

Empirical Study of DuPont Model Parameters for Indian Information Technology Companies



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T Manjunatha

Visvesvaraya Technological University
(tmmanju87@gmail.com)

Information Technology (IT) consulting software and networking 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. We calculated return on equity using three factors DuPont model. The study shows that DuPont Model is significant for Indian IT consulting software and networking 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 companies.

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

1. Introduction

Managers are concerned about the financial returns of the companies' operations generate. Challenges for the managers include how to increase the financial return. If financial aspect is not streamlined then things may get out of the hand. One of the important models used by managers to analyse the financial performance is DuPont model. A company generates income from its operating and non-operating activities. Owners of business enterprises would be interested in translating the financial data into operating indicators to gaze the performance of the business. Managers and entrepreneurs can use financial data to know the direction of the organization. In case of DuPont model improvement can be concentrated in productive areas through a simple financial ratios rather than looking for cost, volume-profit charts. Computers provide a number of opportunities in order to process and manipulate data. Every calculated financial ratio is a piece of valuable information to the manager and entrepreneur. The financial ratio or the financial data is one of the vital tools for managers in order to evaluate their organization performance. But it is difficult for the Managers and Entrepreneurs that where exactly to spend management time to improve the performance of the organization. DuPont model system for financial analysis is a tool in order to evaluate easily and quickly business strengths and weakness, it also provides means for managers and entrepreneurs where to spend valuable management time to improve the performance of the organization. DuPont model is simple and systematic tool to evaluate the financial data and it provide means drill back the financial performance. In the public sector and private sector business there may be several of models will portray how these businesses are running. Out of these one of the model was created in the early 1900s that model name is DuPont model. It is a model for assessment of the profitability in an organization. DuPont model can also be used to analyse the risk. This DuPont model was created by F. Donaldson Brown when he was in General Motors. Since then DuPont model has been a vital tool for financial analysis. Surprisingly DuPont model is not been used in security community or impact analysis or risk prioritization. The original method of financial ratio with respect to DuPont model was developed in 1918 by an engineer at DuPont. He noticed that the product of ratios, net profit margin and asset turnover may lead to return on assets (ROA). Liesz (2002) said that for the financial statement analysis DuPont method is a very widely used because ROA is being affected by an organization performance. In the year 1970's financial analysis is focused on return on equity rather than return on asset. Two distinct versions of DuPont model have been created i.e. DuPont three factors model. The managers and entrepreneur use ROE to measure the profitability of the organization. Though there are many studies on financial statement analysis like Beaver (1977), Bird and McHugh (1977), Foster (1978), Bernstein (1989), Buckmaster and Saniga (1990), Garcia (1994), Mathur (2002); these have not focused on DuPont model. Further, we did not find studies that have used DuPont model for IT companies in Indian context. Information Technology companies are classified as Consulting software, Software Product, Networking Equipment and Training services. In this paper consulting software and networking equipment IT companies were taken for the study purpose. 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_0 : There is no significant relationship between ROE and profit margin.
- H_0 : 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 consulting software and networking 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 46 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

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

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 Consulting Software and Networking companies for the study period 2007 to 2016 it was found that mean varies between -12.102 to 0.327; standard deviation varies between 0.00483 to 23.05515; variance varies between 0.000233 to 531.54; median varies between -0.34 to 0.32; skewness varies between -3.11 to 2.46; kurtosis varies between -1.74 to 9.74.

Table 1 Net Profit Margin Statistical Characteristics of Consulting Software and Networking companies' from 2007 to 2016

Company Name	Mean	Standard Deviation	Variance	Median	Max	Min	Skewness	Kurtosis
Infosys	0.253	0.020575	0.000423	0.255	0.28	0.22	-0.12055	-1.08252
AGC Networks	-0.035	0.152625	0.023294	0.025	0.07	-0.44	-2.49427	6.615983
Zensar Tech	0.152	0.023944	0.000573	0.145	0.19	0.12	0.313226	-1.37246
Empower India	-0.0594	0.180223	0.03248	0.001	0.01	-0.57	-3.11125	9.748806
Wipro	0.172	0.023476	0.000551	0.175	0.2	0.13	-0.62092	-0.37012
Sterling Intl	0.141	0.069674	0.004854	0.125	0.27	0.05	0.577323	-0.35679
VamaInds	0.021	0.011005	0.000121	0.02	0.04	0.01	0.387645	-1.23583
Innovation Soft	-12.102	23.05515	531.54	-0.34	0.16	-73	-2.46822	6.409301
Onward Technolog	-0.01	0.145144	0.021067	0.02	0.14	-0.38	-2.1018	5.23047
Mphasis	0.181	0.04557	0.002077	0.17	0.26	0.12	0.55318	-0.57345
ASM Technologies	0.096	0.04402	0.001938	0.09	0.21	0.04	2.083984	6.083591
Info-Drive Software	0.168	0.176874	0.031284	0.105	0.48	0.02	0.929994	-0.8678
Aurum Soft	-0.149	0.681998	0.465121	0.005	0.52	-1.93	-2.27457	6.088907
Sparc Systems	-1.849	3.281001	10.76497	-0.13	0.04	-9.57	-1.95183	3.033047
Goldstone Tech	0.045	0.093956	0.008828	0.04	0.19	-0.13	-0.08239	0.60747
Starcom Info	0.074	0.344519	0.118693	0.055	0.59	-0.52	0.030774	-0.00156
Cat Tech	-0.103	0.341697	0.116757	-0.04	0.44	-0.63	-0.11994	-0.86668
Cyient	0.171	0.028067	0.000788	0.17	0.21	0.12	-0.69272	0.144204
Sonata Software	0.177	0.06913	0.004779	0.195	0.24	0.06	-0.99118	-0.2569
Accelya Kale	0.184	0.078344	0.006138	0.17	0.29	0.08	0.057328	-1.72493
HCL Technologies	0.251	0.072488	0.005254	0.235	0.35	0.16	0.222116	-1.74601

Geometric	0.127	0.043474	0.00189	0.12	0.2	0.06	0.284586	-0.58221
IZMO	0.062	0.086384	0.007462	0.04	0.25	-0.05	1.327867	1.770222
Commex Tech	-0.112	0.563596	0.31764	0.07	0.53	-0.95	-0.56212	-1.36211
Dynacons Sys	0.013	0.00483	2.33E-05	0.01	0.02	0.01	1.035098	-1.22449
Ramco Systems	-0.038	0.139666	0.019507	-0.01	0.13	-0.37	-1.53985	3.297664
KPIT Tech	0.141	0.028067	0.000788	0.135	0.19	0.1	0.5887	-0.31158
Oracle Fin.Serv	0.287	0.050783	0.002579	0.29	0.39	0.22	0.555882	0.852529
TCS	0.249	0.017288	0.000299	0.25	0.27	0.21	-1.09986	2.330814
NIIT Tech	0.182	0.077143	0.005951	0.155	0.35	0.11	1.591484	1.679815
3i infotech	-0.567	0.93095	0.866668	-0.29	0.21	-2.62	-1.34247	1.42954
SaskenComm.Tec	0.147	0.082469	0.006801	0.12	0.28	0.05	0.462607	-1.37097
FCS Software	-0.099	0.478643	0.229099	0.01	0.23	-1.44	-2.9724	9.183165
R S Software	0.086	0.05379	0.002893	0.085	0.18	0.01	0.318701	-0.87096
Tech Mahindra	0.126	0.05379	0.002893	0.13	0.22	0.02	-0.32384	1.156355
Mindtree	0.125	0.040893	0.001672	0.14	0.16	0.03	-1.73048	2.562403
QuintegraSoln	-1.17	2.092521	4.378644	-0.235	0.11	-6.37	-2.14422	4.325379
Allied Digital	0.085	0.086185	0.007428	0.085	0.2	-0.04	0.047514	-1.48022
TakeSolutions	0.327	0.123473	0.015246	0.32	0.52	0.18	0.309603	-1.50168
GSS Info	-0.201	1.287836	1.658521	0.115	0.6	-3.77	-2.86298	8.61456
SQS India BFSI	0.109	0.036347	0.001321	0.115	0.15	0.03	-1.06244	1.394175
Infinite Comp	0.194	0.053583	0.002871	0.205	0.27	0.09	-0.59108	0.020677
Persistent Sys	0.185	0.033082	0.001094	0.195	0.23	0.11	-1.24286	2.352643
Bharatiya Glob	0.0392	0.03289	0.001082	0.025	0.09	0.001	0.404951	-1.5058
Gemini Comm	-0.574	1.369762	1.876249	0.005	0.12	-4.19	-2.5197	6.392344
SmartlinkNetwr	0.128	0.185281	0.034329	0.085	0.62	-0.01	2.468846	6.683864

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 0.1085 to 5.614; standard deviation varies between 0.066675 to 11.385; variance varies between 0.004446 to 129.6219; median varies between 0.0055 to 2.79; skewness varies between -0.913 to 3.1427; kurtosis varies between -2.10498 to 9.906308.

Table 2 Asset Turnover Statistical Characteristics of Consulting Software and Networking Companies from 2007 to 2016

Company Name	Mean	Standard Deviation	Variance	Median	Max	Min	Skewness	Kurtosis
Infosys	1.112	0.07208	0.005196	1.095	1.21	1	0.190389	-1.07984
AGC Networks	1.885	0.822749	0.676917	1.63	3.88	1.09	1.775286	3.595593
Zensar Tech	1.58	0.142361	0.020267	1.625	1.72	1.33	-0.69175	-0.99554
Empower India	4.096	6.820927	46.52505	0.41	19.2	0.26	1.739198	1.901531
Wipro	1.141	0.141771	0.020099	1.115	1.47	0.99	1.479454	2.594328
Sterling Intl	0.1085	0.213094	0.045409	0.0055	0.62	0.001	2.060088	3.491823
VamaInds	1.634	0.750958	0.563938	1.37	3.12	0.89	0.834034	-0.19108
Innovation Soft	3.442	6.527965	42.61433	0.295	18.98	0.01	2.034235	3.316111
Onward Technolog	1.102	0.438958	0.192684	1.325	1.53	0.38	-0.913	-0.85451
Mphasis	1.112	0.393779	0.155062	1.15	1.61	0.36	-0.57538	-0.33936
ASM Technologies	2.016	0.571824	0.326982	2.045	2.77	0.86	-0.75663	0.451296
Info-Drive Software	0.205	0.072763	0.005294	0.205	0.29	0.11	0.007571	-1.83639
Aurum Soft	0.546	0.501003	0.251004	0.5	1.68	0.05	1.365605	2.166466
Sparc Systems	0.124	0.253035	0.064027	0.04	0.84	0.01	3.095701	9.683771
Goldstone Tech	0.484	0.225201	0.050716	0.4	1	0.31	1.866389	2.569723

Starcom Info	0.242	0.21254	0.045173	0.17	0.76	0.07	1.794296	3.688638
Cat Tech	0.174	0.194376	0.037782	0.095	0.69	0.06	2.506077	6.612931
Cyient	0.855	0.151236	0.022872	0.85	1.23	0.69	1.797194	4.411543
Sonata Software	1.018	0.205037	0.04204	1.08	1.37	0.75	0.109346	-0.97525
Accelya Kale	2.322	0.916149	0.839329	2.38	3.8	1.26	0.303305	-1.33162
HCL Technologies	1.061	0.234068	0.054788	1.065	1.48	0.66	0.039744	0.211017
Geometric	1.205	0.311243	0.096872	1.08	1.76	0.88	0.765485	-0.86363
IZMO	0.163	0.066675	0.004446	0.145	0.31	0.1	1.342297	1.459844
Commex Tech	0.163	0.11265	0.01269	0.16	0.34	0.02	0.399398	-0.84051
Dynacons Sys	2.078	0.934045	0.87244	2.115	3.66	0.85	0.259096	-0.70064
Ramco Systems	0.427	0.10089	0.010179	0.41	0.6	0.28	0.607753	-0.09345
KPIT Tech	1.003	0.481849	0.232179	0.84	2.24	0.61	2.233596	5.383561
Oracle Fin.Serv	0.685	0.286909	0.082317	0.6	1.21	0.44	1.408867	0.663546
TCS	1.612	0.125503	0.015751	1.57	1.87	1.5	0.960955	0.247629
NIIT Tech	1.301	0.224522	0.05041	1.285	1.8	0.97	0.93569	2.340284
3i infotech	0.252	0.135138	0.018262	0.24	0.52	0.1	0.730022	-0.05395
SaskenComm.Tec	1.091	0.200746	0.040299	1.02	1.45	0.84	0.929852	0.006151
FCS Software	0.333	0.370946	0.137601	0.145	1.01	0.06	1.20471	-0.30809
R S Software	2.899	1.264221	1.598254	2.79	4.97	0.86	0.20223	-0.39771
Tech Mahindra	1.651	0.779194	0.607143	1.475	2.99	0.91	0.87848	-0.78401
Mindtree	1.707	0.276045	0.076201	1.775	2.02	1.22	-0.88712	-0.43795
QuintegraSoln	2.565	6.58692	43.38752	0.395	21.28	0.2	3.142788	9.906308
Allied Digital	5.614	11.38516	129.6219	0.615	33.4	0.17	2.144834	3.905322
TakeSolutions	0.221	0.096431	0.009299	0.205	0.41	0.1	0.886883	0.449577
GSS Info	0.215	0.073824	0.00545	0.2	0.41	0.14	2.352894	6.581946
SQS India BFSI	1.979	0.640268	0.409943	2.01	3.08	0.93	-0.09573	-0.08524
Infinite Comp	0.908	0.185999	0.034596	0.815	1.23	0.72	0.817703	-0.79191
Persistent Sys	1.032	0.161713	0.026151	1	1.34	0.8	0.578934	0.195097
Bharatiya Glob	0.988	0.477931	0.228418	0.935	1.83	0.38	0.36148	-1.0295
Gemini Comm	0.734	0.447467	0.200227	0.695	1.74	0.2	1.268753	2.061226
SmartlinkNetwr	0.836	0.524239	0.274827	0.765	1.52	0.25	0.161608	-2.10498

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 0.692 to 156.332; standard deviation varies between 0.003162 to 592.9843; variance varies between 0.00 to 351630.3; median varies between -0.14 to 56.545; skewness varies between -2.75752 to 3.1622; kurtosis varies between -2.21508 to 10

Table 3 Equity Multiplier Statistical Characteristics of Consulting Software and Networking Companies from 2007 to 2016

Company Name	Mean	Standard Deviation	Variance	Median	Max	Min	Skewness	Kurtosis
Infosys	1.001	0.003162	0.00001	1	1.01	1	3.162278	10
AGC Networks	1.653	0.80836	0.653446	1.205	3.09	1	0.797847	-1.02285
Zensar Tech	1.023	0.023594	0.000557	1.02	1.08	1	1.582422	3.692085
Empower India	1.001	0.003162	0.00001	1	1.01	1	3.162278	10
Wipro	1.234	0.102762	0.01056	1.24	1.4	1.03	-0.4028	0.835203
Sterling Intl	1.086	0.171023	0.029249	1	1.41	1	1.765698	1.378276
VamaInds	1.18	0.180924	0.032733	1.105	1.47	1.01	0.739164	-1.07597
Innovation Soft	1.001	0.003162	0.00001	1	1.01	1	3.162278	10
Onward Technolog	1.625	0.308302	0.09505	1.465	2.21	1.35	1.196079	0.062028

Mphasis	1.028	0.033928	0.001151	1.01	1.08	1	0.769002	-1.31497
ASM Technologies	1.532	0.232513	0.054062	1.48	2.09	1.27	1.614721	3.437095
Info-Drive Software	1.298	0.464825	0.216062	1.095	2.57	1.05	2.757232	7.969974
Aurum Soft	1.013	0.018886	0.000357	1.005	1.06	1	1.934914	4.290206
Sparc Systems	1.056	0.039497	0.00156	1.08	1.11	1	-0.42576	-1.47232
Goldstone Tech	1.209	0.061364	0.003766	1.225	1.3	1.1	-0.63552	-0.00547
Starcom Info	6.378	9.906238	98.13355	1.005	32.47	1	2.420652	6.289286
Cat Tech	1.051	0.042544	0.00181	1.045	1.16	1.01	2.078009	5.464773
Cyient	1.035	0.017159	0.000294	1.03	1.06	1	-0.32987	1.416162
Sonata Software	1.039	0.08621	0.007432	1.01	1.28	1	2.965712	9.036879
Accelya Kale	0.903	0.267043	0.071312	0.885	1.53	0.54	1.328397	3.214708
HCL Technologies	1.115	0.101462	0.010294	1.1	1.28	1.01	0.467533	-1.36016
Geometric	1.043	0.034335	0.001179	1.045	1.11	1	0.505224	0.097058
IZMO	1.102	0.054528	0.002973	1.1	1.19	1.02	0.295852	-0.41709
Commex Tech	1.117	0.168394	0.028357	1.04	1.46	1	1.396193	0.609708
Dynacons Sys	1.585	0.361824	0.130917	1.6	2.27	1.11	0.390834	-0.06252
Ramco Systems	2.159	0.768352	0.590366	2.055	3.81	1.01	1.026524	1.779926
KPIT Tech	1.379	0.168289	0.028321	1.32	1.69	1.19	0.949458	-0.08641
Oracle Fin.Serv	1.01	0.011547	0.000133	1.01	1.03	1	1.082532	0.080357
TCS	1.011	0.008756	7.67E-05	1.01	1.02	1	-0.22345	-1.73373
NIIT Tech	1.039	0.031073	0.000966	1.04	1.09	1	0.143874	-1.16902
3i infotech	2.063	5.554698	30.85467	3.07	6.9	-13.22	-2.75752	8.330307
SaskenComm.Tec	1.00801	0.00918	8.43E-05	1.00505	1.02	1	0.473321	-1.80628
FCS Software	1.032	0.028983	0.00084	1.02	1.08	1	0.642144	-1.24676
R S Software	1.238	0.351119	0.123284	1.045	1.88	1.02	1.444571	0.428903
Tech Mahindra	1.286	0.246991	0.061004	1.2	1.74	1	0.632072	-0.81134
Mindtree	1.068	0.082839	0.006862	1.04	1.26	1	1.794978	2.671852
QuintegraSoln	0.692	1.604984	2.575973	-0.14	3.24	-1.58	0.457748	-1.13864
Allied Digital	156.332	592.9843	351630.3	56.545	1182.67	-1022.76	-0.14722	1.492468
TakeSolutions	1.211	0.414875	0.172121	1.08	2.37	1	2.953102	9.009235
GSS Info	1.024	0.025906	0.000671	1.02	1.06	1	0.166804	-2.21508
SQS India BFSI	1.046	0.068183	0.004649	1	1.18	1	1.172861	-0.13977
Infinite Comp	1.044	0.055015	0.003027	1.01	1.17	1.01	1.631909	2.071039
Persistent Sys	1.008	0.006325	0.00	1.01	1.02	1	0.131762	0.178571
Bharatiya Glob	1.073	0.167202	0.027957	1.065	1.27	0.68	-1.38537	3.035802
Gemini Comm	2.565	3.051456	9.311383	2.6	9.68	-1.5	1.168714	3.318543
SmartlinkNetwr	1.001	0.003162	0.00001	1	1.01	1	3.162278	10

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 -0.579 to 21.764; standard deviation varies between 0.008756 to 35.34898; variance varies between 0.0000767 to 1249.55; median varies between -0.05 to 8.075; skewness varies between -3.09933 to 2.909012; kurtosis varies between -1.90582 to 9.710068.

Table 4 Return on Equity Statistical Characteristics of Consulting Software and Networking Companies from 2007 to 2016

Company Name	Mean	Standard Deviation	Variance	Median	Max	Min	Skewness	Kurtosis
Infosys	0.282	0.037653	0.001418	0.27	0.34	0.24	0.664367	-1.34134
AGC Networks	-0.155	0.52863	0.27945	0.055	0.22	-1.55	-2.47902	6.391065
Zensar Tech	0.244	0.027968	0.000782	0.24	0.29	0.2	0.58965	0.324739

Empower India	-0.0026	0.059476	0.003537	0.001	0.08	-0.15	-1.64807	4.841805
Wipro	0.242	0.033267	0.001107	0.24	0.3	0.19	0.143963	-0.06664
Sterling Intl	0.036	0.054813	0.003004	0.01	0.14	0.01	1.778781	1.40625
VamaInds	0.031	0.008756	7.67E-05	0.03	0.05	0.02	1.017941	1.830948
Innovation Soft	-0.325	0.839792	0.70525	-0.05	0.23	-2.61	-2.71006	7.712698
Onward Technolog	-0.001	0.252166	0.063588	0.035	0.31	-0.59	-1.53028	2.939811
Mphasis	0.212	0.103473	0.010707	0.18	0.41	0.06	0.716071	0.23572
ASM Technologies	0.268	0.067297	0.004529	0.255	0.41	0.17	0.840604	1.235474
Info-Drive Software	0.043	0.044485	0.001979	0.02	0.13	0.01	1.256575	0.277162
Aurum Soft	-0.32	1.102129	1.214689	0.005	0.22	-3.44	-3.09933	9.710068
Sparc Systems	-0.039	0.065566	0.004299	-0.005	0.02	-0.19	-1.64733	2.363715
Goldstone Tech	0.045	0.090339	0.008161	0.02	0.23	-0.07	1.299848	1.228258
Starcom Info	-0.29	1.076558	1.158978	0.025	0.43	-3.31	-2.9934	9.236707
Cat Tech	0.032	0.116409	0.013551	-0.005	0.35	-0.04	2.736632	7.899183
Cyient	0.152	0.042374	0.001796	0.155	0.24	0.09	0.582245	1.282231
Sonata Software	0.196	0.095242	0.009071	0.2	0.33	0.05	-0.21633	-0.20712
Accelya Kale	0.467	0.39861	0.15889	0.25	1.09	0.1	0.542886	-1.80683
HCL Technologies	0.285	0.064334	0.004139	0.295	0.38	0.2	0.007824	-1.47853
Geometric	0.158	0.056332	0.003173	0.17	0.23	0.06	-0.51633	-0.96649
IZMO	0.015	0.028382	0.000806	0.01	0.09	-0.01	2.423802	6.502871
Commex Tech	-0.045	0.13032	0.016983	0.015	0.08	-0.28	-1.18998	-0.05359
Dynacons Sys	0.036	0.020656	0.000427	0.04	0.07	0.01	-0.08321	-0.95319
Ramco Systems	-0.032	0.105599	0.011151	-0.01	0.14	-0.22	-0.40477	-0.02891
KPIT Tech	0.188	0.077574	0.006018	0.165	0.37	0.12	1.552758	2.739797
Oracle Fin.Serv	0.196	0.073967	0.005471	0.165	0.35	0.14	1.552497	1.217541
TCS	0.405	0.034721	0.001206	0.4	0.47	0.35	0.348398	0.204343
NIIT Tech	0.237	0.080284	0.006446	0.215	0.37	0.14	0.905935	-0.37033
3i infotech	0.094	1.659325	2.75336	0	4.21	-2.51	1.561881	5.262689
SaskenComm.Tec	0.172	0.126122	0.015907	0.13	0.42	0.06	1.226696	0.378464
FCS Software	0.0154	0.084151	0.007081	0.001	0.24	-0.09	2.357305	7.277794
R S Software	0.259	0.121422	0.014743	0.3	0.44	0.04	-0.91743	0.655854
Tech Mahindra	0.237	0.122207	0.014934	0.225	0.52	0.07	1.270332	2.89275
Mindtree	0.223	0.072426	0.005246	0.24	0.32	0.06	-1.24449	2.186078
QuintegraSoln	0.243	0.709226	0.503001	0.07	2.17	-0.32	2.65208	7.709597
Allied Digital	21.764	35.34898	1249.55	8.075	104.23	-11.31	1.697945	2.683483
TakeSolutions	0.082	0.043153	0.001862	0.07	0.17	0.04	0.980571	0.236081
GSS Info	-0.032	0.290739	0.084529	0.025	0.25	-0.82	-2.59614	7.664012
SQS India BFSI	0.235	0.114431	0.013094	0.245	0.38	0.03	-0.48496	-0.73127
Infinite Comp	0.181	0.060636	0.003677	0.165	0.29	0.11	0.667679	-0.73713
Persistent Sys	0.19	0.031269	0.000978	0.18	0.25	0.15	0.844929	0.052963
Bharatiya Glob	0.0562	0.064822	0.004202	0.01	0.15	0.001	0.596035	-1.90582
Gemini Comm	-0.579	2.646962	7.00641	0.08	1.3	-8.03	-3.02585	9.429811
SmartlinkNetwr	0.141	0.258304	0.066721	0.075	0.86	-0.01	2.909012	8.833427

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.

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	0.03164	0.714452	0.996714
2008	0.028404	-0.04104	0.997429
2009	0.114277	0.978832	0.658691
2010	0.090298	-0.03414	0.999762
2011	-0.41343	0.014741	0.86259
2012	0.027232	0.484075	0.183474
2013	0.052316	0.201596	-0.99151
2014	0.150606	-0.01603	0.912829
2015	-0.0306	0.016087	0.090896
2016	0.518671	0.175995	0.077248

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	0.834609	0	0
2008	0.851326	0.786484	0
2009	0.449343	0	0
2010	0.550509	0.821733	0
2011	0.004209	0.922524	0
2012	0.857393	0.00063	0.22198
2013	0.7298	0.178809	0
2014	0.317526	0.915763	0
2015	0.839957	0.915473	0.547862
2016	0.000211	0.241739	0.609756

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 consulting software and networking equipment 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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