Extended DuPont Ratio Analysis of Indian Information Technology Companies

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Abstract

The economic development of the country depends on the development of adequate infrastructure facilities. 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. Analysts can obtain useful information by analyzing company's recent financial statements and comparing the results with other companies in the same sector. Traditional DuPont model is used to provide performance information based on DuPont profitability analysis. We test whether extended DuPont model can be used to measure the performance of Information Technology companies in Indian context. We use twenty five Indian information Technology Companies five year data and we have calculated return on equity (ROE) by using extended DuPont model. Empirical analysis of the study shows that return on equity is better in creating positive shareholders value and also we found that extended DuPont model can be used to measure the performance of Information Technology. This paper suggests that further study can conducted by using extended 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.

Key words: DuPont Analysis, Extended DuPont model, ROE, profit Margin Ratio, Asset turnover Ratio, equity multiplier

Introduction

Return on equity (ROE) is fairly representative index of performance evaluation, which comprehensively reflects operation level and financial position of enterprises. For more detailed analysis and evaluation of enterprise operational efficiency, DuPont analysis is proposed using the intrinsic link between the major indicators of financial ratios, forming an evaluation system that takes sales margin, asset turnover and equity multiplier as the core index. In practice, the system is widely applied for its strong operability, and achieved the goal to provide corporate financial position and operating results, and other information related to the target decision for investors, creditors and other stakeholders. The Three step Du Pont model became a standard in all financial management textbooks and a powerful tool to illustrate the interconnectedness of a firm's income statement and its balance sheet, and to develop straight-forward strategies for improving

the firm's ROE. However, Hawawini and Viallet (1999) offered yet another modification to the Du Pont model. This modification resulted in five different ratios that combine to form ROE. In their modification they concede that the financial statements firms put together for their annual reports are not always useful to managers making operating and financial decisions as indicated by Brigham and Houston (2001). Hawawini and Viallet (1999) restructured the traditional balance sheet into a "managerial balance sheet" which is "a more appropriate tool for assessing the contribution of operating decisions to the firm's financial performance." A more detailed explanation of the managerial balance sheet is illustrated as the five steps Du-Pont Model. The five steps du Pont model decomposes return on equity in to five ratios overcoming the shortcomings of the three step DuPont model. Nissim et al, (2001), Fairfield et al, (2001), Ross et al, (1996) shows the three-step DuPont Model provides driving force of the company's profit return on equity. Moyer et al, (2007), Ross et al, (2008) describe how a company boosts its ROE by improving its profitability; using its assets more efficiently and taking on additional leverage. Further, we did not find studies that have used DuPont model for IT companies in Indian context. However, companies that boost ROE by adding leverage will eventually reach a point where the cost of debt will diminish profit margins and decrease asset turnover. This observation is not captured by the three steps DuPont. Hence the five step DuPont model explains profitability as accruing from operating activities, efficiency, debts to assets (leverage), cost of funding (interest burden) and tax effect. 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.

Objectives and Methodology

Information technology development is an important pre-requisite for the development of an economy. Information technology projects have a small to medium gestation period and involve large capital. We have set following objectives based on the evidence Nissim and Penman (2001), Fairfield and Yohn (2001), Ross et al., (1996).

• To test whether Extended DuPont model can be used to measure the performance of Information Technology Companies.

• To test whether Indian Information Technology companies are able to generate positive return on equity for its shareholders.

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

• Ho: Performance of Information Technology companies in India is not explained by the Extended DuPont Model.

• Ho: Indian Information Technology Companies are not able to generate positive return on equity for its shareholders.

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.

Data and Sample:

This study was based on the listed 25 Information Technology companies in BSE India. In this study Information Technology companies chosen was Tata Elxsi, Cranes Software, Elnet Technology , Kellton Tech, D-Link India, STG Lifecare, Healthfore Tech, Accel Frontline, Ajel, Pagaria Ener, Infosys, AGC Networks, Zensar Tech, Empower India, Wipro, Sterling Intl, VamaInds, Innovation Soft, Onward Technology, Mphasis, ASM Technologies, Info-Drive Software, Aurum Soft, Sparc Systems, Goldstone Tech. For the study purpose we have taken five years financial statement viz 2011, 2012, 2013, 2014 and 2015 of 25 Information Technology companies. The annual data of the selected companies is obtained from the Capital Line. The collected data are used for calculating ROE.

Methodology:

This study proposes to ascertain the performance of Information Technology companies in India by using DuPont model. Lermack (2003) analyzed comparative analysis of financial performance of private sector companies. 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. Amir et al. (2011) shows there is a significant difference among profitability components. Blessing and Onoja (2015) agree that profitability, assets, liabilities and equities are significant ways of evaluating performance. We propose to analyse extended DuPont model for the information technology companies in India and also to analyse return of equity of the information technology companies in India. We have adopted methodology as done by Moyer et al., (2007), Ross et al., (2008). We calculated ROE using following model.

Five Step DuPont Analysis Model

ROE = (Tax Burden) x (Interest Burden) x (Operating Margin) x (Asset Turnover) x (Equity Multiplier) (1)

Where:

Operating margin shows operating efficiency

Asset turnover shows asset utilization efficiency

Equity multiplier shows financial leverage

Calculation has been done using Microsoft office Excel to calculate Return on equity using DuPont 5 factor models. The collected data has been further processed both manually and also with the help of computer software. Statistical analysis has been made using statistical package for social science (SPSS). We bring out the analysis to test the objectives and hypothesis. We have obtained return on equity by applying Extended DuPont model of the selected companies as shown in Table 1 and Table 6. We have to test whether Indian Information Technology companies are able to generate value for its shareholders and also to test the Extended DuPont model to measure the performance of Information Technology Companies. We bring out the following analysis to test the objectives and hypothesis.

Results and Analysis

The study analyze the extended DuPont model to know whether companies of information technology sectors have created positive return on equity for its shareholders . Therefore, we have analyzed five years data of selected companies. Main findings of the study are discussed in the following paragraphs.

Table 1: Tax Burden for Selected Information Technology Companies

Tax Burden	2011	2012	2013	2014	2015
Tata Elxsi	1.02	0.67	0.66	0.65	0.66
Cranes Software	0.96	0.3	0.96	0.52	0.45
Elnet Technology	0.64	0.66	0.67	0.68	0.66
Kellton Tech	1.01	1.03	0.88	1.01	0.87
D-Link India	0.68675	0.69772	0.67673	0.66667	0.65813
STG Lifecare	0.6667	1	1	1	1
Healthfore Tech	1	1	1	1	1
Accel Frontline	0.55965	0.48577	0.20101	0.19337	13.3036
Ajel	0.8938	0.5238	0.6047	0.76	1
Pagaria Ener	0.6	0.5	1	0.5	1
Infosys	0.73	0.73	0.74	0.73	0.72
AGC Networks	0.68	0.56	1.51	1	-0.16
Zensar Tech	1.03	0.69	0.71	0.73	0.72
Empower India	0.58	-1.4	1.02	1	-0.79
Wipro	0.85	0.79	0.78	0.77	0.78
Sterling Intl	0.7	0.76	0.75	0.67	0.77
VamaInds	0.96	0.85	0.7	0.89	0.51
Innovation Soft	1	2	1	1	1
Onward Technology	1	1.28	0.71	0.7	0.58
Mphasis	0.91	0.86	0.81	0.75	0.73
ASM Technologies	0.78	0.73	0.72	0.71	0.64
Info-Drive Software	1	0.7	1.41	0.56	1.18
Aurum Soft	1.61	0.7	0.36	1.01	0.82
Sparc Systems	0.5	0.67	1.17	0.96	0.96
Goldstone Tech	1.04	1.1	0.7	0.68	19

Table 1 shows the selected companies tax burden during the study period. Tax burden for Tata Elxsi ranges from 0.65 to 1.02; Cranes Software ranges from 0.3 to 0.96; Elnet Technology ranges from 0.64 to 0.68; Kellton Tech ranges from 0.87 to 1.03; D-Link India ranges from 0.65 to 0.69; STG Lifecare ranges from 0.66 to 1; Accel Frontline ranges from 0.19 to 13.3; Ajel ranges from 0.52 to 1.0.

Based on the above analysis it is observed that increase in the profit margin and asset turnover can increase the ROE of the company. Hence we accept alternate hypothesis that Indian information technology Companies performance are better explained by the extended DuPont model.

Table 2: Interest Burden for Selected Information Technology Companies

Interest Burden	2011	2012	2013	2014	2015
Tata Elxsi	0.61	0.68	0.53	0.75	0.86
Cranes Software	21.73	-2.46	2.01	2.88	-0.7
Elnet Technology	0.59	0.68	0.71	0.71	0.63
Kellton Tech	1.06	0.82	0.74	0.63	0.75
D-Link India	0.84264	0.85148	0.90828	0.89069	0.93752
STG Lifecare	0.1931	1.7328	2.451	1.2353	1.8806
Healthfore Tech	1.7386	8.4021	11.1113	10.9283	-6.2278
Accel Frontline	0.64443	0.5293	0.41619	0.33607	-0.027
Ajel	0.8626	0.5526	0.8377	0.6579	-1.1667
Pagaria Ener	0.3333	0.6667	0.25	0.5	0.1111
Infosys	0.92	0.94	0.93	0.93	0.95
AGC Networks	0.81	0.6	-0.55	1.36	0.07
Zensar Tech	0.76	0.84	0.86	0.89	0.88
Empower India	0.64	0.03	1.17	1.01	-0.27
Wipro	0.89	0.81	0.87	0.9	0.9
Sterling Intl	0.36	0.08	0.28	0.19	0.33
VamaInds	0.17	0.21	0.31	0.18	0.5
Innovation Soft	1	1	1.01	1.17	1.14
Onward Technology	0.43	0.56	0.5	0.61	0.31
Mphasis	0.9	0.89	0.86	0.89	0.94
ASM Technologies	0.8	0.8	0.8	0.8	0.7
Info-Drive Software	0.59	0.31	0.26	0.34	0.75
Aurum Soft	0.86	0.23	0.09	1.27	-0.11
Sparc Systems	-2	-1	1.17	1.32	1.01
Goldstone Tech	0.22	0.3	0.52	0.23	-0.04

Table 2 shows the selected companies Interest burden during the study period. Interest burden for Tata Elxsi ranges from 0.53 to 0.86; Cranes Software ranges from -2.46 to 21.73; Elnet Technology ranges from 0.59 to 0.71; Kellton Tech ranges from 0.63 to 1.06; D-Link India ranges from 0.84 to 0.9; STG Lifecare ranges from 0.19 to 2..4; Aurum Soft ranges from -0.11 to 1.27; Sparc Systems ranges from -2 to 1.32; Goldstone Tech ranges from -0.04 to 0.52. Based on the above analysis it is observed that increase in the profit margin and asset turnover can increase the ROE of the company. Hence we accept alternate hypothesis that Indian information technology Companies performance are better explained by the extended DuPont model.

Table 3: Operating Income Margin for Selected Information Technology Companies

Operating Income Margin	2011	2012	2013	2014	2015
Tata Elxsi	0.12	0.14	0.1	0.19	0.21
Cranes Software	-0.21	0.2	-3.4	-0.69	0.86
Elnet Technology	0.58	0.54	0.52	0.54	0.57
Kellton Tech	-5.01	0.21	0.28	0.18	0.24
D-Link India	0.04384	0.04966	0.05627	0.04505	0.05386
STG Lifecare	0.2936	-1.2083	-0.3446	9.2727	-67
Healthfore Tech	-0.4268	-0.1114	-0.1985	-0.2001	0.3129
Accel Frontline	0.05239	0.08394	0.10041	0.12603	0.06058
Ajel	0.3126	0.0579	0.1674	0.0812	0.0249
Pagaria Ener	0.0157	0.0162	0.0263	0.0247	0.052
Infosys	0.36	0.37	0.34	0.32	0.35
AGC Networks	0.08	0.07	0.04	-0.33	0.09
Zensar Tech	0.19	0.22	0.23	0.3	0.26
Empower India	0.01	0.01	-0.04	-0.56	0.01
Wipro	0.24	0.22	0.24	0.27	0.27
Sterling Intl	0.52	0.89	0.74	0.66	0.47
VamaInds	0.13	0.08	0.05	0.04	0.04
Innovation Soft	0.14	-0.33	-25.33	-12	-7
Onward Technology	0.18	0.19	0.15	0.17	0.11
Mphasis	0.31	0.29	0.25	0.24	0.24
ASM Technologies	0.17	0.17	0.17	0.16	0.16
Info-Drive Software	0.16	0.11	0.09	0.1	0.15
Aurum Soft	0.38	0.08	0.07	-0.31	0.09
Sparc Systems	0.13	0.18	-1	-1	-9.86
Goldstone Tech	0.19	0.2	0.2	0.24	0.16

Table 3 shows the selected companies operating income margin during the study period. Operating income margin for Tata Elxsi ranges from 0.1 to 0.21; Cranes Software ranges from -3.4 to 0.86; Elnet Technology ranges from 0.52 to 0.58; Kellton Tech ranges from -5.01 to 0.28; D-Link India ranges from 0.04 to 0.05; Healthfore Tech, ranges from -0.42 to 0.3; Accel Frontline ranges from 0.05 to 0.12; Ajel ranges from 0.02 to 0.1. Based on the above analysis it is observed that increase in the profit margin and asset turnover can increase the ROE of the company. Hence we accept alternate hypothesis that Indian information technology Companies performance are better explained by the extended DuPont model.

Table 4: Asset Turnover for Selected Information Technology Companies

Asset Turnover	2011	2012	2013	2014	2015
Tata Elxsi	1.95	2.26	2.4	3.28	2.9
Cranes Software	0.02	0.16	0.04	0.11	0.1
Elnet Technology	0.35	0.37	0.41	0.38	0.36
Kellton Tech	0.18	0.57	0.43	0.76	0.59
D-Link India	1.86652	3.06696	4.02677	4.90294	4.67465
STG Lifecare	0.2762	0.0395	0.0635	-0.0051	0.0005
Healthfore Tech	0.9743	0.3766	0.4883	0.4014	0.2364
Accel Frontline	2.44207	2.23296	1.62286	1.07589	1.16416
Ajel	0.3521	0.5141	0.6657	0.6729	0.3313
Pagaria Ener	1.2441	0.2457	0.2452	0.247	0.2657
Infosys	1.08	1.13	1.08	1.11	1.06
AGC Networks	1.09	1.83	1.35	1.3	1.42
Zensar Tech	1.58	1.72	1.67	1.46	1.4
Empower India	0.43	0.39	0.33	0.26	0.32
Wipro	1.02	1.1	1.13	1.18	1.07
Sterling Intl	0	0.01	0.01	0	0
VamaInds	1.17	1.57	2.05	2.21	3.12
Innovation Soft	0.55	0.02	0.03	0.01	0.01
Onward Technology	1.37	1.37	1.44	1.28	1.53
Mphasis	1.33	0.97	0.91	0.92	0.36
ASM Technologies	2.45	1.95	1.91	1.68	1.48
Info-Drive Software	0.22	0.29	0.25	0.15	0.12
Aurum Soft	0.05	0.57	0.53	0.47	0.4
Sparc Systems	0.03	0.03	0.08	0.04	0.02
Goldstone Tech	0.31	0.4	0.43	0.37	0.43

Table 4 shows the selected companies asset turn over during the study period. Asset turn over for Tata Elxsi ranges from 1.95 to 3.28; Cranes Software ranges from 0.02 to 0.16; Elnet Technology ranges from 0.35 to 0.41; Kellton Tech ranges from 0.18 to 0.76; D-Link India ranges from 1.8 to 4.9; STG Lifecare ranges from 0.00 to 0.27; Healthfore Tech, ranges from 0.2 to 0.9; Aurum Soft ranges from 0.57 to 0.05; Sparc Systems ranges from 0.08 to 0.02;

Goldstone Tech ranges from 0.31 to 0.4. Further we have found that there is no consistent growth in profit. Based on the above analysis it is observed that increase in the profit margin and asset turnover can increase the ROE of the company. Hence we accept alternate hypothesis that Indian information technology Companies performance are better explained by the extended DuPont model.

Table 5: Equity Multiplier for Selected Information Technology Companies

Equity Multiplier	2011	2012	2013	2014	2015
Tata Elxsi	1.18	1.22	1.33	1.02	1.04
Cranes Software	3.97	3.87	27.88	-13.12	-8.38
Elnet Technology	1.62	1.44	1.41	1.38	1.35
Kellton Tech	1.01	1.24	1.48	1.23	1.18
D-Link India	1.00292	1.00206	1.00363	1.03852	1.02105
STG Lifecare	2.14	2.3356	2.5492	2.737	3.2043
Healthfore Tech	-0.8566	-1.1106	-0.2481	-0.2336	-0.3409
Accel Frontline	1.31997	2.10274	2.15158	2.26675	2.57629
Ajel	1.1398	1.1568	1.2621	1.2277	1.1834
Pagaria Ener	1.2537	1.2304	1.0131	1.0719	1.0672
Infosys	1	1	1	1.01	1
AGC Networks	1.03	1.38	2.02	2.68	2.33
Zensar Tech	1.02	1.03	1.03	1.02	1.02
Empower India	1	1	1	1	1
Wipro	1.25	1.23	1.26	1.17	1.18
Sterling Intl	1	1.03	1.01	1	1
VamaInds	1.06	1.15	1.27	1.29	1.47
Innovation Soft	1	1	1	1	1
Onward Technology	1.78	1.64	1.46	1.47	1.35
Mphasis	1	1.08	1.08	1.01	1
ASM Technologies	1.27	1.44	1.44	1.52	1.56
Info-Drive Software	1.05	1.1	1.08	1.08	1.43
Aurum Soft	1	1.01	1.02	1.02	1.02
Sparc Systems	1.08	1.11	1.02	1.03	1
Goldstone Tech	1.3	1.1	1.12	1.23	1.24

Table 5 shows the selected companies equity multiplier during the study period. Equity multiplier for Tata Elxsi ranges from 1.02 to 1.33; Cranes Software ranges from -13.12 to 27.88; Elnet Technology ranges from 1.35 to 1.62; Kellton Tech ranges from 1.01 to 1.48; D-Link India ranges from 1.002 to 1.003; STG Lifecare ranges from 2.14 to 3.2; Aurum Soft ranges from 1.0 to 1.02; Sparc Systems ranges from 1.0 to 1.1; Goldstone Tech ranges from 1.1 to 1.3.

Based on the above analysis it is observed that increase in the profit margin and asset turnover can increase the ROE of the company. Hence we accept alternate hypothesis that Indian information technology Companies performance are better explained by the extended DuPont model.

Table 6: Return on equity for Selected Information Technology Companies

ROE	2011	2012	2013	2014	2015
Tata Elxsi	0.18	0.18	0.11	0.32	0.36
Cranes Software	-0.40	-0.09	-7.67	1.49	0.23
Elnet Technology	0.12	0.13	0.14	0.14	0.12
Kellton Tech	-0.97	0.13	0.12	0.11	0.11
D-Link India	0.047493	0.09066	0.139764	0.13620	0.158623
STG Lifecare	0.0223	-0.1933	-0.1368	-0.1601	-0.1826
Healthfore Tech	0.6193	0.3916	0.2672	0.2051	0.1571
Accel Frontline	0.060901	0.101338	0.029332	0.019974	-0.06533
Ajel	0.0967	0.0100	0.0712	0.0335	-0.0114
Pagaria Ener	0.004	0.001	0.001	0.001	0.001
Infosys	0.26	0.28	0.25	0.24	0.25
AGC Networks	0.05	0.06	-0.1	-1.55	0
Zensar Tech	0.24	0.23	0.24	0.29	0.24
Empower India	0.0001	0	-0.02	-0.15	0
Wipro	0.23	0.19	0.23	0.25	0.24
Sterling Intl	0.0	0.0	0.0001	0.0001	0.0002
VamaInds	0.03	0.03	0.03	0.02	0.05
Innovation Soft	0.08	-0.01	-0.68	-0.14	-0.09
Onward Technology	0.19	0.31	0.11	0.14	0.04
Mphasis	0.34	0.23	0.17	0.15	0.06
ASM Technologies	0.32	0.28	0.27	0.24	0.17
Info-Drive Software	0.02	0.01	0.01	0	0.02
Aurum Soft	0.03	0.01	0	-0.19	0
Sparc Systems	0	0.001	-0.11	-0.06	-0.19
Goldstone Tech	0.02	0.03	0.03	0.02	-0.07

Table 6 shows the selected companies return on equity during the study period. Return on equity for Tata Elxsi ranges from 0.11 to 0.36; Cranes Software ranges from -7.67 to 1.49; Elnet Technology ranges from 0.12 to 0.14; Kellton Tech ranges from -0.97 to 0.13; D-Link India ranges from 0.09 to 0.15; STG Lifecare ranges from -0.19 to 0.02; Healthfore Tech, ranges from 0.15 to 0.61; Accel Frontline ranges from -0.06 to 0.10; Ajel ranges from -0.01 to 0.09; Pagaria Ener ranges from 0.001 to 0.004; Infosys ranges from 0.24 to 0.28; AGC Networks ranges from -1.55 to 0.06; Zensar Tech ranges from 0.23 to 0.29; Empower India ranges from -0.15 to 0.001; Wipro ranges from 0.19 to 0.25; Sterling Intl ranges from 0.00 to 0.0002; VamaInds ranges from 0.02 to 0.05; Innovation Soft ranges from -0.68 to 0.08;   Onward Technology ranges from -0.04 to 0.31; Mphasis ranges from 0.06 to 0.34; ASM Technologies ranges from 0.17to 0.32; Info-Drive Software ranges from 0.00 to 0.02; Aurum Soft ranges from -0.19 to 0.03; Sparc Systems ranges from -0.19 to 0.0001; Goldstone Tech ranges from -0.07 to 0.03. Further we have found that there is no consistent growth in profit. We reject null hypothesis and accept alternate hypothesis that Indian Information Technology Companies are able to generate positive return on equity for its shareholders.

4. Summary and Conclusion

This paper has attempted to test Indian Information Technology companies able to generate positive return on equity for its shareholders by using the extended DuPont model and further to test extended DuPont model can be used to measure the performance of Information Technology Companies. The overall conclusions of this study are summarized as follows:

Ø   The analysis of return on equity from the table 1 – 6 shows that increase in the operating income margin and asset turn over it reflects positively on the return on equity. We reject null hypothesis and accept alternate hypothesis that Performance of Indian Information Technology Companies explained by the extended DuPont model.

Ø   The analysis of return on equity from the table 6 shows positive for all the selected companies during the study period. We reject null hypothesis and accept alternate hypothesis that Indian Information Technology Companies are able to generate positive return on equity for its shareholders.

The results of the study can be used by Indian Information Technology companies by knowing the factors affecting return on equity with DuPont model to become more successful in the competitive world. The results of the study can be used by investment advisors, policy makers and regulators of the IT companies to create conducive investment environment by understanding factors affecting return on equity. The results of the study can be used by Indian IT companies by knowing the factors affecting return on equity with DuPont model to become more successful in the competitive world. 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 and also results of the study can be compared with other foreign IT companies and also with startup IT companies to understand how Indian information technology companies are operating and how well it can generate revenue.

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