Empirical Study of DuPont Model Parameters for Indian Software and Training Companies

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Information Technology (IT) software products and training services companies are considered to analyze the characteristics of different groups of Indian IT companies and to ascertain the patterns of the Return on Equity (ROE) for Indian IT companies using the DuPont model. Calculated ROE using three factors DuPont model. The study shows that DuPont Model is significant for Indian IT software products and training services companies. Further we found that there is a significant relationship between ROE, asset run over and profit margin. We found that five factors DuPont model can be used to measure the performance of other sectors.

Keywords: DuPont Analysis, ROE, Profit Margin, Asset Turn over Ratios, Equity Multiplier

1. Introduction

The country's growth and development has inter-linkages with many sectors. All the sectors require facilities from the information technology (IT) companies for the development infrastructure. The reformation of liberalization, privatization and globalization initiated by the Government of India has led to the development of many sectors in general and IT companies in particular. The reformation has focused on improvement of infrastructure, technology know how, software development, software enabled services etc. IT Companies are essential for development of the country's economy. In India, this sector has been mostly financed, operated and maintained by the private enterprises. Finance for IT companies can come from government and non-government sources. The non-government sources of financing for IT companies include private sector, local self-governments, private institutions, religious institutions, trusts, general public, high net-worth individuals. The effective utilisation of the finance will be reflected on the growth of IT companies. Hence, it is necessary to analyse the sources and utilisation of finance in Indian IT companies. Therefore, assessing the financial performance of the information technology companies will help us to understand how we are creating value for the money spent for development of this sector. There are various methods that are used in analyzing financial statements, such as comparative statements, schedule of changes in working capital, common size percentages, funds analysis, trend analysis and financial ratios analysis. Many researchers in developed countries have debated on the method of financial statement analyses. The research on financial performance analysis has been undertaken by Beaver (1977), Bird and McHugh (1977), Foster (1978), Ijiri (1978), Bernstein (1989), Buckmaster and Saniga (1990), Garcia (1994), Mathur (2002). Therefore analysts can obtain useful information by analyzing company's recent financial statements and comparing the results with other companies. Financial statement analysis, when used carefully, can produce meaningful insights about a company's financial information and its prospects for the future. However, an analyst must be aware of certain important considerations about financial statements and the use of these analytical tools. Making meaningful comparisons may not be possible only with traditional financial ratios. Hence modern technique of financial statement analysis is required for widely diversified companies. One of the modern techniques is DuPont analyses where investors and owners can see a comprehensive picture of firm performance. F. Donaldson Brown was the founder of the DuPont equation in 1914. This model provides the comparison of return in similar firms using Return on Equity (ROE). The mechanism of DuPont equation measure ROE with three components such as profit margin, asset turnover and financial leverage. In this model firm Profit margin describes working efficiency, asset turnover describe utilization of asset and financial leverage describe equity multiplier. This research focuses on assessing the performance of companies' profitability. The present study focuses on the three factors DuPont model Soliman (2008) is applied for the Information Technology Companies in order to know its effect on ROE. Hence this study has been taken up to test three factors DuPont model and five factors DuPont model which are affecting ROE. 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 analyze the characteristics of different groups of Indian IT companies.
- To ascertain the patterns of the ROE for Indian IT companies using the DuPont model.

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

- **H$_o$:** There is no significant relationship between ROE and profit margin.
- **H$_o$:** There is no significant relationship between ROE and asset turn over.

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.

2.2 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. Adopted methodology as done by Moyer et al., (2007), and Ross et al., (2008) calculated ROE characteristics like mean, standard deviation, variance, skewness, kurtosis. To test the hypothesis we used correlation coefficient in SPSS tool. We calculated ROE using following model.

Three Step DuPont Analysis Model

ROE = (Net Profit Margin) x (Asset Turnover) x (Equity Multiplier)   (1)

3.   Results and Analysis

The study analyses characteristics of different groups of Indian IT companies and to ascertain the patterns of the ROE for Indian IT companies using the DuPont model. Therefore, we have analyzed ten years data of selected companies for the study period. Main findings of the study are discussed in the following paragraphs.

Table 1 shows net profit margin characteristics of IT software products and training services companies for the study period 2007 to 2016 it was found that mean varies between -30.183 to 0.535; standard deviation varies between 0.012894 to 95.50676; variance varies between 0.000166 to 9121.541; median varies between -0.65 to 0.535; skewness varies between -3.16228 to 3.089455; kurtosis varies between -1.72152 to 10.

Table 1 *Net Profit Margin Statistical Characteristics of IT Software Products and Training Services Companies' from 2007 to 2016*

Company Name	Mean	Standard Deviation	Variance	Median	Max	Min	Skewness	Kurtosis
Tata Elxsi	0.111	0.041218	0.001699	0.125	0.17	0.03	-0.71975	0.243978
TechnvisionVen	0.032	0.036148	0.001307	0.03	0.07	-0.03	-0.32534	-1.33493
Genesys Intl	0.229	0.158986	0.025277	0.165	0.48	0.07	0.612059	-1.42421
NetlinkSolns	0.25	0.294769	0.086889	0.135	0.67	-0.13	0.454081	-1.5126
Pan India Corpor	-2.406	27.66963	765.6083	-0.255	54.49	-61.76	-0.16992	4.187818
Cranes Software	-2.197	2.824241	7.976334	-0.65	0.36	-6.54	-0.57856	-1.72152
Avance Tech	-0.0064	0.012894	0.000166	0.001	0.001	-0.04	-2.30897	5.869308
CressandaSolns	-1.674	4.378973	19.1754	-0.13	0.38	-14	-3.03983	9.397905
Mindteck	0.08	0.04714	0.002222	0.085	0.16	0.01	0.262513	-0.49066
R S Software	0.086	0.05379	0.002893	0.085	0.18	0.01	0.318701	-0.87096
Elnet Technology	0.239	0.021833	0.000477	0.24	0.27	0.2	-0.3219	-0.58557
Trigyn Techno	0.2521	0.239782	0.057495	0.22	0.83	0.001	1.621303	3.579043
Kellton Tech	-0.587	1.738614	3.022779	0.125	0.2	-5.37	-2.82762	8.215376
Mastek	0.084	0.069314	0.004804	0.075	0.18	-0.01	0.147841	-1.39684
Svam Software	-0.004	0.068832	0.004738	0.005	0.06	-0.19	-2.55355	7.548135
Datasoft Application	0.535	0.191964	0.03685	0.535	0.75	0.14	-0.93154	0.559162
BITS	-2.04	4.489095	20.15198	-0.075	0.39	-13.03	-2.15187	3.980276
Dion Global	-0.465	0.431412	0.186117	-0.255	-0.03	-1.35	-1.06323	0.411978
Odyssey Tech	0.071	0.361246	0.130499	0.19	0.29	-0.9	-2.58576	7.167293
Mangalya Soft	-0.218	0.102068	0.010418	-0.25	0.07	-0.27	3.061615	9.535836
CLIO Infotech	0.316	0.581745	0.338427	0.175	1.45	-0.34	0.763532	-0.08523
Ram Info	-2.473	6.931497	48.04565	0.025	0.22	-22.01	-3.05685	9.466136

Nihar Info Glob	-1.907	3.850524	14.82653	-0.155	0.42	-11.93	-2.37291	5.828757
Virtualsoft Sys	-1.19	2.675307	7.157267	-0.425	0.54	-8.69	-2.9863	9.200984
ABM Knowledge	0.174	0.047889	0.002293	0.18	0.22	0.06	-1.59891	3.187015
Nucleus Soft	0.189	0.056263	0.003166	0.18	0.28	0.12	0.706888	-0.57163
B2B Soft.Tech	-0.052	0.287046	0.082396	0.055	0.19	-0.79	-2.22587	5.426606
Advent Computer	-0.388	0.61026	0.372418	-0.14	0.04	-1.9	-1.99664	4.14267
CG-VAK Software	0.002	0.09716	0.00944	0.02	0.11	-0.18	-0.82829	-0.4676
Ace Soft	0.107	0.107399	0.011534	0.1	0.36	-0.08	1.061701	4.406231
Nimbus Foods	-30.183	95.50676	9121.541	0.02	0.03	-302	-3.16228	10
Prithvi Softech	0.25	0.052915	0.0028	0.245	0.37	0.17	1.079898	2.699405
Silicon Valley	0.089	0.596964	0.356366	-0.055	1.23	-0.41	1.437197	0.826213
PFL Infotech	-1.503	6.029588	36.35593	0.47	0.71	-18.65	-3.15299	9.956686
Panoramic Univ	0.36	0.068475	0.004689	0.375	0.44	0.25	-0.68001	-0.6331
IEC Education	0.098	0.088794	0.007884	0.105	0.21	-0.03	-0.22778	-1.63093
Twinstar Indus	0.0322	0.069947	0.004893	0.01	0.23	0.001	3.089455	9.648019
Polaris Consulta	0.083	0.028694	0.000823	0.09	0.13	0.04	-0.1291	-0.70346
Cybermate Info	-0.6598	1.726372	2.98036	0.0255	0.5	-4.98	-2.22136	4.570326
Intense Tech	-0.28	0.607417	0.368956	0.025	0.24	-1.36	-1.22666	-0.04321
Danlaw Tech	-0.143	0.548595	0.300957	-0.005	0.15	-1.69	-3.05335	9.505423
Cura Tech	-0.249	0.919619	0.845699	0.03	0.33	-2.77	-2.76939	8.069195
Softsol India	0.261	0.191337	0.03661	0.27	0.57	0.01	0.243095	-1.2287
Subex	-0.07	0.270719	0.073289	-0.06	0.33	-0.56	-0.52846	0.121283
Virgo Global	-0.291	1.24984	1.562099	0.1	0.8	-3.67	-2.59873	7.488795
Hit Kit Global	-0.162	0.580456	0.336929	-0.025	0.28	-1.78	-2.91446	8.929938
Kanika Infra	-0.106	0.208923	0.043649	0	0.01	-0.64	-2.2597	5.161752
Virinchi	0.082	0.065625	0.004307	0.06	0.24	0.02	1.791414	3.423731
Firstobj.Tech	0.0181	0.069222	0.004792	0.0205	0.09	-0.12	-0.82448	0.248921
California Soft.	-0.709	0.925652	0.856832	-0.225	0.12	-2.31	-0.8091	-1.04464
Usha Mart. Edu.	-0.135	0.722699	0.522294	0.075	0.45	-2.08	-2.57955	7.26179
NIIT	0.018	0.109016	0.011884	0.06	0.11	-0.27	-2.39618	6.47358
Birla Shloka	-0.083	0.206669	0.042712	0.015	0.06	-0.51	-1.73985	1.497042
JetkingInfotrai	0.142	0.085739	0.007351	0.13	0.27	0.03	0.336044	-1.41375
Compucom Soft	0.157	0.043982	0.001934	0.15	0.24	0.1	0.868385	0.188581
Aptech	0.129	0.124495	0.015499	0.135	0.37	-0.08	0.273202	0.719095

Table 2 shows Asset turn over characteristics of IT Consulting Software and Networking companies for the study period 2007 to 2016 it was found that asset turn over mean varies between 0.011 to 2.899; standard deviation varies between 0.003162 to 3.830528; variance varies between 0.00001 to 14.67294; median varies between 0.01 to 2.79; skewness varies between -1.42 to 1.81; kurtosis varies between -2.04321 to 10.

Table 2 *Asset Turn over Statistical Characteristics of IT Software Products and Training Services Companies' from 2007 to 2016*

Company Name	Mean	Standard Deviation	Variance	Median	Max	Min	Skewness	Kurtosis
Tata Elxsi	2.548	0.511051	0.261173	2.47	3.33	1.81	0.272772	-0.78315
Techn vision Ven	0.274	0.064498	0.00416	0.26	0.38	0.21	0.617068	-1.22254
Genesys Intl	0.643	0.318261	0.10129	0.655	1.19	0.22	0.514297	-0.23603
Netlink Solns	0.179	0.117327	0.013766	0.125	0.38	0.08	1.093236	-0.18816
Pan India Corpor	0.032	0.057697	0.003329	0.01	0.19	-0.01	2.743685	8.03584
Cranes Software	0.135	0.118626	0.014072	0.105	0.3	0.01	0.533146	-1.56197

Avance Tech	1.254	1.398636	1.956182	0.435	3.57	0.23	1.028419	-1.06278
Cressanda Solns	0.3851	0.340927	0.116231	0.29	0.85	0.001	0.240162	-1.85285
Mind teck	0.465	0.161125	0.025961	0.41	0.89	0.32	2.369428	6.440964
R S Software	2.899	1.264221	1.598254	2.79	4.97	0.86	0.20223	-0.39771
Elnet Technology	0.39	0.041366	0.001711	0.38	0.48	0.34	1.071378	1.366221
Trigyn Techno	0.596	0.360222	0.12976	0.38	1.3	0.25	0.953116	-0.36399
Kellton Tech	0.377	0.232668	0.054134	0.345	0.76	0.13	0.327592	-1.55032
Mastek	1.549	0.369938	0.136854	1.565	2.04	1.02	-0.07546	-1.45133
Svam Software	0.519	0.321643	0.103454	0.565	1.1	0.02	-0.16162	0.571092
Datasoft Application	0.078	0.02201	0.000484	0.08	0.13	0.04	1.097286	4.411019
BITS	0.03	0.02582	0.000667	0.015	0.08	0.01	0.968246	-0.39107
Dion Global	0.14	0.059815	0.003578	0.13	0.29	0.07	1.89639	4.806226
Odyssey Tech	1.621	0.630352	0.397343	1.41	2.84	0.91	0.867852	-0.24601
Mangalya Soft	0.011	0.003162	0.00001	0.01	0.02	0.01	3.162278	10
CLIO Infotech	0.038	0.045412	0.002062	0.04	0.14	-0.04	0.838592	3.170855
Ram Info	0.821	0.747268	0.55841	0.43	2.03	0.13	0.552057	-1.70186
Nihar Info Glob	0.157	0.090683	0.008223	0.12	0.29	0.06	0.76276	-1.33617
Virtual soft Sys	1.016	1.345248	1.809693	0.62	4.58	0.12	2.462172	6.565029
ABM Knowledge	1.477	0.426095	0.181557	1.51	2.03	0.78	-0.31475	-1.16502
Nucleus Soft	0.876	0.173282	0.030027	0.795	1.14	0.69	0.705178	-1.40691
B2B Soft. Tech	0.938	0.318601	0.101507	1.11	1.26	0.43	-0.55477	-1.70324
Advent Computer	0.022	0.014757	0.000218	0.02	0.06	0.01	2.167728	5.561745
CG-VAK Software	0.88	0.284136	0.080733	0.775	1.28	0.5	0.21339	-1.75107
Ace Soft	0.409	0.161276	0.02601	0.39	0.69	0.2	0.43047	-0.83336
Nimbus Foods	1.066	0.528629	0.279449	0.98	1.69	0.01	-0.59442	0.209711
Prithvi Softech	0.405	0.0538	0.002894	0.41	0.49	0.33	0.050839	-0.96364
Silicon Valley	0.487	1.141101	1.302112	0.3	2.82	-1.42	0.529625	1.408336
PFL Infotech	0.089	0.103113	0.010632	0.06	0.38	0.03	3.063044	9.546648
Panoramic Univ	0.218	0.056135	0.003151	0.205	0.33	0.14	0.782233	0.446478
IEC Education	0.198	0.106437	0.011329	0.18	0.35	0.05	0.19464	-1.47191
Twinstar Indus	1.693	1.02347	1.04749	1.35	3.26	0.49	0.441697	-1.30519
Polaris Consulta	1.855	0.537675	0.289094	1.59	2.89	1.49	1.697672	1.246118
Cybermate Info	0.248	0.266074	0.070796	0.14	0.96	0.08	2.548185	6.967443
Intense Tech	0.54	0.252631	0.063822	0.515	0.85	0.19	-0.10802	-1.66331
Danlaw Tech	0.349	0.098031	0.00961	0.34	0.5	0.22	0.157525	-1.66376
Cura Tech	0.177	0.097417	0.00949	0.17	0.31	0.07	0.106059	-2.04321
Softsol India	0.126	0.068993	0.00476	0.095	0.28	0.07	1.52535	1.648907
Subex	0.296	0.110172	0.012138	0.295	0.43	0.13	-0.34155	-1.23799
Virgo Global	0.057	0.034657	0.001201	0.045	0.15	0.03	2.557637	7.113617
Hit Kit Global	0.162	0.204277	0.041729	0.065	0.67	0.02	2.094887	4.301215
Kanika Infra	1.137	0.861717	0.742557	1.28	2.3	0.03	-0.11269	-1.55903
Virinchi	0.562	0.159151	0.025329	0.53	0.88	0.39	1.042179	0.39106
Firstobj. Tech	0.944	0.477172	0.227693	0.935	1.55	0.07	-0.43186	-0.56526
California Soft.	0.403	0.121568	0.014779	0.405	0.6	0.18	-0.16932	0.162912
Usha Mart. Edu.	0.25	0.251396	0.0632	0.155	0.62	0.01	0.732355	-1.37519
NIIT	0.97	0.311947	0.097311	1.03	1.48	0.43	-0.63903	0.657056

Birla Shloka	2.581	3.830528	14.67294	1.7	12.89	0.04	2.578378	7.241552
Jetking Info trai	1.249	0.684421	0.468432	0.935	2.45	0.55	0.75496	-1.01535
Compucom Soft	0.444	0.0667	0.004449	0.46	0.53	0.35	-0.2177	-1.60353
Aptech	0.577	0.193967	0.037623	0.525	0.94	0.37	0.790827	-0.43965

Table 3 shows equity multiplier characteristics of IT Consulting Software and Networking companies for the study period 2007 to 2016 it was found that equity multiplier mean varies between -0.792 to 5.415; standard deviation varies between 0.000422 to 10.86982; variance varies between 0.00 to 118.1529; median varies between -0.39 to 3.85; skewness varies between -1.03959 to 3.162278; kurtosis varies between -2.30003 to 10.

Table 3 *Equity Multiplier Statistical Characteristics of IT Software Products and Training Services Companies' from 2007 to 2016*

Company Name	Mean	Standard Deviation	Variance	Median	Max	Min	Skewness	Kurtosis
Tata Elxsi	1.16	0.151731	0.023022	1.135	1.47	1	0.984061	0.397611
TechnvisionVen	1.311	0.070309	0.004943	1.335	1.42	1.19	-0.48932	-0.34191
Genesys Intl	1.067	0.045959	0.002112	1.075	1.13	1	-0.27419	-1.08599
NetlinkSolns	1.007	0.011595	0.000134	1	1.03	1	1.261585	-0.06762
Pan India Corpor	1.012	0.015492	0.00024	1	1.03	1	0.484123	-2.27679
Cranes Software	1.871	10.86982	118.1529	2.185	27.88	-13.12	1.388821	3.812663
Avance Tech	1.144	0.328742	0.108071	1.015	2.07	1	3.044363	9.439428
CressandaSolns	2.833	4.34522	18.88093	1.285	15.08	1	3.051695	9.470902
Mindteck	1.053	0.093101	0.008668	1.01	1.31	1.01	2.838202	8.394357
R S Software	1.238	0.351119	0.123284	1.045	1.88	1.02	1.444571	0.428903
Elnet Technology	1.599	0.29282	0.085743	1.485	2.17	1.33	1.145604	0.156191
Trigyn Techno	1.0002	0.000422	1.78E-07	1	1.001	1	1.778781	1.40625
Kellton Tech	1.125	0.1596	0.025472	1.06	1.48	1	1.306666	1.493324
Mastek	1.037	0.03802	0.001446	1.03	1.1	1	0.440618	-1.40028
Svam Software	1.002	0.004216	1.78E-05	1	1.01	1	1.778781	1.40625
Datasoft Application	1.048	0.046857	0.002196	1.025	1.11	1	0.570586	-1.76546
BITS	1.028	0.04341	0.001884	1.005	1.11	1	1.381757	0.307338
Dion Global	4.465	3.700385	13.69285	2.65	11.7	1.37	0.952239	-0.2983
Odyssey Tech	1.519	0.872715	0.761632	1.2	3.76	1.01	2.341776	5.37828
Mangalya Soft	1.001	0.003162	0.00001	1	1.01	1	3.162278	10
CLIO Infotech	1.147	0.37789	0.142801	1.04	2.22	1	3.134829	9.872923
Ram Info	2.548	4.323118	18.68935	1.08	14.84	1.03	3.151007	9.947098
Nihar Info Glob	2.092	1.755922	3.083262	1.16	5.51	1.08	1.673372	1.179963
Virtualsoft Sys	-0.792	0.826677	0.683396	-0.39	-0.15	-2.17	-1.03959	-0.99262
ABM Knowledge	1.008	0.025298	0.00064	1	1.08	1	3.162278	10
Nucleus Soft	1.015	0.014337	0.000206	1.015	1.03	1	-2.9E-14	-2.24084
B2B Soft.Tech	1.007	0.012517	0.000157	1	1.04	1	2.405306	6.336416
Advent Computer	1.049	0.009944	9.89E-05	1.045	1.06	1.04	0.237277	-2.30003
CG-VAK Software	1.187	0.124191	0.015423	1.235	1.32	1.01	-0.36817	-1.78106
Ace Soft	0.882	0.043919	0.001929	0.885	0.96	0.81	0.363572	0.209805
Nimbus Foods	1.107	0.09464	0.008957	1.06	1.29	1.04	1.211635	-0.22881
PrithviSoftech	1.009	0.02846	0.00081	1	1.09	1	3.162278	10
Silicon Valley	1.205	0.283284	0.08025	1.12	2.01	1.08	3.143883	9.915915
PFL Infotech	1.017	0.018288	0.000334	1.015	1.04	1	0.144424	-2.26516
Panoramic Univ	1.58	0.168391	0.028356	1.565	1.95	1.37	1.077876	1.677489
IEC Education	1.088	0.050509	0.002551	1.075	1.21	1.05	1.795588	3.478335
Twinstar Indus	1.188	0.286232	0.081929	1.015	1.87	1	1.738437	3.007772

Polaris Consulta	1.023	0.045959	0.002112	1	1.11	1	1.759284	1.363124
Cybermate Info	1.037	0.023118	0.000534	1.035	1.09	1	1.06297	3.213327
Intense Tech	1.032	0.023944	0.000573	1.04	1.07	1	-0.3545	-0.78286
Danlaw Tech	1.039	0.056853	0.003232	1.005	1.15	1	1.244284	0.047006
Cura Tech	1.384	0.407273	0.165871	1.17	2.07	1	1.053489	-0.42503
Softsol India	1.014	0.012649	0.00016	1.02	1.03	1	-0.13176	-1.86756
Subex	2.837	0.814453	0.663334	2.86	3.82	1.25	-0.66533	-0.03529
Virgo Global	5.415	3.505894	12.29129	3.85	14.94	3.64	2.696311	7.629341
Hit Kit Global	1.0002	0.000422	1.78E-07	1	1.001	1	1.778781	1.40625
Kanika Infra	1.0002	0.000422	1.78E-07	1	1.001	1	1.778781	1.40625
Virinchi	1.151	0.068872	0.004743	1.165	1.29	1.06	0.542882	0.555461
Firstobj.Tech	1.028	0.023476	0.000551	1.025	1.06	1	0.234456	-1.61185
California Soft.	2.387	5.368553	28.82136	1.63	16.83	-2.71	2.5219	7.333148
Usha Mart. Edu.	1.031	0.056065	0.003143	1	1.17	1	2.066495	4.163574
NIIT	1.377	0.172243	0.029668	1.35	1.64	1.15	0.401341	-1.18783
Birla Shloka	1.264	0.303871	0.092338	1.205	2.09	1.03	2.651648	7.719231
JetkingInfotrai	1.071	0.070309	0.004943	1.065	1.23	1	1.260981	2.159609
Compucom Soft	1.38	0.223706	0.050044	1.375	1.69	1	-0.30556	-0.77751
Aptech	1.066	0.07905	0.006249	1.015	1.24	1.01	1.335967	1.232691

Table 4 shows return on equity characteristics of IT Consulting Software and Networking companies for the study period 2007 to 2017 it was found that return on equity mean varies between -2.1559 to 0.321; standard deviation varies between 0.00483 to 6.783116; variance varies between 0.000 to 46.01066; median varies between -0.14 to 0.34; skewness varies between -3.16167 to 2.819977; kurtosis varies between -1.61175 to 9.99719.

Table 4 *Return on Equity Statistical Characteristics of IT Software Products and Training Services Companies' from 2007 to 2016*

Company Name	Mean	Standard Deviation	Variance	Median	Max	Min	Skewness	Kurtosis
Tata Elxsi	0.321	0.136825	0.018721	0.34	0.56	0.11	0.055605	-0.42097
TechnvisionVen	0.0113	0.012588	0.000158	0.015	0.03	-0.01	-0.26256	-0.99438
Genesys Intl	0.183	0.162142	0.02629	0.115	0.44	0.02	0.502525	-1.61114
NetlinkSolns	0.07	0.096954	0.0094	0.02	0.25	-0.01	1.111887	-0.38626
Pan India Corpor	-0.1796	0.297142	0.088294	-0.01	0.001	-0.81	-1.41104	0.726795
Cranes Software	-0.583	2.546972	6.487068	0.19	1.49	-7.67	-2.89037	8.853956
Avance Tech	-0.0013	0.008097	6.56E-05	0.001	0.01	-0.02	-1.4832	2.997434
CressandaSolns	-2.1559	6.783116	46.01066	-0.01	0.09	-21.46	-3.16167	9.99719
Mindteck	0.043	0.03164	0.001001	0.035	0.1	0.01	0.629824	-0.72889
R S Software	0.259	0.121422	0.014743	0.3	0.44	0.04	-0.91743	0.655854
Elnet Technology	0.148	0.031552	0.000996	0.14	0.21	0.12	1.104667	0.083246
Trigyn Techno	0.1451	0.194868	0.037973	0.06	0.62	0.001	2.007921	3.788562
Kellton Tech	-0.06	0.332933	0.110844	0.055	0.13	-0.97	-2.74272	7.924375
Mastek	0.15	0.131487	0.017289	0.105	0.36	-0.01	0.609255	-1.00323
Svam Software	0.0111	0.007218	5.21E-05	0.01	0.03	0.001	2.108975	6.758043
Datasoft Application	0.043	0.018886	0.000357	0.05	0.06	0.01	-1.15798	0.172567
BITS	-0.052	0.146576	0.021484	0.005	0.01	-0.46	-2.93258	8.805546
Dion Global	-0.368	0.466328	0.217462	-0.14	-0.01	-1.21	-1.26849	0.187911
Odyssey Tech	-0.247	1.529743	2.340112	0.205	0.86	-4.43	-2.74887	7.956017
Mangalya Soft	0.013	0.00483	2.33E-05	0.01	0.02	0.01	1.035098	-1.22449
CLIO Infotech	0.012	0.04614	0.002129	0.01	0.12	-0.06	1.223021	3.597907
Ram Info	-1.8	3.856397	14.8718	0.025	0.16	-10.1	-1.84359	1.891382

Nihar Info Glob	-0.358	0.699314	0.48904	-0.035	0.07	-1.94	-1.85083	2.34609
Virtualsoft Sys	0.056	0.304018	0.092427	0.105	0.44	-0.74	-2.18759	6.4915
ABM Knowledge	0.246	0.081677	0.006671	0.235	0.4	0.12	0.377028	0.01346
Nucleus Soft	0.171	0.078238	0.006121	0.145	0.32	0.11	1.534104	0.93113
B2B Soft.Tech	-0.059	0.335409	0.112499	0.035	0.21	-0.96	-2.55059	7.184667
Advent Computer	0.0031	0.009457	8.94E-05	0.01	0.01	-0.01	-0.78536	-1.55679
CG-VAK Software	0.012	0.104541	0.010929	0.015	0.14	-0.19	-0.67471	-0.14205
Ace Soft	0.049	0.056657	0.00321	0.035	0.2	-0.01	2.443523	6.957013
Nimbus Foods	-0.179	0.643436	0.41401	0.02	0.04	-2.01	-3.16065	9.992458
PrithviSoftech	0.103	0.024967	0.000623	0.1	0.14	0.06	-0.05141	-0.57835
Silicon Valley	-0.439	1.091059	1.19041	-0.055	0.01	-3.5	-3.00995	9.216453
PFL Infotech	-0.069	0.388486	0.150921	0.025	0.28	-1.15	-2.87656	8.89344
Panoramic Univ	0.124	0.045265	0.002049	0.11	0.23	0.06	1.389874	3.184695
IEC Education	0.0261	0.026644	0.00071	0.015	0.06	-0.01	0.32277	-1.61175
Twinstar Indus	0.0302	0.054448	0.002965	0.01	0.18	0.001	2.819799	8.226204
Polaris Consulta	0.152	0.045898	0.002107	0.155	0.22	0.07	-0.48814	-0.03899
Cybermate Info	-0.494	1.543317	2.381827	0.01	0.15	-4.87	-3.11977	9.793995
Intense Tech	-0.03	0.176383	0.031111	0.015	0.21	-0.32	-0.42901	-1.02563
Danlaw Tech	-0.0298	0.154676	0.023925	0.001	0.08	-0.46	-2.89114	8.813448
Cura Tech	-0.0269	0.166421	0.027696	0.0105	0.1	-0.48	-2.67298	7.787759
Softsol India	0.0451	0.050948	0.002596	0.025	0.16	0.001	1.53646	1.898136
Subex	-0.027	0.215873	0.046601	-0.055	0.38	-0.39	0.404853	0.726299
Virgo Global	-0.267	0.770484	0.593646	0.02	0.08	-2.44	-3.05885	9.505039
Hit Kit Global	-0.0134	0.133837	0.017912	0.001	0.18	-0.36	-1.98667	6.432099
Kanika Infra	-0.0056	0.013705	0.000188	0.001	0.01	-0.03	-0.63891	-0.8322
Virinchi	0.05	0.036818	0.001356	0.045	0.14	0.02	1.853385	3.858611
Firstobj.Tech	0.0062	0.070093	0.004913	0.0055	0.1	-0.15	-1.1046	2.062426
California Soft.	-0.668	2.131295	4.542418	0.05	1.27	-6.17	-2.30238	5.61521
Usha Mart. Edu.	-0.0138	0.071101	0.005055	0.0055	0.08	-0.18	-1.51632	3.039643
NIIT	0.0562	0.096504	0.009313	0.085	0.2	-0.14	-0.71561	0.70567
Birla Shloka	0.028	0.04638	0.002151	0.04	0.11	-0.04	-0.01637	-0.34043
JetkingInfotrai	0.237	0.230846	0.05329	0.135	0.69	0.02	0.946675	-0.23728
Compucom Soft	0.096	0.029136	0.000849	0.095	0.13	0.05	-0.1779	-1.20845
Aptech	0.078	0.118397	0.014018	0.06	0.38	-0.08	1.941082	5.618293

Table 5 shows the r value with respect to correlation efficient for the ROE and the each factors of the DuPont model during the study period 2007 to 2016. Result shows that profit margin, asset turn over and operating income margin are positive correlation with ROE whereas equity multiplier and tax burden is slightly negative correlation with ROE.

Table 5 *Correlation Coefficient between ROE and DuPont Factors during the Study Period 2007 to 2016*

Year	Profit Margin	Asset Turn over	Equity Multiplier
2007	0.395556	-0.01328	-0.21949
2008	0.421931	0.133407	-0.42953
2009	0.611586	0.218869	-0.61558
2010	0.88946	0.334716	-0.11445
2011	0.388497	0.038545	-0.72298
2012	0.260936	-0.08045	-0.93468
2013	0.490114	0.172751	-0.97832
2014	-0.39197	0.136257	-0.60768
2015	0.465092	0.430103	-0.33136
2016	0.112665	0.218413	-0.38644

Table 6 shows the *p* value with respect to correlation efficient for the ROE and the each factors of the DuPont model. If the *p* value is less than 0.05 then we reject the null hypothesis and accept the alternate hypothesis. Result shows that in the year 2007 *p* value for asset turn over and equity multiplier is 0 hence we reject null hypothesis and accept alternate hypothesis i.e. there is a significant relationship between ROE, asset turn over and equity multiplier.

Table 6 *Correlation Coefficient p value between ROE and DuPont Factors during the Study Period 2007 to 2016*

Year	Profit Margin	Asset Turn over	Equity Multiplier
2007	0.074611	0	0.104
2008	0.303262	0	0.0009
2009	0.509379	0	0
2010	0.509379	0.000175	0.402
2011	0.608123	0.002218	0.000001
2012	0.769712	0.002921	0.000001
2013	0.714347	0.000489	0.000001
2014	0.883661	0	0.000001
2015	0.769712	0	0.012
2016	0.769712	0	0.0033

4. Summary and Conclusion

The study analyses characteristics of different groups of Indian IT companies and to ascertain the patterns of the ROE for Indian IT companies using the DuPont model. 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 there is a significant relationship between ROE and profit margin.
- Correlation coefficient analysis of IT software products and training companies shows *P* value is less than 0.05 Hence we are rejecting the null hypothesis and we are accepting the alternate hypothesis that there is a significant relationship between ROE and asset turn over.

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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