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A Study of Financial Performance of Paradeep Phosphates Ltd. Using Dupont Analysis

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ABSTRACT

Profit and profitability are the barometers of financial performance of a firm. Profit maximization has been deemed to be the pivotal goal of firms. This is now true for public sector units as well. Profit is a measure of the company's efficiency and effectiveness (Pandey). Profitability refers to the efficiency with which a company is utilizing its capital to generate profits. The "return on" illustrates the relationship between profits and the investment needed to generate those profits (Leisz & Maranville). The objective of this paper was to evaluate and analyze financial performance of Paradeep Phosphates Limited after disinvestment during the period from 2011-12 to 2019-20 using three step and five step DuPont model. In the year 2002, the government disinvested 74% of its stake in favour of a selected strategic partner Zuari Maroc phosphates (ZMPL). The results shows that ROE was highly volatile in initial years. The range of cost of debt is higher than the range of return on equity which states that company is earning less from the debt and paying more which is adversely affecting return on equity.

Keywords - Profitability, Ratio Analysis, Return on Equity, DuPont Model, Paradeep Phosphates Limited

Introduction

DuPont Model – A Brief Introduction to DuPont Analysis

Every business is interested in knowing how well it is running. For this, there are various profitability measures. Academics and analyst have long been searching for measures which are not very technical and at the same time are also very insightful. Simplicity can come at the cost of losing important insights. DuPont method is a reasonable compromise between the two. It is not very simple as textbook formula of profit but at the same time it is not highly technical that men in business, analysts, investors and other related parties with some basic understanding of finance and accounts cannot understand.

Three important functions of business are – Operations, Investment and Financing. Of these three, operations functions involves day-to-day decisions known as tactical decisions whereas investing and financing decisions known as strategic decisions have long term implications. Profits can be earned or lost from any of these functions. These three functions can be tied together to identify areas where profit is earned or lost (Patel B). DuPont model is a method of analysis which does this.

The DuPont model was created in 1919 by a finance executive at E .I. du Pont de Nemours & Co. DuPont analysis is a technique that can be used to analyze the profitability of a company using traditional performance management tools. Till 1970, an important goal of financial management was maximizing Return on Assets. But after 1970s, the generally accepted goal of financial management became maximization of shareholder's wealth and therefore the focus

shifted from Return on Assets to ROE. This was responsible for the induction of leverage in addition to profitability and efficiency in evaluating financial performance of firms.

DuPont Pyramid is a technique to decompose different drivers of Return on Equity. DuPont Pyramid consists of three formulas explained here under:

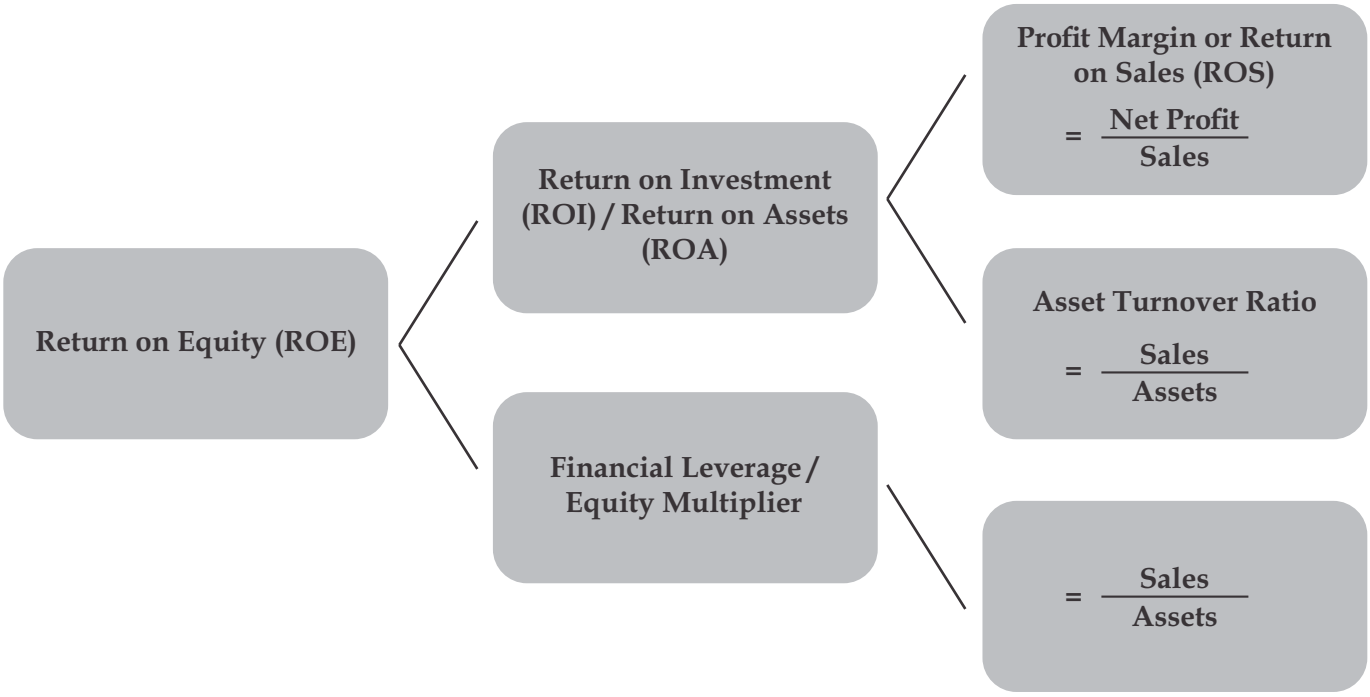
Combining these three ratios, we getROE as shown below:-

ROE = [(Net Profit/Sales) × (Sales or Revenue/Assets) × (Assets/equity)]

ROE = EAT/ Equity

Return on Equity is the product of Return on Investment / Return on Assets and Equity Multiplier. The following chart meaningfully captures interrelationship between all these ratios:

Name	Formula	Usefulness
Net Profit Margin or Return on Sales	Net profit ÷ Sales or Revenue	Shows operating efficiency
Asset Turnover Ratio or Capital Turnover Ratio or Asset Use Efficiency Ratio	Sales or Revenue ÷ Assets	Shows how efficiently the business is utilizing its assets / utilization efficiency
Equity Multiplier or Financial Leverage	Assets ÷ Equity	Shows how financially leverage the business is

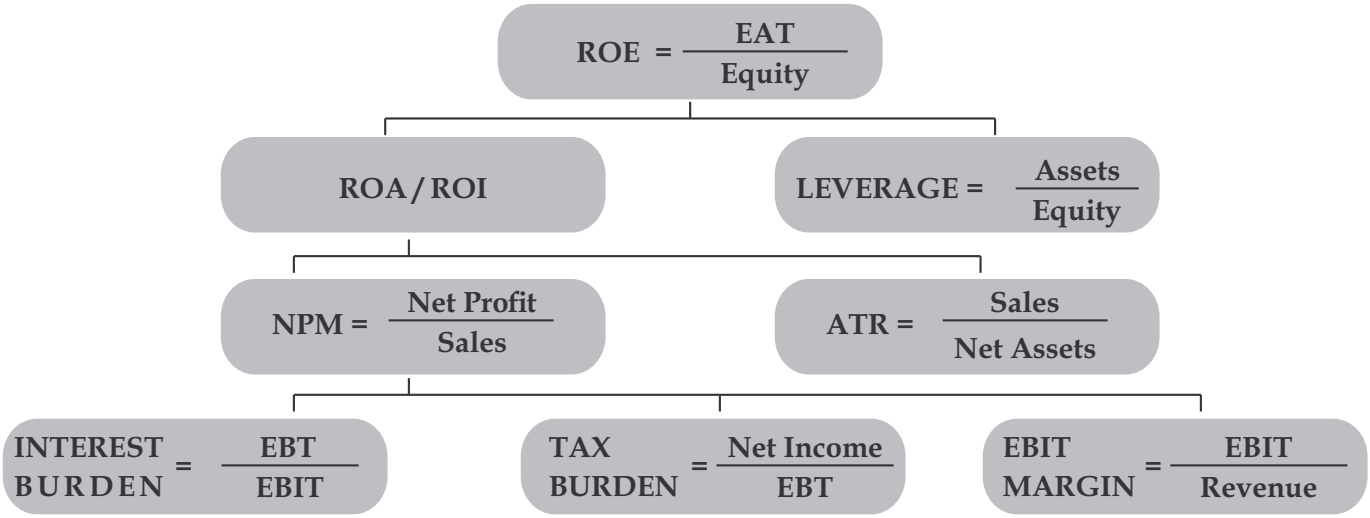


As is evident from the chart given above, the DuPont system of financial analysis clearly brings out the effect of Profit Margin and Asset Turnover on the Return on Assets (Narayanswamy).

"Really" Modified DuPont Model

In 1999, Hawawini&Viallet modified the DuPont model of 1970 to develop five step DuPont Model which considers five different ratios that are combined in such a way so as to give Return on Equity when multiplied. These five ratios are:

Name	Formula	Usefulness
Operating Profit Margin	**EBIT ÷ Sales/Revenue**	Shows operating decisions of the management (acquisition and disposal of fixed assets & operating assets and operating liabilities)
Capital Turnover or Assets Turnover ratio	Sales/ Revenue ÷ Invested capital / Total assets	Shows operating decisions of the management (acquisition and disposal of fixed assets & operating assets and operating liabilities)
Financial Cost ratio or Interest Burden ratio	EBT ÷ EBIT	Shows financing decisions of the management (mix of debt and equity used to fund the firm's operating decisions)
Tax Effect ratio or Tax Burden ratio	EAT / NI ÷ EBT	Shows the incidence of business taxation or shows the proportion of profits retained after paying taxes



Combining these five ratios, we getROE as shown below:-

ROE = [(EBIT/Sales) × (Sales/Invested Capital) × (EBT/EBIT) × (Invested Capital/Equity) × (EAT/EBT)]

ROE = EAT/Equity

Literature Review

Isberg (1998) has established a strong case for using DuPont ratio as a very useful tool in financial statement analysis for variety of reasons. The author has suggested the use of DuPont ratio in the process of company analysis which generally begins with qualitative inquiries of policies and strategies, creating a context for investigation. Subsequently goals and objectives of a company are defined which provides a basis for interpreting the results. The author has theoretically analysed various ratios making up DuPont analysis. At the same time the author frankly highlights various limitations of DuPont ratio.

Blumenthal (1998) has analysed that the consensual view among the academics and managers is that DuPont system helps companies to visualize the critical blocks in Return on Assets and Return on Investments. Proponents of EVA have pointed to several limitations inherent in DuPont model. The biggest benefit of the expandable DuPont model is its flexibility which can enable finance executives to combine Return on Investment with measures that do incorporate growth prospects.

Soliman (2008) has concluded that DuPont analysis is a useful tool of financial statement analysis as it is based on sound theory and is related to operational aspects of the firm.

Rahman & Mia (2018) concluded Return on Equity is a quick measure of management efficiency. DuPont model is useful to investors to determine the actual drivers behind a company's Return on Equity and used as a compass to know the strength and weakness in financial statement. DuPont model suggested the comparison of Return on Equity and its drivers should be with other companies of same industry.

Tandon et al. (2015) concluded on the basis of 5-point DuPont analysis that the whole manufacturing sector remained unaffected from the global financial crisis of 2008 due to its strong domestic markets. Subsectors i.e. Metal and Capital Goods had been largely affected by the recession while FMCG, Auto and Consumer Durables subsectors were able to withstand the vital blow of recession. It is worth mentioning that standard statistical measure of null hypothesis was majorly close to standard measure of consumer durable subsector which indicated that it was strongly affected by recession. Lastly, two sample paired T-test suggested that 3 out of 5 constituents of DuPont Analysis (i.e. ATR, OPM & EM) were substantially impacted by the recession.

Objectives

1. To study the financial performance of Paradeep Phosphates Ltd by applying DuPont model using three factor testing.
2. To study the financial performance of Paradeep Phosphates Ltd by applying DuPont model using five factor testing.
3. To study the impact of Equity Multiplier and Return on Assets on Return on Equity.

   (Return on assets includes Net profit margin and Asset Turnover)
4. To study the impact of Net Profit Margin and Assets Turnover on Return on Equity.

   (Net profit margin includes tax burden, interest burden and operating margin)
5. To test whether Paradeep Phosphates Ltd is able to generate positive ROE post disinvestment for the shareholders.

An Introduction to Paradeep Phosphates Ltd

Founded in 1981 under the Companies Act, 1956, Paradeep Phosphates Limited (PPL) is India's third-largest producer of non-urea fertilizer and the second-largest producer of Di-Ammonium Phosphate (DAP). The company has a proven track record of achieving robust financial results. Having an annual turnover of about Rs. 5,000 crores, the company manufactures, trades distribute, and sells various types of complex fertilizers. This includes DAP, a total of three types of NPK (NP-10, NP-12, NP-20), Zypmite, Phosphogypsum, and Hydroflorosilicic Acid (HFSA). Additionally, the company engages in the trading, distribution, and sales of Muriate of Potash (MOP), Ammonia, Specialty Plant Nutrients (SPN), and City Compost. The company market their fertilizers under the brand names 'Jai Kisaan - Navratna' and 'Navratna'.

The primary promoters of the company, Zuari Maroc Phosphates Private Limited (ZMPPL), a joint venture of ZuariAgro Chemicals Limited (ZACL) and the OCP Group S.A. holds 80.45% of the equity share capital of the Company, with the remaining shares held by the Government of India. ZACL, a leading company in the agribusiness vertical of the Adventz Group, holds 40.23% of the equity shares in Paradeep Phosphates Limited. As of March 31, 2021, ZACL had a total annual capacity of 1.2 million metric tons of fertilizer.

The integrated business model of the company has contributed to its success and has set it apart from its competitors. With our integrated business model, we are able to drive profitability, optimize capital efficiency, and maintain our competitive advantage. The company distributes its products across 17 states in India through various private and institutional channels. For instance, in states such as Madhya Pradesh, Chattisgarh and Telangana, we supply our products to marketing federations in co-operative channels.

The company's performance in improving production processes, addressing environment and safety, human resource practices, and social responsibility have been well recognized by apex industry bodies such as fertilizer Association of India (FAI), Indian Chambers of Commerce (ICC), Confederation of Indian Industries (CII), Utkal Chamber of Commerce & Industry (UCCI), Government Ministries and Departments, prestigious non-government bodies, and leading print/electronic media groups at national as well as at the state level.

Research Methodology

This paper attempts to study the financial performance of Paradeep Phosphates Ltd. by using three step and five step DuPont model which when mathematically multiplied leads to Return on Equity (ROE) for a period of 9 years from 2011-12 to 2019-20. The secondary data was collected from the annual report of Paradeep Phosphates Ltd., published records and journals.

Table 1: Paradeep Phosphates Limited Datasheet for DuPont Analysis (Numbers are in '000 MT)

Years	Revenue	EBIT	EBT	Income Tax	Net Income / EAT/ Net Profit	Total Assets	Shareholder's equity
2011-12	4,77,201	30,053	25,926	8,155	17,771	3,03,563	1,03,816
2012-13	5,33,591	27,475	13,174	2,815	10,359	4,54,032	1,14,175
2013-14	4,28,927	6,471	(13,410)	(821)	(12,589)	3,61,390	1,01,586
2014-15	4,21,282	17,084	3,994	(339)	4,333	3,66,138	1,08,501
2015-16	4,83,753	25,232	5,976	(533)	6,509	4,88,117	1,15,707
2016-17	3,74,935	37,317	13,117	4,426	8,691	4,58,489	1,24,627
2017-18	3,81,669	38,275	22,352	7,294	15,058	4,13,150	1,39,544
2018-19	4,39,721	41,074	25,148	9,243	15,905	5,62,775	1,48,280
2019-20	4,22,778	42,218	23,039	3,634	19,405	5,01,086	1,60,407

- Revenue = Revenue from Operations (net) + Other Income
- EBIT = EBITDA – Depreciation & Amortization Expense
- EBT = EBITDA – Depreciation & Amortization Expense – Finance cost
- Income tax = Tax including deferred tax + Taxation expenses credited
- Net Income = Net Profit / loss
- Twotal Assets = Fixed assets + Current assets
- Share holder's equity = Paid up capital + Res. & Surplus

DuPont Testing Using 3 Factor Analysis for Paradeep Phosphates Limited

Years	NP Margin (Net Income / Revenue)	Asset Turnover Ratio (Revenue / Total assets)	Equity Multiplier (Total assets / Equity)	ROE (Net Income / Equity)
	(A)	(B)	(C)	D = A*B*C
2011-12	3.72%	1.57	2.92	17.138
2012-13	1.94%	1.18	3.98	9.171
2013-14	(2.93%)	1.19	3.56	(12.447)
2014-15	1.03%	1.15	3.37	3.898
2015-16	1.35%	0.99	4.22	5.705
2016-17	2.32%	0.82	3.68	6.935
2017-18	3.95%	0.92	2.96	10.614
2018-19	3.62%	0.78	3.79	10.610
2019-20	4.59%	0.84	3.12	12.095

DuPont Testing Using 5 Factor Analysis for Paradeep Phosphates Limited

Year	Tax Burden (NI / EBT)	Interest Burden (EBT / EBIT)	Operating Income Margin (EBIT / Revenue)	Asset Turnover (Revenue / Total Assets)	Equity Multiplier (Total Assets / Equity)	ROE (Net Income / Equity)
	(A)	(B)	(C)	(D)	(E)	F = A*B*C*D*E
2011-12	0.69	0.86	6.3%	1.57	2.92	17.138
2012-13	0.79	0.48	5.15%	1.18	3.98	9.171
2013-14	0.94	(2.07)	1.51%	1.19	3.56	(12.447)
2014-15	1.08	0.23	4.05%	1.15	3.37	3.898
2015-16	1.09	0.24	5.22%	0.99	4.22	5.705
2016-17	0.66	0.35	9.95%	0.82	3.68	6.935
2017-18	0.67	0.58	10.03%	0.92	2.96	10.614
2018-19	0.63	0.61	9.34%	0.78	3.79	10.610
2019-20	0.84	0.55	9.99%	0.84	3.12	12.095

Conclusions

Return on Equity increased at lower pace because of adverse Asset Turnover Ratio. Adverse Asset Turnover Ratio indicates investment in new assets but no efficient use of those assets which impacted ROE.

ROE increased gradually since 2014 and at the same time cost of debt too increased which implied that company earned less from the debt and paid more which adversely affected return on equity.

The positive trend in ROE was due to two elements – a) increase in profit margin and b) fluctuation in equity multiplier

Moving from 2017-18 to 2018-19, Profit Margin and Assets Turnover Ratio decreased but it was compensated by increase in Equity Multiplier which kept ROE constant.

Moving from 2018-19 to 2019-20, Profit Margin and Assets Turnover Ratioincreased while Equity Multiplier decreased which resulted in marginal increase in ROE.

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