

Testing of DuPont model for Indian Software Products and Training Services Companies



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In this paper we considered Information Technology(IT) software products and training services companies to apply and analyze DuPont Model for Indian IT software products and training services companies and also analyze the performance of these IT companies differs over a period of time. We have calculated return on equity by three factors and five factors DuPont model. Empirical analysis of the study shows that DuPont Model is significant for Indian IT software products and training services companies and also we found that five factors DuPont model can be used to measure the performance of Information Technology in other countries.

Keywords: DuPont Analysis, ROE, Margin Ratios, Turn over Ratios, Leverage Ratios

1. Introduction

The Information Technology (IT) sector has been playing a vital role in strengthening the Indian economy. In order to compare and set benchmark, a financial statement analysis should be made of all companies. A financial statement is a collection of data organized according to logical and consistent accounting procedures. Generally the users of financial statements calculate return on equity to measure efficiency of the Management in utilizing the funds and creating profit an increasing return on equity can suggest that the company is able to grow profits without adding new equity into the business, which dilutes the ownership share of existing shareholders. The higher a company's return on equity, the better management is at employing investors' capital to generate profits. The use of financial ratios by financial analysts, lenders, academic researchers, and small business owners has been widely acknowledged in the literature. Osteryoung (1992), Devine & Seaton (1995), or Burson (1998) they said that the concepts of Return on Assets and Return on Equity are important for understanding the profitability of a business enterprise. Specifically, a "return on" ratio illustrates the relationship between profits and the investment needed to generate those profits. Sahu (2002) revealed the effective management of liquidity in the paper companies. Tiwari and Parray (2012) explained in detail the analysis of financial statements of Ranbaxy Ltd. They provided insights into two widely used financial tools, ratio analysis and common size statements analysis. The objective of the paper was to help the reader understand how these tools should be used to analyze the financial position of a firm. In a recent study, Francis (2013) used ROA and ROE in a static model to examine the determinants (both firm specific and macroeconomic variables) of commercial banks' profitability in Sub-Saharan Africa during the period 1999-2006. This paper proposes to study DuPont model of Indian Information Technology companies Listed in BSE India. The paper is organized in four parts. Part 1 is the introduction; Part 2 presents objectives, and methodology; Part 3 analyses the results; Part 4 presents the summary and conclusions. References are given after Part 4.

2. Objectives and Methodology

2.1 We have set following objectives based on the evidence Fairfield and Yohn (2001), Ross et al., (1996).

- To apply and analyze DuPont Model for Indian IT software products and training services companies.
- To analyze whether the performance of IT companies differs over a period of time.

2.2 Hypotheses: Based on the available evidence on Nanavathi (2013) and Tiwari and Parray (2012) the following null hypotheses are formulated

- **H₀:** Three factors and five factors DuPont model is not significant for the Indian IT companies.
- **H₀:** There is no significant difference in the performance of companies over different time periods.

Negations of above hypothesis are alternate hypothesis. We propose to test the above hypotheses in the Indian context by taking the data and sample described below.

2.3 Data Sample & Methodology

This study proposes to apply and analyze DuPont Model for Indian IT software product and training services companies. Lermack (2003) analyzed benefits of financial ratios analysis. Santany *et al.* (2003) observed that degree of current asset in positive associated with the operating profitability of the firm. Lasher (2005) found that requires financial data of the companies. This data would be collected using the different corporate databases Powell and Stark (2005) shows that significant improvements in operating performance. For the study purpose we have taken Ten years financial statement viz 2007,2008,2009,2010,2011,2012,2013, 2014, 2015 and 2016 of 56 IT companies. The annual data of the selected companies

is obtained from the Capital Line Database. We have adopted methodology as done by Moyer et al., (2007), and Ross et al., (2008). To test the hypothesis we used Panel data regression in R Studio. We calculated ROE using following model.

Three Step DuPont Analysis Model

$$\text{ROE} = (\text{Net Profit Margin} \times (\text{Asset Turnover}) \times (\text{Equity Multiplier}) \quad (1)$$

We have applied 5 factors DuPont Analysis for the Calculation of ROE.

Extended DuPont Analysis Model

$$\text{ROE} = (\text{Tax Burden}) \times (\text{Interest Burden}) \times (\text{Operating Margin}) \times (\text{Asset Turnover}) \times (\text{Equity Multiplier}) \quad (2)$$

3. Results and Analysis

The study analyses DuPont Model for Indian IT software products and training services companies. Further to analyze whether the performance of IT companies differs over a period of time. Therefore, we have analysed ten years data of selected companies for the study period. Main findings of the study are discussed in the following paragraphs.

Table 1 shows that return on equity (ROE) of the Software and Networking companies. ROE of Tata Elxsi is ranges from 0.11 to 0.56; Techn visionVen ranges from -0.01 to 0.03; Genesys Intl ranges from 0.02 to 0.44; Netlink Solutions ranges from -0.01 to 0.25; Pan India Corporation ranges from -0.81 to 0.001; Cranes Software ranges from -7.67 to 1.49; Avance Tech ranges from -0.02 to 0.01; CressandaSolns ranges from -21.46 to 0.09; Mindteck ranges from 0.01 to 0.1; R S Software ranges from 0.04 to 0.44; Elnet Technology ranges from 0.12 to 0.21; Trigyn Technology ranges from 0.001 to 0.62; Kellton Tech ranges from -0.97 to 0.13; Mastek ranges from -0.01 to 0.36; Svam Software ranges from 0.001 to 0.03; Data soft Application ranges from 0.01 to 0.06; BITS ranges from -0.46 to 0.01; Dion Global ranges from -1.21 to -0.01; Odyssey Tech ranges from -4.43 to 0.86; Mangalya Soft ranges from 0.01 to 0.02; CLIO InfoTech ranges from -0.06 to 0.12; Ram Info ranges from -10.1 to 0.16; Nihar Info Glob ranges from -1.94 to 0.07; Virtual soft Sys ranges from -0.74 to 0.44; ABM Knowledge ranges from 0.12 to 0.4; Nucleus Soft ranges from 0.11 to 0.32; B2B Soft.Tech ranges from -0.96 to 0.21; Advent Computer ranges from -0.01 to 0.01; JetkingInfotrai ranges from 0.02 to 0.69; CompuCom Soft ranges from 0.05 to 0.13; Aptech ranges from -0.08 to 0.38; We found that increase in the operating Income profit margin and asset turn over it reflects positively on the return on equity.

Table 1 Return on equity of Indian IT software products and Training services companies from 2007 - 2016

ROE	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Tata Elxsi	0.56	0.44	0.38	0.28	0.18	0.18	0.11	0.32	0.36	0.4
TechnvisionVen	0.03	0.02	0.02	0.02	0.02	0.001	-0.01	0.001	0.01	0.001
Genesys Intl	0.08	0.38	0.44	0.3	0.33	0.11	0.12	0.03	0.02	0.02
Netlink Solns	0.21	0.25	-0.01	0.06	0.001	0.02	0.001	0.001	0.15	0.02
Pan India Corpor	0.001	-0.48	-0.01	-0.01	0.001	0.001	0.001	-0.81	-0.01	-0.48
Cranes Software	0.23	0.2	0.18	-0.44	-0.4	-0.09	-7.67	1.49	0.23	0.44
Avance Tech	-0.01	0.001	0.01	0.001	0.001	0.001	0.001	-0.02	0.001	0.001
Cressanda Solns	-0.12	0.09	0.09	-0.1	-21.46	0.001	0.01	-0.05	-0.01	-0.01
Mindteck	0.1	0.03	0.03	0.01	0.04	0.01	0.01	0.08	0.07	0.05
R S Software	0.25	0.06	0.26	0.31	0.44	0.32	0.3	0.31	0.3	0.04
Elnet Technology	0.21	0.19	0.17	0.14	0.12	0.13	0.14	0.14	0.12	0.12
Trigyn Techno	0.62	0.06	0.14	0.12	0.06	0.05	0.04	0.35	0.001	0.01
Kellton Tech	-0.01	-0.03	-0.17	0.03	-0.97	0.13	0.12	0.11	0.11	0.08
Mastek	0.36	0.34	0.27	0.1	0.01	-0.01	0.11	0.08	0.17	0.07
Svam Software	0.03	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.01	0.01
Data soft Application	0.04	0.05	0.01	0.06	0.01	0.05	0.05	0.06	0.04	0.06
BITS	0.001	-0.01	-0.01	0.01	0.01	0.01	0.01	-0.09	0.01	-0.46
Dion Global	-0.53	-0.37	-1.17	-0.23	-1.21	-0.05	-0.01	-0.01	-0.05	-0.05
Odyssey Tech	-4.43	-0.82	0.86	0.16	0.53	0.16	0.2	0.34	0.32	0.21
Mangalya Soft	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01
CLIO Infotech	0.12	0.04	0.01	0.01	-0.01	-0.02	-0.06	0.01	0.01	0.01
Ram Info	0.04	0.06	0.01	-0.42	-10.1	-8	0.01	0.12	0.16	0.12

Nihar Info Glob	-0.06	0.01	-0.05	-1.34	-0.02	-0.33	-1.94	0.03	0.05	0.07
Virtual soft Sys	0.2	0.11	0.1	0.07	-0.01	0.18	0.44	-0.74	0.12	0.09
ABM Knowledge	0.12	0.4	0.29	0.26	0.3	0.31	0.21	0.2	0.2	0.17
Nucleus Soft	0.31	0.32	0.13	0.14	0.17	0.11	0.12	0.15	0.15	0.11
B2B Soft. Tech	0.03	0.04	-0.17	-0.06	-0.96	-0.03	0.06	0.14	0.15	0.21
Advent Computer	0.01	0.01	-0.01	-0.01	0.01	-0.01	0.01	0.01	0.001	0.01
CG-VAK Software	0.001	-0.07	0.02	-0.09	0.01	-0.19	0.14	0.09	0.12	0.09
Ace Soft	0.04	0.2	0.04	-0.01	0.02	0.03	0.03	0.04	0.03	0.07
Nimbus Foods	-2.01	0.01	0.02	0.04	0.04	0.03	0.02	0.03	0.01	0.02
Prithvi Softech	0.13	0.09	0.09	0.06	0.1	0.08	0.11	0.14	0.13	0.1
Silicon Valley	-0.02	0.01	-0.08	0.01	-0.04	-0.02	-0.61	-0.07	-0.07	-3.5
PFL Infotech	0.28	0.01	0.01	0.01	-1.15	0.03	0.03	0.04	0.02	0.03
Panoramic Univ	0.23	0.11	0.15	0.15	0.11	0.11	0.12	0.1	0.1	0.06
IEC Education	-0.01	0.06	0.06	0.06	0.04	0.02	0.01	0.01	0.01	0.001
Twinstar Indus	0.01	0.18	0.01	0.01	0.001	0.05	0.001	0.01	0.02	0.01
Polaris Consulta	0.14	0.09	0.16	0.17	0.2	0.18	0.15	0.07	0.22	0.14
Cybermate Info	0.08	0.15	0.03	0.01	0.01	-0.01	0.01	0.01	-0.36	-4.87
Intense Tech	-0.32	-0.25	0.02	-0.19	-0.09	0.06	0.14	0.21	0.11	0.01
Danlaw Tech	0.001	0.001	-0.46	-0.02	-0.01	-0.01	0.06	0.02	0.04	0.08
Cura Tech	0.02	0.1	0.08	0.06	0.04	-0.02	-0.01	-0.06	-0.48	0.001
Softsol India	0.04	0.07	0.16	0.1	0.03	0.001	0.02	0.01	0.01	0.01
Subex	0.03	-0.01	-0.39	0.38	0.23	0.01	-0.1	-0.11	-0.1	-0.21
Virgo Global	-0.08	-0.17	-0.23	0.08	0.07	0.02	0.03	0.03	0.02	-2.44
Hit Kit Global	-0.36	0.18	0.03	0.01	0.001	0.001	0.001	0.001	0.001	0.001
Kanika Infra	-0.01	0.01	0.01	0.001	0.001	0.001	0.001	-0.03	-0.02	-0.02
Virinchi	0.14	0.08	0.05	0.05	0.03	0.02	0.02	0.02	0.04	0.05
Firstobj. Tech	0.01	0.03	0.07	0.1	0.06	-0.01	0.001	-0.15	-0.05	0.001
California Soft.	0.09	0.07	-0.08	0.05	-0.08	-2.33	-6.17	1.27	0.45	0.05
Usha Mart. Edu.	0.001	0.001	0.01	0.02	0.08	0.02	0.02	-0.03	-0.08	-0.18
NIIT	0.11	0.09	0.12	0.08	0.12	0.2	0.001	-0.02	-0.14	0.001
Birla Shloka	0.02	0.06	0.04	0.11	0.05	0.04	0.05	-0.03	-0.04	-0.02
JetkingInfotrai	0.42	0.69	0.49	0.31	0.19	0.06	0.08	0.06	0.05	0.02
Compucom Soft	0.1	0.08	0.13	0.13	0.13	0.11	0.08	0.09	0.05	0.06
Aptech	-0.08	0.02	0.03	0.38	0.03	0.07	0.09	0.11	0.08	0.05

Table 2 shows the regression analysis of IT software products and Training services companies from 2007 to 2016. sig value is statistically significant hence we reject the null hypothesis and accept the alternate hypothesis that three factors DuPont model is significant for the Indian IT companies and also five factors DuPont model is significant for the Indian IT companies. The results of this are conforming the study undertaken by Mihaela et.al (2010), Nissim (2001), Francis (2013).

Table 2 Regression Analysis of IT Software Products and Training Services Companies from 2007 - 2016

DuPont 3 Factor		DuPont 5 Factor		DuPont 3 Factor		DuPont 5 Factor	
R	R Square	R	R Square	F	Sig.	F	Sig.
.601	.355	.600	.353	102.68	.000	61.01	.002

Table 3 shows the panel data regression analysis of IT software products and Training services companies from 2007 to 2016. We have conducted panel data regression in R studio as mentioned in the methodology to test the hypothesis. The R Value is 0.599 and 0.599 which indicates a low degree of correlation with the dependent variable for both the DuPont three and five Factor analysis respectively. We have conducted a pTtest in R studio and we have calculated the *p* value and it is less

than 0.05 hence we are rejecting the null hypothesis and we are accepting the alternate hypothesis that there is a significant difference in the performance of IT companies over different time periods.

Table 3 Panel Data Regression Analysis of IT Software Products and Training Services Companies from 2007 - 2016

DuPont 3 Factor		DuPont 5 Factor		DuPont 3 Factor		DuPont 5 Factor	
R	R Square	R	R Square	F	P	F	p
.599	.355	.599	.353	103.683	0.0032	62.028	0.0021

4. Summary and Conclusion

This paper has attempted to analyse DuPont model for Indian software products and training services companies and further to analyze whether the performance of IT companies differs over a period of time. The overall conclusions of this study are summarized as follows:

- The analysis of return on equity shows that increase in the operating income margin and asset turn over it reflects positively on the return on equity. Hence we reject the null hypothesis and accept the alternate hypothesis that three factors DuPont model is significant for the Indian IT companies and also five factors DuPont model is significant for the Indian IT companies.
- Panel data regression analysis of IT software products and training services companies shows *P* value id less than 0.05 Hence we are rejecting the null hypothesis and we are accepting the alternate hypothesis that there is a significant difference in the performance of IT companies over different time periods.

For future research direction, researchers can employ the five step DuPont model in other industries to see if it can explain the total variation in ROE as it has in the Indian Information Technology companies.

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