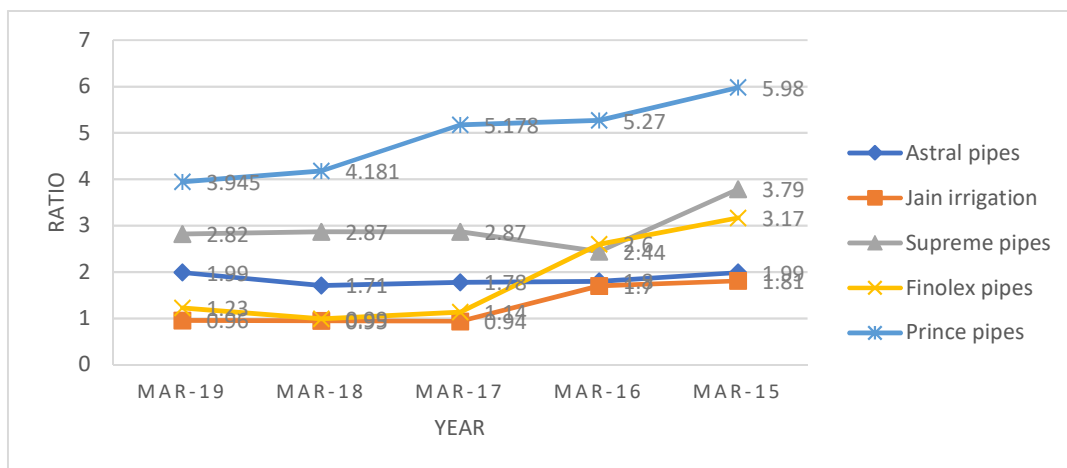


Fig.1: Comparative Analysis of DuPont Analysis ROE of Selected Companies

5.5.2 DuPont Computation of ROI:

When analyzing an investment or a business you should start by first, looking at the company's ROI. This is also known as the Return on Assets (ROA) ratio. This ratio tells you how efficiently you have been using your asset base to generate sales. ROI is composed of two parts, the company's profit margin and the asset turnover—the firm's ability to generate profit and make sales based on its asset base.

From the graph below , supreme pipe have high return on investment on 2015 at 22.04,followed by astral pipes at 9.5,prince pipes at 3.95,Finolex at 3.47 and least is Jain irrigation at 0.93 .In 2016 Finolex pipes has great return compared to others at 21.19 supreme has declined that year at 15.54 but after that year on year it has constantly maintained 20 to 22. Then Finolex ROI decreased further year up to 10.464. This tells that supreme pipes have high return on investment and Jain irrigation was not used asset their properly to create good return.

5.6Principal Component Analysis

In this research, we use PCA which is a statistical tool that is used to reduce the variables that are used in data analysis PCA has also been used for dimension reduction of large volumes of data and also in image compressing The application of PCA in reducing variables as already noted in the literature review makes it a useful tool in modern days where large volumes of data are compiled and Compared for its usefulness. In accounting field, PCA was used in a study by Taylor (1986) to reduce the number of ratios used in analysis of Australian companies since a lot of ratios are available, this makes the model very useful in helping investors and those who study ratios on knowing the most important ratios as it offers a way to reduce the numbers of ratios by statistically taking those that are most important with limited bias. The fact that PCA creates a new set of artificial variables which are independent makes it less complex to do regressions and come up with conclusions on related variables. In itself the PCA only reduces the variables that can be further used for regression analysis.

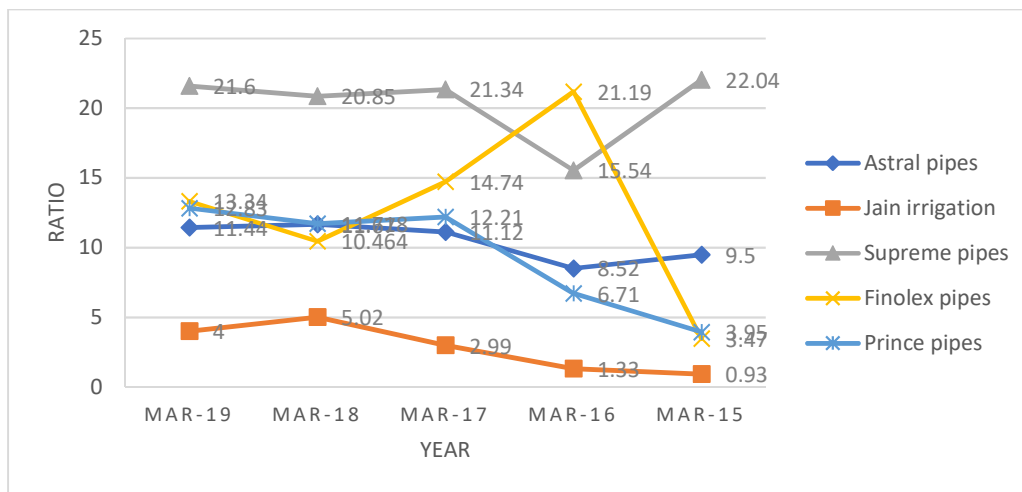


Fig.2: Comparative Analysis of DuPont Analysis ROI of Selected Companies

The first principal component combines the X-variables that have the maximum variance amongst all the combinations. Much of the variation in the data is taken by this first component. The second one likewise also takes the maximum remaining variation in the data with the condition that the correlation between the first and the second component is 0. This continues until the “ith” component, which will account to the last variation that has not been accounted for by the other components with the condition still remaining that its correlation with the other components is 0. This condition is what creates the independence of the variable being used. The principal component estimation uses eigen vectors as the coefficient to come up with the following basic equations:

$$Y_1 = \hat{e}_{11}ZX_1 + \hat{e}_{12}ZX_2 + \hat{e}_{13}ZX_3 + \dots + \hat{e}_{1i}ZX_i; \quad (1)$$

$$Y_2 = \frac{1}{4}\hat{e}_{21}ZX_1 + \hat{e}_{22}ZX_2 + \hat{e}_{23}ZX_3 + \dots + \hat{e}_{2i}ZX_i; \quad (2)$$

$$Y_i = \frac{1}{4}\hat{e}_{i1}ZX_1 + \hat{e}_{i2}ZX_2 + \hat{e}_{i3}ZX_3 + \dots + \hat{e}_{ii}ZX_i; \quad (3)$$

where Y is the principal component; \hat{e} the eigenvector; ZX the standardized value of the ratios used.

5.6.1 Data used for Analysis

For the study purpose, last five years ratios have been taken from the selected companies. The table-2 shows the average of last five years ratios.

6. RESULTS AND DISCUSSION

6.1 Descriptive Statistics

The table-3 shows mean and standard deviation and variance of average of all companies

Using the data from the companies, which is described in Table 8, we use standardized values of the ratios in the extraction of the principal component. In this section, we first examined the components that have been extracted and the new independent variables. Then second, we looked at the ratio mix that can be used for analysis of the selected company's performance. Based on the extraction in (Table 10), we only need four components to use as variables in the selected companies instead of the initial 18. These new variables are not only independent but are more easily comparable than the initial variables we had.

Ratio	Astral	Jain Irrigation	Supreme	Finolex	Prince
Current Ratio	1.378	1.034	1.116	0.958	0.878
Quick Ratio	0.84	1.62	0.682	0.464	1.35
Debt to Equity Ratio	0.14	0.646	0.168	0.198	1.204
Gross Profit Margin	10.88	11.26	12.226	14.346	8.448
Net Profit Margin	6.582	3.814	7.906	9.436	4.194
Return on Capital Employed	17.748	9.874	31.536	21.332	19.572
Return on Net Worth	11.732	4.018	23.34	14.084	19.602
Return on Assets	71.772	73.618	120.042	150.36	41.302
Return on Long Term Funds	17.92	12.046	34.97	23.638	29.654
Interest Coverage Ratio	8.51	1.626	19.16	27.662	3.038
Inventory Turnover Ratio	6.928	4.79	7.478	5.264	8.178
Debtors Turnover Ratio	7.318	2.39	15.532	62.658	5.25
Investment Turnover Ratio	6.928	3.892	7.478	5.264	2.216
Total Asset Turnover Ratio	1.594	0.756	2.562	1.47	2.25
No.of Days Working Capital	41.26	140.88	41.26	29.958	56.64
Dividend Payout Ratio	5.78	27.962	38.432	44.712	0
Earnings Retention Ratio	94.286	77.06	60.016	58.914	100
Earningsper Share	8.544	3.158	28.004	20.66	6.876

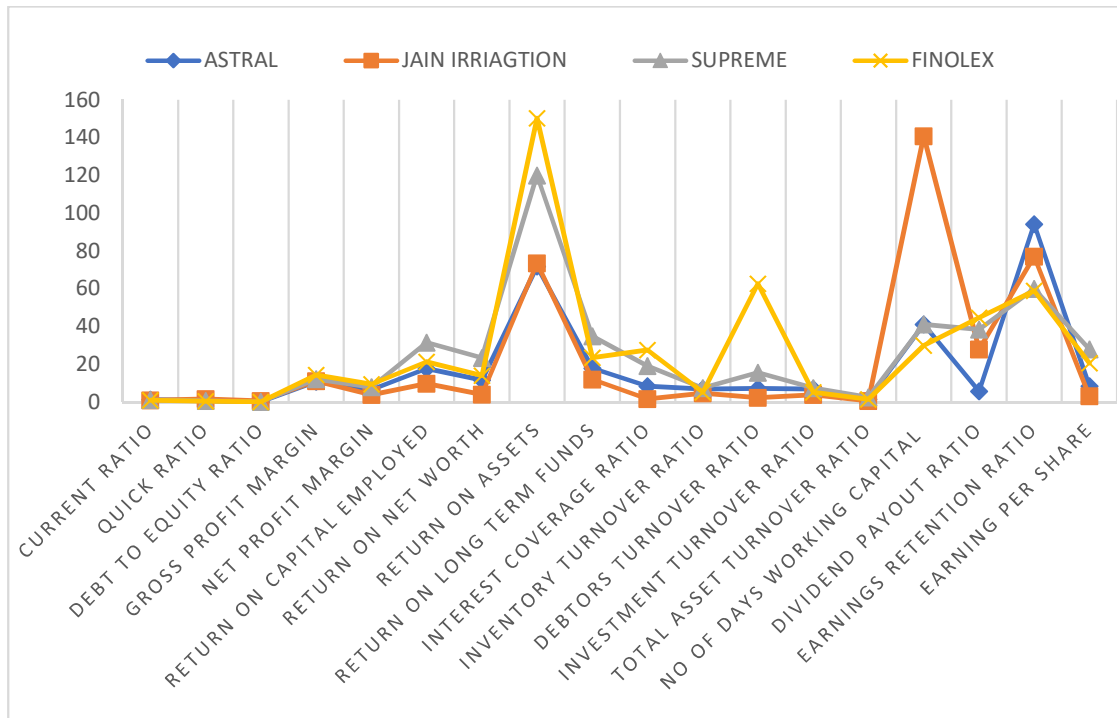


Fig.3: Average Chart of Selected Companies

Table-3: Descriptive Statistics							
	N	Minimum	Maximum	Mean		Std. Dev.	Var.
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Current Ratio	5	.878	1.378	1.07280	.085920	.192123	.037
Quick Ratio	5	.464	1.620	.99120	.214538	.479722	.230
Debt to Equity Ratio	5	.140	1.204	.47120	.205404	.459296	.211
Gross Profit Margin	5	8.448	14.346	11.43200	.958133	2.142450	4.590
Net Profit Margin	5	3.814	9.436	6.38640	1.074043	2.401633	5.768
Return on Capital Employed	5	9.874	31.536	20.01240	3.483126	7.788506	60.661
Return on Net Worth	5	4.018	23.340	14.55520	3.330675	7.447617	55.467
Return on Assets	5	41.302	150.360	91.41880	19.375128	43.324103	1876.978
Return on Long Term Funds	5	12.046	34.970	23.64560	4.072322	9.105990	82.919

Interest Coverage Ratio	5	1.626	27.662	11.99920	4.983379	11.143173	124.170
Inventory Turnover Ratio	5	4.790	8.178	6.52760	.648203	1.449426	2.101
Debtors Turnover Ratio	5	2.390	62.658	18.62960	11.222267	25.093753	629.696
Investment Turnover Ratio	5	2.216	7.478	5.15560	.969139	2.167062	4.696
Total Asset Turnover Ratio	5	.756	2.562	1.72640	.316017	.706635	.499
No.of Days Working Capital	5	29.958	140.880	61.99960	20.171476	45.104792	2034.442
Dividend Payout Ratio	5	.000	44.712	23.37720	8.828918	19.742062	389.749
Earnings Retention Ratio	5	58.914	100.000	78.05520	8.478802	18.959179	359.450
Earningsper Share	5	3.158	28.004	13.44840	4.674476	10.452447	109.254

The first principal component covers the highest variation in the data with an initial eigenvalue of 9.620, which represent 53.447 per cent of the variance. This variation is huge and is likely to be because of these data being focused on one sector, hence, reducing the differences in valuation and reports of numerous firms. The increased percentage means there is lesser data loss from the four components and this allows for better analysis of the financial statements. From the PCA for the selected companies, we remain with four variables, Y1–Y4 whose calculation based on Equations (1)– (3) (Table-6).

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.620	53.447	53.447	9.620	53.447	53.447	7.690
2	5.023	27.908	81.355	5.023	27.908	81.355	5.949
3	2.294	12.745	94.100	2.294	12.745	94.100	3.825
4	1.062	5.900	100.000	1.062	5.900	100.000	6.437
5	9.222E-16	5.123E-15	100.000				
6	6.248E-16	3.471E-15	100.000				
7	3.649E-16	2.027E-15	100.000				
8	3.553E-16	1.974E-15	100.000				
9	1.754E-16	9.742E-16	100.000				
10	6.072E-17	3.374E-16	100.000				
11	-4.525E-18	-2.514E-17	100.000				
12	-1.338E-16	-7.431E-16	100.000				
13	-2.311E-16	-1.284E-15	100.000				
14	-3.362E-16	-1.868E-15	100.000				
15	-3.515E-16	-1.953E-15	100.000				
16	-6.054E-16	-3.364E-15	100.000				
17	-9.726E-16	-5.403E-15	100.000				
18	-1.894E-15	-1.052E-14	100.000				

^aExtraction Method: Principal Component Analysis.

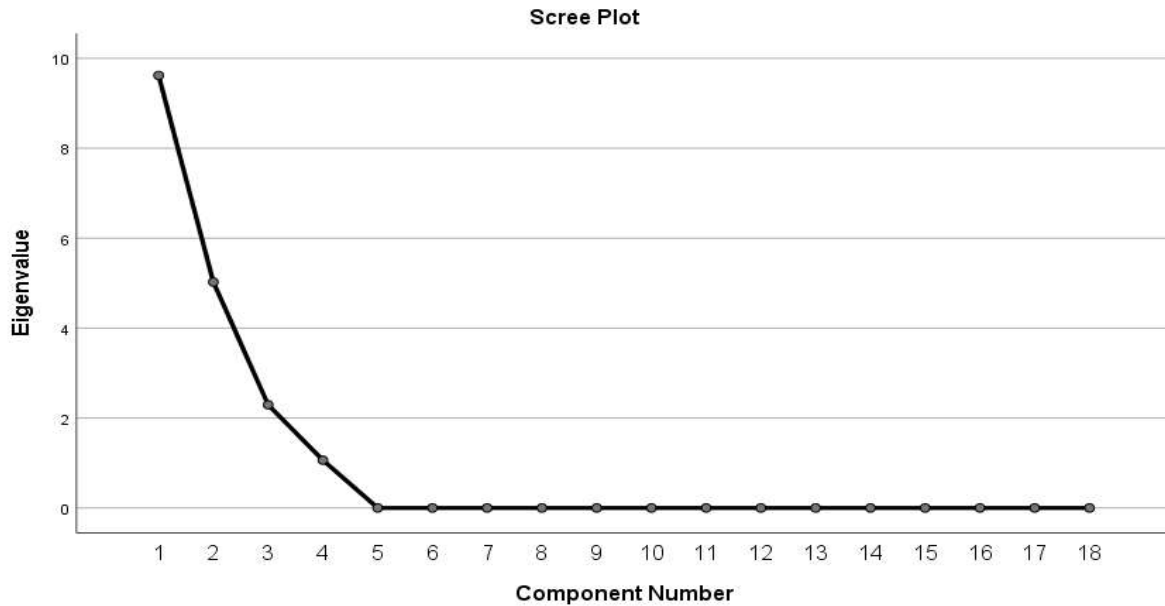


Fig.4: No.of Components above Eigen Value

Component	1	2	3	4
1	1.132	.475	1.573	.556
2	.475	1.064	.193	-.133
3	1.573	.193	2.821	.502
4	.556	-.133	.502	1.031

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Component Scores.

In component 1, we see profitability measures having a very significant value of above 1.0. Second, liquidity in the industry is very important as proved by component 1. From the analysis, we established the importance of working capital assets as well as the importance of the operating cash to the firms. As shown in table below some of ratio good value.

From the table-6 we can find important ratio which the value is above .3 which give greater impact. There are 12 ratios is enough for performance analysis, investors can look those ratios instead of looking all other ratios.

The component correlation matrix (Table-7) shows that the components are perfectly correlated extraction method is done using principal component analysis and rotation method is Oblimin with Kaiser normalization. In the financing section, only equity ratio is included in the components. The presence the interest cover in measuring of performance is likely to prove that the model of financing is great importance when measuring the performance in the industry, which has very high capital requirements through investment in fixed assets. However, the allocation of capital is very important as also supported by the return of

stockholder equity ratio. means that management is expected to generate high returns for its shareholders in all their operations. The interests of the shareholders are further cemented by the EPS that needs to remain high and be maintained as the firm grows. The other stakeholders with fixed returns like the fixed tax, fixed interest always have their returns regardless of the performance yet the shareholders' returns are based on how the firm has performed. Management has to keep a low volatility in their EPS and ROCE to maintain high investment and also attract more investors and partners.

	Component			
	1	2	3	4
Interest Coverage Ratio	.968			
Net Profit Margin	.968			
Earnings per Share	.944			
Quick Ratio	-.935			
Return on Assets	.917	-.368		
Gross Profit Margin	.806	-.590		
Earnings Retention Ratio	-.800	.390		-.366
Return on Capital Employed	.766	.605		
Debtors Turnover Ratio	.747	-.323	.364	-.453
Debt to Equity Ratio	-.741	.362	.561	
Dividend Payout Ratio	.735	-.500	.310	.336
No. of Days Working Capital	-.692	-.511		.484
Investment Turnover Ratio	.688		-.681	
Inventory Turnover Ratio		.989		
Total Asset Turnover Ratio	.382	.917		
Return on Net Worth	.496	.852		
Return on Long Term Funds	.511	.803		
Current Ratio			-.991	

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Component	1	2	3	4
1	1.000	.285	-.276	.500
2	.285	1.000	-.107	-.036
3	-.276	-.107	1.000	-.145
4	.500	-.036	-.145	1.000

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

7. FINDINGS

- The Astral pipes have the higher current ratio of 1.45% in the year 2015 but it is reduced slightly to 1.27% on 2019, even though the company stands higher than other companies .so it is referred as a good resource to pay its own debt
- Jain irrigation has the higher quick ratio of 1.78% in 2014, which drastically improved to 2.34% in 2016 and slightly decreased to 1.55% in 2019
- Finolex pipes have shown 0.75% in 2015 it has drastically reduced during the subsequent years with 0.12% in 2016, 0.04% in 2017 & 2018 and 0.09% in 2019. Thus, Finolex pipes is considered as a best option because of low debt record
- profit margin was drastically increasing from the next subsequent years with 9.52% in 2016 drastically increases from the next subsequent years with 9.52% in 2016, 13.53 % in 2017,10.9% in 2018 and 11.31 % in 2019. So Finolex pipes is the best option compared to other companies because of highest net profit margin
- The supreme pipes have the better return on capital comparing to other companies. the company has the ratio of 28.09% in 2015, reduced to 17.44% in 2016, again increased to 24.41 % in 2017 ,23.63% in 2018 and 23.13% in 2019
- The supreme pipes have the higher return on long term fund ratio compared to other companies. The company has the ratio of 39.34% in 2015, 28.45% in 2016, 39.19% in 2017, 36.73% in 2018 and 31.14% in 2019.
- Finolex pipes has the better interest coverage ratio of 2.93 in 2015, 8.15% in 2016, which drastically increased to 34.61 %, 45.7 % in 2018 and 46.92 % in 2019.
- Finolex pipes has the better interest coverage ratio of 2.93 in 2015, 8.15% in 2016, which drastically increased to 34.61 %, 45.7 % in 2018 and 46.92 % in 2019.
- supreme pipes turnover was highest at 2.63 in 2019, followed by prince, astral, Finolex and Jain (Figure 4.13). Thus, it can be concluded that over the last five years, supreme has been able to regenerate assets to generate sale consistently.
- All the companies showed a decline in the ratio in the next year, except Jain increasing to 194.28 from 194.47. the low working capital turnover was done by supreme pipes, In 2019 only 24.98 days.
- supreme pipes have healthy payout ratio at 56% to 44% followed by Finolex pipes 51 to 36%, Jain irrigation 46% to 26% and at last astral pipes constantly at 6 to 7%.
- The Finolex recorded its best EPS of 67.15 in 2019 over the past five years. The shareholders can be assured that Finolex and supreme can be considered safe players in terms of investment.
- prince pipes has high ROE at average of compared with other companies followed by supreme pipes at 2.958, Finolex at 2.958, astral at 1.854 and at at last Jain irrigation at 1,272 supreme pipes constant maintaining their value at 1.8 to 1.9 and 3.8 to 2.82 all the companies have low return on equity compare with other sectors
- The Finolex ROI decreased further year up to 10.464. This tells that supreme pipes have high return on investment and Jain irrigation was not used asset their properly to create good return.

8. SUGGESTIONS

- **To improve profitability & efficiency:**

Executives, managers and employees must see progress toward targets such as revenue, sales, cash flow, inventory, production and quality. They must Identify the performance indicators that most effectively track the company's long-term sustainability.

Ensure managers in all level can easily monitor those Key performance indicators and are able to create the reports that allow them to assess the state of the business.

Managers can run a cost analysis on every job & employee for each shift, can track production efficiency and take action on underperforming equipment, tools and material & peoples in a timely manner.

- **To improve liquidity:**

Having efficient account receivables helps in better liquidity. Submit your invoices as quickly as possible to your customers. The more accounts receivables more company can receive money for sales, it will make the better current ratio thus liquidity will be enough.

Switch from Short-term debt to Long-term debt, because long term debts will have lower monthly instalments and interest will be comparatively low. It will improve the current ratio and will have better liquidity.

Control and optimise the Overhead Expenses like labour cost, rent, marketing & advertising will improve the current ratio & liquidity.

- **To improve ROI:**

Identify Investments which give Potential returns to company with risk awareness like Branding, R&D, better operational methods, effective sales & distribution network, one potential return are identified, it is easier to improve and optimise the methodology, thus by this way return on investment can be improved.

9. CONCLUSION

Based on factors like return on net worth, return on assets, return on long term funds, inventory turnover ratio, debtor turnover ratio and interest coverage ratio, it can be concluded that Finolex is the most sought-after company for investors. Along similar lines is supreme industries, whose return on capital employed, return on long-term fund, dividend payout ratio and DuPont analysis returns show encouraging signs for shareholders who have profits as their prime point of consideration. Based on the results from the PCA analysis carried on 18 ratios over 5 years, profitability, liquidity and management efficiency are the main performance highlighters for the industry. Maintaining all these will result in favorable returns to the shareholder of this industry. We cannot look at these factors in isolation as they are correlated and they are all combined when assessing the overall performance of the industry or individual firms. A combination of 12 ratios is able to give meaningful conclusion about the industry and can effectively analyses operations of the firms.

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