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## Is M and A an Approach to Corporate Sustenance?

## Vinod M. Lakhwani<sup>1</sup> Swati Tiwari<sup>2</sup> and Sangeeta Jauhari<sup>3</sup>

<sup>1</sup>Faculty Member, ICFAI Business School, Ahmedabad

<sup>2</sup>Corporate Trainer and Consultant, Catchup Consultant Pvt. Ltd., Bhopal

<sup>3</sup> HOD Management, AISECT University, Bhopal

### ABSTRACT

Corporates always foster for the growth of the business by either internal or external expansion. Although both the routes have different ways and means but the end destination is same –growth. Mergers and Acquisitions (popularly known as M&A) is one of the techniques amongst inorganic growth that has been put to use worldwide by many business entities. The magnitude of M&A's further increased in the post liberalization era where the companies were faced to deal with global competitors along with their age old local rivals. The current paper examines the effect of M&A in the long run by calculating and comparing ROA as per Du Pont framework for six years each – before and after merger on the sample of 21 companies that belongs to Construction Materials, Hotels and Tourism, Machinery and Textiles that have been acquired and merged with the acquirers in the F.Y. 2004-2005, 2005-2006 and 2006 -2007. The results obtained depicted the mixed effect of M&A on the all three ratios and was company specific rather than beingany sectorspecific. Afterwards ARIMAmodel was applied to the post-merger data on ten years to forecast the future values of all the ratiosand find out whether M&A is an approachto corporate sustenance.

Keywords : Mergers and Acquisitions, ROA, Du Pont Framework.

### **1. INTRODUCTION**

To cope up with today's competitive and ever changing world, business organizations design and put to action various strategies to achieve growth, improve profitability, gain competitive advantage and achieving cost benefits. Mergers and Acquisitions (M&A) is one of such strategies that has been popular and accepted worldwide by many players in the several sectors to achieve these challenging and tough tasks. M&A is a three stage process which divides into– before M&A, during M&A and after M&A. Once the firm decides

to walk on this path to fuel growth engine, it has to pass through all three phases. The first level includes selection of a right target, due diligence, deal finalization, second stage deals with seeking approval from shareholders and other regulatory authorities and last stage is to start with integration process. Once all this is done, the next stage is to assess whether the acquirer has been able to build synergies throughout the process or not. And whether the benefits derived from such synergies will be immediate one or take substantial time. Although many has opted for this route of inorganic growth but the success ratio is quite low.

Thus the present study has been conducted to seek the answers of the above mentioned question by studying the financial performance of the companies in pre and post M&A scenario by computing the three ratios - return on assets, net profit margin and asset turnover ratio as per Du Pont framework.

#### 2. LITERATURE REVIEW

Chari (2006) applied event study as well as accounting ratios method to the selected12 companies from the time frame of 1999 – 2005 acquisitions deals in order to assess the success or failure of M&A. Based on the event study results it was deduced that shareholders of the target companies benefited immediately because of high premium paid by the acquirer for buying the company and acquirer companies' shareholders reap abnormal returns within the time frame of two years. As per accounting ratios, ROCE and RONW were improved. However only half of the companies were able to take advantage of cost reduction and made better use of fixed assets.

Herciu,Ogrean and Belascu (2011) computed ROS, ROA and ROE as per Du Pont framework to top 20 most profitable companies in the world in 2009 as per Fortune and found that all these firms will have different ranking when rated as per above mentioned parameters and henceforth every time absolute measures will not be pertinent.

Verma & Sharma (2012) has examined the impact of M&A on financial performance of Tata group companies by taking sample of 24 out of 45 external deals that took place from 2003 - 04 to2007 - 08. They computed and compared current, working capital, return on net worth, return on investment and debt - equity ratio over a period of six year -three years prior merger and three years' post-merger. They applied paired two sample t - test to validate the data statistically and found that there was no significance difference in the ratios.

Leepsa and Mishra (2013) conducted their study specific to Indian manufacturing sectors by selecting the deals during 2003-2004 to 2006-2007. They computed liquidity, profitability and solvency ratios and compared the effect with pre and post-merger taking the time frame of three years for each. Their research findings were that M&A impact were reflected in the immediate years categorically in event and the first year after M&A.

### **3. OBJECTIVE OF THE STUDY**

As mentioned above, the objective the study is to gauge the financial performance of the companies in the long run by comparing the before and after merger profitability and efficiency ratios of the acquirers. Keeping in view the objectives, the following hypothesis have been formulated:-

- $H_0$  = There is no significant effect onReturn on Assets (ROA) before and after M&A.
- $H_1$  = There is significant effect on Return on Assets (ROA) before and after M&A.
- $H_0$  = There is no significant effect onNet Profit Margin (NPM) before and after M&A.
- $H_1$  = There is significant effect onNet Profit Margin (NPM) before and after M&A.
- $H_0$  = There is no significant effect on Asset Turnover Ratio (ATR) before and after M&A.
- $H_1$  = There is significant effect on Asset Turnover Ratio (ATR) before and after M&A.

**Data Collection and Methodology Applied :** The present study is solely based on secondary data. Detailed information about M&A deals that have taken place in F.Y. 2004-2005, 2005-2006 and 2005-2006 along with their sectors has been extracted from Prowess – Centre For Monitoring Indian Economics (CMIE) Database. In order to have fair results, companies where M&A has taken place between holding - subsidiary and they are into such relationship since the beginning has been dropped. Also After studying 453 deals for all three years, a sample of 21 companies comprising of 4 sectors namely construction materials, hotels and tourism, machinery and textiles been selected for the purpose of study. The sectors selected form a bouquet of service industry and manufacturing industry in which recently the government has taken various initiatives for promoting tourism, infrastructure and making India as self-dependent economy and a place of global manufacturing hub.

S. No	Main Sector of the Acquirer	Name of the Acquirer	Name of the Target	Main Sector of the Target	Year of Merger
			Jaipur Polyspin Ltd.		2004-2005
	K S W M Ltd.	Mordi Textiles & Processors Ltd.	Textiles	2005-2006	
		Spentex Industries Ltd.	C L C Global Ltd.	Wholesale and Retail Trading	2004-2005
1.	Textiles		Indo Rama Textiles Ltd.	Textiles	2006-2007
		Welspun India Ltd.	Glofame Cotspin Inds. Ltd.	Textiles	2004-2005
		Pioneer Embroideries Ltd.	Crystal Lace (India) Ltd.	Textiles	2006-2007

 Table 18.1

 List of companies along with sectors finalized for the study

S. No	Main Sector of the Acquirer	Name of the Acquirer	Name of the Target	Main Sector of the Target	Year of Merger
		Akar Tools Ltd.	Ajanta Auto Inds. Pvt. Ltd.	Transport Equipment	
		Forbes & Co. Ltd.	F A L Industries Ltd.	Consumer Goods	
2.	Machinery	Lakshmi Machine Works Ltd.	Jeetstex Engineering Ltd.	Machinery	2005-2006
		Universal Cables Ltd.	Optic Fibre Goa Ltd.	Miscellaneous Manufacturing	
		H M T Ltd.	Praga Tools Ltd.	Machinery	
		Thermax Ltd.	Thermax Babcock & Wilcox Ltd.	Machinery	
		H I L Ltd.	Malabar Building Products Ltd.	Construction Materials	2005 2006
		Century Plyboards (India) Ltd.	Shyam Century Ferrous Ltd.	Shyam CenturyMetals andFerrous Ltd.Metals Products	
3.	Construction Materials	A C C Ltd.	Tarmac (India) Pvt. Ltd.	Construction Materials	
	Wateriais	Chettinad Cement Corpn. Ltd.	High-Tech Lime Products Ltd. Sabari Cements (Chennai) Ltd.	Construction Materials	2006-2007
		India Cements Ltd.	Visaka Cement Industry Ltd.	Construction Materials	
		Kamat Hotels (India) Ltd.	Himco (India) Ltd.	Hotels and Tou <del>r</del> ism	
		E I H Associated Hotels Ltd.	Indus Hotel Corpn. Ltd.	Hotels and Tourism	2005-2006
4.	Hotels and Tourism	Hotel Leelaventure Ltd.	Kovalam Hotels Ltd.	Hotels and Tourism	
		Indian Hotels Co. Ltd.	Taj Lands End Ltd.	Hotels and Tourism	2006 2007
		Taj G V K Hotels & Resorts Ltd.	Sri Tripurasundari Hotels Ltd.	Hotels and Tourism	2000-2007
		Thomas Cook (India) Ltd.	L K P Forex Ltd.	Other Financial Services	

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Further financial data with respect to sales, net profit and total assets for computing ratios were also taken from Prowess – Centre For Monitoring Indian Economics (CMIE) Database. Total data for sixteen years were collected in which six years was for before and ten years subsequent to merger. Out of this, six years for each pre and post-merger duration was used for comparing ratios and ten years in total after merger for forecasting. F.Y. 2004-2005 financial data was collected from F.Y. 1998 - 1999 to F.Y. 2003 – 2004 for pre-merger and from F.Y. 2005-2006 to F.Y. 2010 – 2011 for post-merger period. Similarly for M&A Deals of F.Y. 2005 - 2006 financial data was collected from F.Y. 1999 - 2000 to F.Y. 2004 – 2005 for pre-merger and from F.Y. 2006 - 2007 to F.Y. 2011 – 2012 for post-merger period and for M&A Deals of F.Y. 2007 - 2008 to F.Y. 2012 – 2013 for post-merger period. The term of six years were chosen as the data for pre-merger period was available in the Prowess for aforesaid time limit only.

Moving further, all three ratios were calculated and with the help of mean, standard deviation and coefficient of variation the values of all three ratios wereanalyzed in order to find the impact of M&A on the firms. Also paired t test were applied at 5% to check the significant effect. At last Autoregressive Integrated Moving Average (ARIMA) technique has been deployed to forecast the values of all three ratios for five years (i.e. 2016-2020) of the companies that have notable impact of M&A in either way.

**Du Pont Framework of calculating Return on Assets (ROA):** In 1920s, Du Pont took over General Motors and F. Donaldson Brown who joined Du Pont – the company as an explosive salesman in 1909 and later on transferred to company's finance sectionwas given the charge of treasurer of General Motors. The task assigned to him was of cleaning up the tumultuous finance of sick auto manufacturing company.While working on same, he came across that by multiplication of two ratios - Net Profit Margin (NPM) with Asset Turnover Ratio (ATR), leads to Return on Assets (ROA). Hence forth, this model gained popularity after the company's name and is known as Du Pont analysis.

Return on Assets (ROA) depicts the profit (in %)earned by the company with respect to assets being deployed into the business. Net Profit Margin (NPM) explains the net income earned by the company after deducting interest and other expenses in relation to total sales made during a specific year. Asset Turnover Ratio (ATR) shows the firm's efficiency in utilizing assets to generate sales.





#### 4. RESULTS AND ANALYSIS

#### 4.1. Impact on Return on Assets

Looking at the mean values of ROA (Table 18.2) it is observed that out of 4 firms catering to textile sectors, only 2 firms' ROA has improved after merger. Also both the firms have registered low standard deviation values (Table 18.3) but the coefficient of variation (Table 18.4) is higher in one firm and lesser in other subsequent to merger. This shows that along with the increased returns, there is stability in terms of profitability following the merger. The remaining 2 firms' post-merger ROA has dropped and their standard deviation as well as coefficient of variation values has moved up reflecting that not only their returns has been hit after M&A but the variability is also being noticed in the earnings. From the companies that belongs to machinery sector, the ROA of 4 firms have become better and for rest 2 it has fallen down. With respect to former, 2 firms have the high and 2 firms have the low standard deviation values. All these four firms have registered with low coefficient of variation values after merger. This represents the fact that undoubtedly the performance of these players has enhanced subsequent to merger but when it comes to variability the outcome is different as few have steadiness and few have fluctuations in returns. In case of latter,1 firm has no impact on standard deviation whereas the standard deviation value of other firm has seen surge. The coefficient of variation values of both the firms has been on higher side after M&A. This depicts that with lesser returns, firms do have divergence too. Out of 5companies that represents construction material industry, mean value of ROA of all the firms has boosted after merger. Also the standard deviation values has gone high but the coefficient variation value of 4 firms has plunged and only 1 firm has on higher side. This signifies that with improvement in profitability there exists volatility as well. From the 6 companies that constitutes hotel and tourism sector, the mean value of ROA of 4 firms has fallen following the merger. Contrast to that there is rise in standard deviation of 3 firms and fall in standard deviation of 1 firm but the coefficient of variation values of all firms has seen upswing. This manifest that after M&A along with drop these players has also facing instability in the earnings. From the remaining 2 firms who have higher ROA, one firm has low values in both - standard deviation and coefficient of variation whereas the second one has high values in standard deviation and coefficient of variation too. This proffer the mixed results that on one side M&A along with growth gives firmness in returns and at times it do have unsteadiness too.

From machinery industry, the ROA of Lakshmi Machine Works Ltd. has significantly improved and that of Forbes & Co. Ltd. has notably decreased subsequent to merger. H I L Ltd. and India Cements Ltd. are two firms belonging to construction materials whose ROA has significantly improved following the merger. From hotel and tourism sector, the ROA of E I H Associated Hotels Ltd. is significant enhanced and ROA of Thomas Cook (India) Limited has significantly gone downafter M&A (Table 18.5).

Effect on Net Profit Margin: From the mean values of NPM (Table 18.2) it is found that from 4 companies that represent textile sector, 2 companies NPM has dropped and for 2 companies it has been escalated after merger. The firms who have experienced dip in NPM average values, seen rise in standard deviation (Table III) as well as coefficient of variation values (Table IV). Howbeit out of the firms whose performance have become better post-merger, both has low values of standard deviation but in case of coefficient of variation, for one it has shoot up and for rest it has come down. This is tandem with earlier results of ROA that with surge in profitability the firms are also able to control the fluctuation and for those players who are not benefited from M&A are also exposed to variability in margins. Machinery sector has equal distribution where in the margins have become better for 3 firms and for rest 3 it has decreased

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subsequent to merger. With respect to former, the 2 firms have high and 1 firm has low standard deviation values with low coefficient of variation values for all three. This replicates the mix batch of firms that along with advancement some have unsteadiness and some have firmness in margins. Similarly in case of latter, one firm has low values, one has high values and one has low as well as high values in standard deviation and coefficient of variation respectively. This forms bunch of companies that have divergence and at the same time stabilization in profits with lesser margins. All 5 companies that constitutes construction material sector have indicated growth in profit margins subsequent to merger. Out of this, the standard deviation and coefficient of variation values of 1 firm has increased, for 2 firms thestandard deviation values have gone up but the coefficient of variationvalues have fallen down. For rest 2 firms the two values i.e. standard deviation and coefficient of variation has decreased. This delineate that though all firms have better margins but few have stationary in it. Among the players from hotel and tourism industry, profitability of 4 firms and 2 firms has enhanced and fallen following the mergerrespectively. Out of these 4 firms, 3 have high standard deviation and coefficient of variation values too and only 1 firm have both the values in downtrend. This portray that majority of the firms who have better results in terms of margins after merger at the same time they have come across the anomaly also. Remaining 2 firms, whose profitability has decreased after merger do have standard deviation on lower side but coefficient of variation on higher side exhibiting the fact that these firms loose on one count but gain on other i.e. M&A hinder the margins but brings the stability into it.

Thus the enterprises with significant fall in NPM after M&A are Pioneer Embroideries Ltd. from textile industry and Thomas Cook (India) Ltd. from hotel and tourism industry. The firms whose NPM has improved after M&A are Lakshmi Machine Works Ltd. from machinery sector, H I L Ltd. and India Cements Ltd. from construction material industry and E I H Associated Hotels Ltd. from hotel and tourism industry (Table 18.6).

### 4.2. Influence on Assets Turnover Ratio

The mean values of ATR (Table 18.2) shows that from 4 firms which are representing textiles industry, 3 firms have seen dip in ATR and one firm ATR has improved after merger. Out of 3 firms the standard deviation (Table III) and coefficient of variation values (Table IV) of 2 firms have been scaled up and for 1 firm it has scaled down. The firm with higher mean value of ATR do have similar results in standard deviation and coefficient of variation too. This describes that maximum number of firms were utilizing assets efficiently before merger and the deviation was also less during that period of time. Out of 6 firms from machinery industry, the efficiency of 4 firms has become better and for 2 firms it has decreased subsequent to merger. From the firms who have recorded with improvement in ATR, the standard deviation along with coefficient of variation of 2 firms have gone down, for 1 firm there is upside swing in both the values and for 1 firm the standard deviation value is high whereas coefficient of variation value is low. Rest 2 firms having sink in ATR is equally distributed with one having standard deviation and coefficient of variation values high and other one with lo values. This unfolds that there is combination of firms as for few M&A has been advantageous and for few it has detrimental but with respect to stability it differs from one firm to other. Construction material sector that composed of 5 firms, have 4 companies and one company whose ATR has enhanced and declined after merger respectively. With reference to former the standard deviation and coefficient of variation values of 2 players has reduced, in 1 company there is surge in both the values and for 1 firm standard deviation is on higher end whereas coefficient of variation

is on lower side. The only firm with dip in mean value of ATR have same pattern in standard deviation and coefficient of variation too. Thus it can be said that with increase in efficiency variability also exists but its degree varies in each firm. The 6 companies that belongs to hotel and tourism sector, 4 firms have experienced downfall in the turnover ratios and only 2 firms have better turnover ratios in comparison to pre-merger period. Each firm having boom in efficiency have different outcome with respect to standard deviation and coefficient of variation values. One found with spurt and other with reduction in both. From the 4 firms whose efficiency has been affected adversely, 3 firms have found with growth in standard deviation and coefficient of variation of values as well and only single firm has low standard deviation but high coefficient of variation of values. This limn that handful of firms have been benefited from M&A when it comes to efficiency.

R S W M Ltd. and Pioneer Embroideries Ltd. from textile sector, Forbes & Co. Ltd. from machinery industry and Thomas Cook (India) Ltd. from hotel and tourism sector are the firms whose efficiency has significantly dropped after M&A. Akar Tools Ltd. and Thermax Ltd. from machinery industry, H I L Ltd., Chettinad Cement Corpn. Ltd. and India Cements Ltd. from construction material industry andE I H Associated Hotels Ltd. from hotel and tourism industry are the players registered with noteworthy increment in efficiency subsequent to merger. (Table 18.7).

#### 4.3. Forecasting using ARIMA model

For the 8 companies that have significantly affected after M&A, forecasting was done for all three ratios and it was found for Pioneer Embroideries Ltd., (Table 18.8)a company from textile sector all three ratios has shown a sign of betterment in the future. Similar results were observed with respect to Lakshmi Machine Works Ltd. (Table 18.10) from machinery sector and in E I H Associated Hotels Ltd. (Table 18.14) from hotel and tourism sector. Contrast results were seen in H I L Ltd. (Table 18.12) of machinery sector and Thomas Cook (India) Ltd. (Table 18.15) of hotel and tourism sector where there was fall in all three values in future. Two companies from machinery sector - Akar Tools Ltd. (Table VIII) and Thermax Ltd. (Table 18.11) have different outcome. In former ATR depicted sign of strength and in latter NPM promised growth in future. India Cements Ltd.(Table 18.13) from construction material industry too have continued with higher ATR in future.

#### 5. DISCUSSION

The results found were company specific where in the effect of M&A was differ on each company. RS W M Ltd. and Pioneer Embroideries Ltd. both have significant impact of merger with fall in ATR. Akar Tools Ltd. and Thermax Ltd. has noteworthy influence of M&A with improvement in efficiency whereas merger has affected Forbes & Co. Ltd. with remarkable fall in ATR. Lakshmi Machine Works Ltd. has been benefited from M&A where in ROA and NPM have become better after M&A. For H I L Ltd.,India Cements Ltd. and E I H Associated Hotels Ltd. M&A has proven a boon as all three firms have registered growth in all three ratios subsequent to merger. Thomas Cook (India) Ltd. has not been able to reap the fruits of M&A as all three ratios have fallen significantly after merger.

### 5.1. Epilogue

The current research work was undertaken to assess the impact of M&A in long run and to find out whether this strategy is an approach to corporate sustenance or not. The findings painted a picture showing that companies and not the sectors do get rewarded from M&A in the long run and they are the ones who become sustainable through this strategy. To add on further the results were also aligned with Du Pont framework which says ROA is product of NPM and ATR and change in any one ratio will affect other.

### 5.2. Direction for Future Work

The present study has been conducted to study the long term effect of M&A on financial performance of the companies with the help of Du Pont ROA framework. It further can be extended to various other models suggested by Du Pont like ROI or ROE. Researchers can also study other variables like liquidity, solvency, and profitability by computing different set of ratios. The study can be widen by incorporating more sectors and also quantitative model can be developed to find out the factors other than M&A that affects the performance of the companies.

		Return	n on Assets	Net Pro	fit Margin	Asset Turnover Ratio	
Sectors	Company Name	Pre- Merger Mean	Post-Merger Mean	Pre- Merger Mean	Post-Merger Mean	Pre-Merger Mean	Post-Merger Mean
	RSWM Limited*	2.3300	2.0083	2.1317	1.7717	1.1033	1.0267
		2.4867	1.2533	2.1200	1.1500	1.1733	1.0133
Textiles	Spentex Industries	-8.2433	-1.6283	-9.4150	-2.0000	0.8467	1.0333
	Limited#	-5.6517	-7.3600	-7.1367	-5.7083	1.0933	1.2800
	Welspun India Limited	-3.1400	1.3383	-3.7617	2.7533	0.6600	0.5733
	Pioneer Embroideries Limited	8.1250	-4.4233	8.5217	-6.1083	0.9367	0.4867
	Akar Tools Limited	2.8850	2.3717	3.1667	1.9300	0.9867	1.2217
	Forbes & Co. Limited	3.5433	-1.9350	4.4083	-4.5100	0.7917	0.5517
	H M T Limited	-4.7533	-3.0483	-8.2983	-26.8017	0.3083	0.1183
Machinery	Lakshmi Machine Works Limited	4.7817	9.2283	4.4683	7.8283	1.1183	1.1650
	Thermax Limited	4.3550	8.6467	5.6317	7.5867	0.7800	1.1183
	Universal Cables Limited	-1.1583	3.2233	-1.1667	2.5367	1.0267	1.3467

Table 18.2Pre and Post Mean Values of All Three Ratios

		Return	on Assets	Net Proj	fit Margin	Asset Turnover Ratio	
Sectors	Company Name	Pre- Merger Mean	Post-Merger Mean	Pre- Merger Mean	Post-Merger Mean	Pre-Merger Mean	Post-Merger Mean
	Century Plyboards (India) Limited	6.2317	8.9383	3.9150	6.0233	1.6200	1.5200
Construction Materials	H I L Limited	-0.7750	9.1300	-1.0867	6.1100	1.0267	1.4733
	A C C Limited	5.4617	13.1233	6.1883	14.2217	0.9117	0.9183
	Chettinad Cement Corporation Limited%	1.8517	5.7550	2.0150	6.4600	0.6500	0.8717
	India Cements Limited	-1.0867	4.4783	-3.5750	8.1717	0.4015	0.5450
	E I H Associated Hotels Limited	-2.5900	2.7183	-11.1700	6.7933	0.2483	0.3967
	Kamat Hotels (India) Limited	1.1433	1.9667	4.1467	7.4200	0.2550	0.2133
Hotel and	Hotel Leela Ventures Limited	1.5483	0.4050	10.8600	1.9617	0.1233	0.1000
Tourism	Indian Hotels Company Limited	4.3183	2.7883	12.6650	7.9900	0.3267	0.2850
	Taj G V K Hotels and Resorts Limited	8.5167	8.4417	15.5933	16.2000	0.5333	0.4833
	Thomas Cook (India) Limited	9.0583	4.7767	19.1450	13.2800	0.4700	0.3567

\* This company has done acquisitions in F.Y. 2004 - 2005 and 2005 - 2006 respectively.

<sup>#</sup>This company has done acquisitions in F.Y. 2005 - 2006and 2006 - 2007respectively.

<sup>%</sup>This company has done two acquisitions in F.Y.2006 - 2007.

		Return d	Return on Assets		t Margin	Asset Turnover Ratio	
Sectors	Company Name	Pre-Merger Mean	Post-Merger Mean	Pre-Merger Mean	Post- Merger Mean	Pre- Merger Mean	Post- Merger Mean
		0.9634	3.9080	0.7516	3.7337	0.2369	0.1790
	KSWM Limited*	0.9400	4.0415	0.7475	3.8606	0.1718	0.1621
Textiles	Spentex Industries	8.1297	5.6022	8.7075	5.5778	0.0650	0.1582
	Limited#	10.6356	14.3028	10.8123	9.0491	0.5123	0.3781
	Welspun India Limited	8.6099	2.5883	11.5622	4.0375	0.1239	0.1248
	Pioneer Embroideries Limited	2.3813	6.9344	1.11291	11.4143	0.1557	0.2000
	Akar Tools Limited	1.2341	1.2368	2.0583	1.0010	0.1770	0.1264
	Forbes & Co. Limited	2.1017	4.5386	2.3834	9.8123	0.0462	0.1049
Machinery	H M T Limited	11.8452	3.0048	17.9903	25.4842	0.2154	0.0147
	Lakshmi Machine Works Limited	2.6507	3.0755	2.2848	1.4246	0.3244	0.2374
	Thermax Limited	3.4145	2.6597	4.4096	1.6112	0.1211	0.2002
	Universal Cables Limited	1.7676	3.5070	1.6500	2.6988	0.1015	0.1240
	Century Plyboards (India) Limited	1.8522	4.1397	1.3524	2.9891	0.14464	0.1017
	H I L Limited	2.4873	5.2622	2.4147	3.3152	0.1988	0.1013
Construction Materials	A C C Limited	3.5745	4.4147	4.6653	3.7393	0.0986	0.1426
	Chettinad Cement Corporation Limited%	3.1147	4.3888	4.4561	4.9817	0.1908	0.1126
	India Cements Limited	3.1903	3.3021	8.7829	5.9406	0.0696	0.0339

## Table 18.3Pre and Post Standard Deviation Values of All Three Ratios

		Return d	on Assets	Net Profi	t Margin	Asset Turnover Ratio	
Sectors	Company Name	Pre-Merger Mean	Post-Merger Mean	Pre-Merger Mean	Post- Merger Mean	Pre- Merger Mean	Post- Merger Mean
	E I H Associated Hotels Limited	1.4567	0.8152	6.4829	1.8063	0.0519	0.0326
	Kamat Hotels (India) Limited	1.0641	2.5083	3.7199	8.5665	0.0288	0.0612
Hotel and Tou <del>r</del> ism	Hotel Leela Ventures Limited	1.4114	3.8593	9.1269	35.6637	0.0377	0.0316
	Indian Hotels Company Limited	3.1903	3.3021	8.7829	5.9406	0.0696	0.0339
	Taj G V K Hotels and Resorts Limited	3.9253	5.8601	5.5723	8.3018	0.0561	0.1013
	Thomas Cook (India) Limited	2.1037	1.3353	3.2686	2.8014	0.0513	0.0683

# Table 18.4Pre and Post Coefficient of Variation Values of All Three Ratios

		Return d	on Assets	Net Prof.	it Margin	Asset Turnover Ratio	
Sectors	Company Name	Pre-Merger Mean	Post-Merger Mean	Pre-Merger Mean	Post-Merger tttMean	Pre-Merger Mean	Post-Merger Mean
		41.29	194.69	35.23	210.85	21.57	17.36
	KS W M Limited"	37.76	323.08	35.23	336.08	14.65	16.08
	Spentex Industries Limited#	-98.62	-344.19	-92.47	-279.02	7.76	15.38
Textiles		-188.19	-194.33	-151.51	-158.53	46.91	29.66
	Welspun India Limited	-274.13	193.36	-307.33	146.55	18.69	21.59
	Pioneer Embroideries Limited	29.31	-156.72	13.04	-186.81	16.68	40.76

		Return d	on Assets	Net Profi	it Margin	Asset Turnover Ratio	
Sectors	Company Name	Pre-Merger Mean	Post-Merger Mean	Pre-Merger Mean	Post-Merger tttMean	Pre-Merger Mean	Post-Merger Mean
	Akar Tools Limited	42.84	52.29	65.01	51.88	18.07	10.37
	Forbes & Co. Limited	59.38	-234.32	54.10	-217.50	6.03	18.72
Machinery	H M T Limited	-249.24	-98.65	-216.79	-95.07	70.14	11.05
	Lakshmi Machine Works Limited	55.45	33.32	51.18	18.21	29.03	20.26
	Thermax Limited	78.36	30.75	78.34	21.24	15.68	17.83
	Universal Cables Limited	-152.45	108.77	-141.11	106.34	9.96	9.11
	Century Plyboards (India) Limited	29.74	46.30	34.55	49.61	8.95	6.77
	H I L Limited	-320.76	57.61	-222.31	54.28	19.35	6.75
Construction	A C C Limited	65.38	33.64	75.40	26.28	10.82	15.49
Materials	Chettinad Cement Corporation Limited%	168.17	76.28	221.20	77.07	29.32	13.24
	India Cements Limited	-293.54	73.76	-245.62	72.68	17.32	6.35
	E I H Associated Hotels Limited	-56.26	29.96	-58.02	26.62	20.63	8.12
	Kamat Hotels (India) Limited	93.11	127.51	89.76	115.44	11.90	28.22
Hotel and	Hotel Leela Ventures Limited	91.19	953.42	84.04	1817.08	30.49	31.62
Tourism	Indian Hotels Company Limited	46.43	158.07	31.25	152.65	18.08	31.68
	Taj G V K Hotels and Resorts Limited	46.08	69.41	35.73	51.24	10.66	21.37
	Thomas Cook (India) Limited	23.23	27.94	17.08	21.11	10.93	19.42

				Paired Diffe	rences				
Sectors		Mean	Std.	Std. Error	95% Confid the D	ence Interval of ifference	t	df	Sig.
			Deviation	Mean	Lower	Upper	-	-9	(2-tailed)
	Pair 1 RSWM Limited Post and	0.32167	3.12549	1.27598	-2.9583	3.60167	0.252	5	0.811
	Pre Merger*	1.2333	3.2850	1.3411	-2.2141	4.6807	0.920	5	0.400
	Pair 2 Spentex Industries	-6.6150	7.67911	3.1349	-14.6737	1.4437	-2.110	5	0.089
Textiles	Limited Post and Pre Merger#	1.7083	20.4527	8.3498	-19.7555	23.1721	0.205	5	0.846
	Pair 3 Welspun India Limited Post and Pre Merger	-4.4783	9.6610	3.9441	-14.6170	5.6603	-1.135	5	0.308
	Pair 4 Pioneer Embroideries Limited Post and Pre Merger	12.5483	8.1175	3.3139	4.0294	21.0671	3.786	5	0.013
	Pair 5 Akar Tools Limited Post and Pre Merger	0.5133	1.8560	0.7577	-1.4344	2.4611	0.677	5	0.528
	Pair 6 Forbes & Co. Limited Post and Pre Merger	5.4783	4.1038	1.6753	1.1716	9.7850	3.270	5	0.022
	Pair 7H M T Limited Post and Pre Merger	-1.7050	14.6629	5.9861	-17.0928	13.6828	-0.285	5	0.787
Machinery	Pair 8Lakshmi Machine Works Limited Post and Pre Merger	-4.4466	3.7100	1.5146	-8.3400	-0.5532	-2.936	5	0.032
	Pair 9Thermax Limited Post and Pre Merger	-4.2916	5.5629	2.2710	-10.1296	1.5463	-1.890	5	0.117
	Pair 10 Universal Cables Limited Post and Pre Merger	-4.3816	4.8535	1.9814	-9.4751	0.7117	-2.211	5	0.078

## Table 18.5Paired Sample Test Results for Return on Asset Ratio

		Paired Differences							
Sectors		Mean	Std. Deviation	Std. Error Mean	95% Confid the D	95% Confidence Interval of the Difference		df	Sig.
					Lower	Upper		5	(2-tailed)
Construction Materials	Pair 11Century Plyboards (India) Limited Post and Pre Merger	-2.7066	4.1876	1.7096	-7.1013	1.6880	-1.583	5	0.174
	Pair 12H I L Limited Post and Pre Merger	-9.9050	4.9599	2.0248	-15.1101	-4.6998	-4.892	5	0.005
	Pair 13 A C C Limited Post and Pre Merger	-7.6616	7.6225	3.1118	-15.6610	0.3376	-2.462	5	0.057
	Pair 14 Chettinad Cement Corporation Limited Post and Pre Merger %	-3.9033	4.4806	1.8292	-8.6054	0.7987	-2.134	5	0.086
	Pair 15 India Cements Limited Post and Pre Merger	-5.5650	3.9109	1.5966	-9.6692	-1.4607	-3.485	5	0.018
	Pair 16 EIH Associated Hotels Limited Post and Pre Merger	-5.30833	1.54916	.63244	-6.93408	-3.68259	-8.393	5	0.000
	Pair 17Kamat Hotels (India) Limited Post and Pre Merger	-0.8233	1.9907	0.8127	-2.9124	1.2657	-1.013	5	0.358
	Pair 18 Hotel Leela Ventures Limited Post and Pre Merger	1.1433	4.9791	2.0327	-4.0819	6.3685	0.562	5	0.598
Hotel and Tourism	Pair 19 Indian Hotels Company Limited Post and Pre Merger	1.5300	4.6794	1.9103	-3.3807	6.4407	0.801	5	0.460
	Pair 20Taj G V K Hotels and Resorts Limited Post and Pre Merger	0.0750	9.4570	3.8608	-9.8495	9.9995	0.019	5	0.985
	Pair 21Thomas Cook (India) LimitedPost and Pre Merger	4.2816	2.6972	1.1011	1.4510	7.1122	3.888	5	0.012

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	Paired Differences								
Sectors		Mean	Std. Deviation	Std. Error Mean	95% C Interva Diffe	onfidence al of the erence	t	df	Sig. (2-tailed)
					Lower	Upper			
	Pair 1 RSWM Limited Post and	0.3600	3.1065	1.2682	-2.9001	3.6201	0.284	5	0.788
	Pre Merger*	0.9700	3.3040	1.3488	-2.4974	4.4374	0.719	5	0.504
	Pair 2 Spentex Industries Limited	-7.4150	8.3069	3.3912	-16.1325	1.3025	-2.186	5	0.080
Textiles	Post and Pre Merger#	-1.4283	15.0959	6.1628	-17.2705	14.4138	-0.232	5	0.826
	Pair 3 Welspun India Limited Post and Pre Merger	-6.5150	13.6822	5.5857	-20.8736	7.8436	-1.166	5	0.296
	Pair 4 Pioneer Embroideries Limited Post and Pre Merger	14.6300	11.8571	4.8406	2.1866	27.0733	3.022	5	0.029
	Pair 5 Akar Tools Limited Post and Pre Merger	1.2366	2.3163	0.9456	-1.1941	3.6674	1.308	5	0.248
	Pair 6 Forbes & Co. Limited Post and Pre Merger	8.9183	9.2298	3.7680	-0.76776	18.6044	2.367	5	0.064
	Pair 7H M T Limited Post and Pre Merger	18.5033	41.9974	17.1453	-25.5703	62.5769	1.079	5	0.330
Machinery	Pair 8Lakshmi Machine Works Limited Post and Pre Merger	-3.3600	1.6678	0.6809	-5.1103	-1.6096	-4.935	5	0.004
	Pair 9Thermax Limited Post and Pre Merger	-1.9550	5.3339	2.1775	-7.5525	3.6425	-0.898	5	0.410
	Pair 10 Universal Cables Limited Post and Pre Merger	-3.7033	3.9941	1.6306	-7.8949	0.4882	-2.271	5	0.072

## Table 18.6Paired Sample Test Results for Net Profit Margin Ratio

			Pa	ired Difference	25				
Sectors		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Pair 11Century Plyboards (India) Limited Post and Pre Merger	-2.1083	3.0838	1.2589	-5.3446	0 <i>pper</i>	-1.675	5	0.155
	Pair 12H I L Limited Post and Pre Merger	-7.1966	3.0097	1.2287	-10.3552	-4.0381	-5.857	5	0.002
Construction Materials	Pair 13 A C C Limited Post and Pre Merger	-8.0333	8.2596	3.3719	-16.7012	0.6346	-2.382	5	0.063
Hotel and Tourism	Pair 14 Chettinad Cement Corporation Limited Post and Pre Merger %	-4.4450	5.0344	2.0553	-9.7283	0.8383	-2.163	5	0.083
	Pair 15 India Cements Limited Post and Pre Merger	-11.7466	9.3808	3.8297	-21.5913	-1.9020	-3.067	5	0.028
	Pair 16 EIH Associated Hotels Limited Post and Pre Merger	-17.9633	6.4279	2.6241	-24.7090	-11.2176	-6.845	5	0.001
	Pair 17Kamat Hotels (India) Limited Post and Pre Merger	-3.2733	7.2213	2.9481	-10.8516	4.3050	-1.110	5	0.317
	Pair 18 Hotel Leela Ventures Limited Post and Pre Merger	8.8983	42.7171	17.4392	-35.9306	53.7272	0.510	5	0.632
	Pair 19 Indian Hotels Company Limited Post and Pre Merger	4.6750	13.3675	5.4572	-9.3534	18.7034	0.857	5	0.431
	Pair 20Taj G V K Hotels and Resorts Limited Post and Pre Merger	-0.6066	13.7217	5.6018	-15.0067	13.7934	-0.108	5	0.918
	Pair 21Thomas Cook (India) LimitedPost and Pre Merger	5.8650	3.1240	1.2754	2.5864	9.1435	4.599	5	0.006

	Paired Differences									
Sectors		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the D <u>if</u> ference		t	df	Sig. (2-tailed)	
					Lower	Upper				
Textiles	Pair 1 RSWM Limited Post and Pre Merger*	0.0766	0.2860	0.1167	-0.2235	0.3768	0.657	5	0.541	
		0.1600	0.1190	0.0485	0.0351	0.2848	3.294	5	0.022	
	Pair 2 Spentex	-0.1866	0.2104	0.0858	-0.4074	0.0341	-2.173	5	0.082	
	and Pre Merger#	-0.1866	0.4328	0.1767	-0.6409	0.2675	-1.056	5	0.339	
	Pair 3 Welspun India Limited Post and Pre Merger	0.0866	0.1684	0.0687	-0.0901	0.2634	1.260	5	0.263	
	Pair 4 Pioneer Embroideries Limited Post and Pre Merger	0.4500	0.2939	0.1200	0.1415	0.7584	3.750	5	0.013	
	Pair 5 Akar Tools Limited Post and Pre Merger	-0.2350	0.0728	0.0297	-0.3114	-0.1585	-7.899	5	0.001	
	Pair 6 Forbes & Co. Limited Post and Pre Merger	0.2400	0.0779	0.0318	0.1581	0.3218	7.539	5	0.001	
Machinery	Pair 7H M T Limited Post and Pre Merger	0.1900	0.2132	0.0870	-0.0338	0.4138	2.182	5	0.081	
Machinery	Pair 8Lakshmi Machine Works Limited Post and Pre Merger	-0.0466	0.3948	0.1612	-0.4610	0.3677	-0.290	5	0.784	
	Pair 9Thermax Limited Post and Pre Merger	-0.3383	0.1792	0.0731	-0.5264	-0.1502	-4.623	5	0.006	
	Pair 10 Universal Cables Limited Post and Pre Merger	-0.3200	0.1099	0.0448	-0.4353	-0.2046	-7.132	5	0.001	

## Table 18.7Paired Sample Test Results for Asset Turnover Ratio

Sectors		Mean	Std. Deviation	Std. Error	95% C Intervo Diff	Confidence al of the Ference	t	df	Sig. (2-tailed)
				Iviean	Lower	Upper			
	Pair 11Century Plyboards (India) Limited Post and Pre Merger	0.1000	0.1739	0.0709	-0.0824	0.2824	1.409	5	0.218
Construction Materials	Pair 12H I L Limited Post and Pre Merger								
	Pair 13 A C C Limited Post and Pre Merger	-0.0066	0.2273	0.0928	-0.2452	0.2318	-0.072	5	0.946
	Pair 14 Chettinad Cement Corporation Limited Post and Pre Merger %	-0.2216	0.1282	0.0523	-0.3562	-0.0870	-4.233	5	0.008
	Pair 15 India Cements Limited Post and Pre Merger	-0.1450	0.0459	0.0187	-0.1932	-0.0967	-7.732	5	0.001
	Pair 16 EIH Associated Hotels Limited Post and Pre Merger	-0.1483	0.0256	0.0104	-0.1752	-0.1214	-14.179	5	0.000
Hotel and Tourism	Pair 17Kamat Hotels (India) Limited Post and Pre Merger	0.0416	0.0462	0.0188	-0.0068	0.0901	2.208	5	0.078
	Pair 18 Hotel Leela Ventures Limited Post and Pre Merger	0.0233	0.0531	0.0217	-0.0324	0.0791	1.075	5	0.331
	Pair 19 Indian Hotels Company Limited Post and Pre Merger	0.0416	0.0793	0.0324	-0.0416	0.1249	1.286	5	0.255
	Pair 20Taj G V K Hotels and Resorts Limited Post and Pre Merger	0.0500	0.1378	0.0562	00946	0.1946	0.889	5	0.415
	Pair 21Thomas Cook (India) LimitedPost and Pre Merger	0.1133	0.1065	0.0434	0.0015	0.2251	2.606	5	0.048

## Paired Differences

Model		2016	2017	2018	2019	2020
	Forecast	2.09	4.29	9.29	21.97	57.46
Asset Turnover Ratio (times)-Model_3	UCL	10.38	24.48	54.49	129.53	338.22
	LCL	.31	.52	1.08	2.55	6.67

Table 18.8 Forecasted Valuesfor Pioneer Embroideries Ltd

# Table 18.9Forecasted Values for Akar Tools Ltd.

Model	Model		2017	2018	2019	2020
	Forecast	1.40	1.22	1.06	.91	.78
Return on Assets	UCL	13.95	12.25	10.60	9.11	7.78
(//) _/	LCL	.05	.04	.04	.03	.03
	Forecast	.80	.65	.53	.42	.34
Net Profit Margin	UCL	7.42	6.09	4.93	3.94	3.12
(/0) 140del_2	LCL	.03	.03	.02	.02	.01
	Forecast	1.68	1.80	1.93	2.07	2.24
Asset Turnover Ratio	UCL	1.98	2.12	2.27	2.44	2.63
(unics)-woder_5	LCL	1.42	1.52	1.63	1.75	1.89

## Table 18.10 Forecasted Values for Lakshmi Machine Works Ltd

Model		2016	2017	2018	2019	2020
	Forecast	11.99	15.38	20.78	29.56	44.31
Return on Assets (%)-Model_1	UCL	23.98	30.68	41.51	59.05	88.48
	LCL	5.59	7.20	9.71	13.82	20.73
Net Profit Margin	Forecast	8.21	9.35	11.04	13.45	16.91
	UCL	14.08	16.12	19.02	23.16	29.10
())	LCL	4.59	5.21	6.15	7.49	9.43
	Forecast	1.44	1.64	1.89	2.20	2.63
Asset Turnover Ratio (times)-Model 3	UCL	2.61	3.11	3.61	4.22	5.03
	LCL	.76	.82	.93	1.08	1.29

Model		2016	2017	2018	2019	2020
	Forecast	6.92	6.74	6.60	6.48	6.40
Return on Assets (%)-Model_1	UCL	24.68	24.04	23.49	23.04	22.70
	LCL	1.51	1.47	1.44	1.42	1.40
	Forecast	6.88	7.11	7.37	7.73	8.19
Net Profit Margin (%)-Model 2	UCL	13.85	14.40	15.00	15.72	16.65
(/0) 1100001_2	LCL	3.19	3.27	3.37	3.54	3.75
	Forecast	.95	.89	.84	.79	.73
Asset Turnover Ratio (times)- Model 3	UCL	1.85	1.78	1.68	1.57	1.46
	LCL	.45	.42	.39	.37	.34

Table 18.11 Forecasted Value of Thermax Ltd

Table 18.12Forecasted Value of H I L Ltd.

Model		2016	2017	2018	2019	2020
	Forecast	8.73	7.30	6.07	4.95	3.94
Return on Assets (%)-Model_1	UCL	119.56	101.77	84.54	68.70	54.62
	LCL	.15	.12	.10	.08	.07
	Forecast	6.20	5.34	4.59	3.88	3.22
Net Profit Margin	UCL	78.02	68.82	59.12	49.85	41.27
(/0)-iviouci_2	LCL	.13	.11	.09	.08	.07
	Forecast	1.35	1.31	1.27	1.23	1.18
Asset Turnover Ratio (times)- Model 3	UCL	1.70	1.65	1.60	1.54	1.49
MOdel_5	LCL	1.06	1.03	1.00	.97	.93

# Table 18.13Forecasted Values for India Cements Ltd.

Model		2016	2017	2018	2019	2020
Asset Turnover Ratio (times)-Model_3	Forecast	.64	.68	.74	.81	.90
	UCL	.79	.86	.94	1.03	1.14
	LCL	.51	.54	.59	.64	.71

Model		2016	2017	2018	2019	2020
	Forecast	10.81	17.33	28.80	50.57	94.25
Return on Assets (%)-Model_1	UCL	34.73	59.01	98.88	173.78	323.56
	LCL	2.73	4.03	6.61	11.60	21.66
	Forecast	16.27	22.87	33.24	50.61	80.89
Net Profit Margin (%)-Model_2	UCL	40.80	59.00	85.98	130.84	208.90
	LCL	5.73	7.76	11.23	17.12	27.40
	Forecast	.64	.72	.82	.94	1.09
Asset Turnover Ratio (times)- Model 3	UCL	.89	1.02	1.17	1.34	1.55
houer_9	LCL	.46	.50	.57	.65	.76

Table 18.14 Forecasted Values of EIH Associated Hotels Ltd

Table 18.15Forecasted Values for Thomas Cook (India) Ltd.										
Model		2016	2017	2018	2019	2020				
Return on Assets (%)-Model_1	Forecast	1.30	.80	.44	.22	.10				
	UCL	6.36	4.36	2.41	1.20	.54				
	LCL	.20	.11	.06	.03	.01				
	Forecast	6.45	4.81	3.27	2.08	1.25				
Net Profit Margin	UCL	20.73	16.50	11.34	7.22	4.32				
(//) 1100001_2	LCL	1.72	1.18	.79	.51	.30				
Asset Turnover Ratio (times)-Model_3	Forecast	.19	.16	.12	.09	.07				
	UCL	.43	.35	.28	.21	.16				
	LCL	.08	.06	.05	.04	.03				

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