EVALUATION OF LONG-TERM FINANCIAL PERFORMANCE OF DOMESTIC ACQUISITIONS IN INDIA

ABSTRACT

THESIS

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Introduction

Organizations can grow by using the strategy of internal growth or external growth or a combination of these two strategies. Firstly, they can adopt the strategy of organic growth that is they establish their plant & machinery or expand their capacities etc. The benefit of such an approach is that the owner has complete control on the operations and expansion process. There are no problems of cultural fit, post merger integration, over payment etc. which are commonly found when organizations adopt the route of external growth through mergers & acquisitions. However the disadvantage of such an approach is that, it will be a time consuming process and in the meantime competitor may capture the market or the fast growth period of the industry/economy may be lost in capacity building.

Another approach to grow or expand at a faster pace is through inorganic growth that is to merge with or acquire another firm. M&A benefits the organizations in several ways. Few of the benefits of mergers and acquisitions are Expansion of capacity at a faster pace, Fast and easy entry in the new industry, Fast and easy entry in the new geographical market, To reduce the competition and increase market power, To achieve the consolidation in the industry, To acquire the key source of raw material/ components, For taxation purpose etc.

It has always been a matter to investigate whether M&A are fruitful exercises or they are the waste of capital and human effort and do not lead to value enhancement. Two main research approaches explain Mergers and Acquisition profitability. The event studies examine the abnormal returns to shareholders in the period surrounding the announcement of a merger or acquisition. The accounting studies examine the reported financial results of acquirers before and after the acquisitions to see how the financial performance changes, Kumar and Prabina Rajib (2007).
This research is motivated by the inquisitiveness to know, whether takeovers create real economic gains and can be considered as the rewarding strategy for corporate growth. Therefore, this study aims to examine long-term financial performance of domestic acquisitions. For this purpose combined post-merger performance of acquiring and target firms is compared with the combined pre-merger performance. The performance measures which are applied for this purpose includes profitability ratios, operating cash flows and economic value added.

Research Objectives

Based on the research gaps identified with the help of review of literature, following research objectives have been framed:

1. To examine the long term financial performance of select domestic mergers & acquisitions in India by applying profitability ratios, cash flow based ratios and Economic Value Added performance measures.

2. To analyze the impact of various merger characteristics on the post merger performance measures.

3. To analyze the performance of various subsamples created on the basis of several merger characteristics.

4. To analyze the performance of M&A for select industries, in order to find out whether M&A are more successful in few industries as compared to others.

5. To analyze the impact of acquirer's learning on M&A performance in case of multiple mergers and acquisitions by an acquirer.

Hypothesis to be tested

Hypotheses have been developed based on the objectives stated above. The hypotheses are categorized in three categories for which the statistical tools are applied to test them. These categories are given as follows:

1. M&A performance using five year mean values of performance measures in pre & post merger period by applying paired t-test.

3. Impact of several merger characteristics on post-merger performance using the regression analysis.

Hypothesis for each of these categories are stated as follows:

Category 1 - M&A performance based on mean value of measures:

H01 There is no significant variation in the value of combined ROA (weighted average ROA) between pre and post merger scenario.

H01.1 There is no significant variation in the value of raw ROA for combined firm, between pre and post merger scenario.

H01.2 There is no significant variation in the value of industry adjusted ROA for combined firm, between pre and post merger scenario.

H02 There is no significant variation in the value of combined ROE (weighted average ROA) between pre and post merger scenario.

H02.1 There is no significant variation in the value of raw ROE for combined firm, between pre and post merger scenario.

H02.2 There is no significant variation in the value of industry adjusted ROE for combined firm, between pre and post merger scenario.

H03 There is no significant variation in the value of combined Net Profit Margin (weighted average NP Margin) between pre and post merger scenario.

H03.1 There is no significant variation in the value of raw NP Margin for combined firm, between pre and post merger scenario.

H03.2 There is no significant variation in the value of industry adjusted NP Margin for combined firm, between pre and post merger scenario.
H04 There is no significant variation in the value of combined EPS (weighted average EPS) between pre and post merger scenario.

H04.1 There is no significant variation in the value of raw EPS for combined firm, between pre and post merger scenario.

H04.2 There is no significant variation in the value of industry adjusted EPS for combined firm, between pre and post merger scenario.

H05 There is no significant variation in the value of combined Cash Flows (weighted average Cash Flows) scaled by various parameters, between pre and post merger scenario.

H05.1 There is no significant variation in the value of raw “Cash Flows/Total Assets” for combined firm, between pre and post merger scenario.

H05.2 There is no significant variation in the value of industry adjusted “Cash Flows/Total Assets” for combined firm, between pre and post merger scenario.

H05.3 There is no significant variation in the value of raw “Cash Flows/Operating Assets” for combined firm, between pre and post merger scenario.

H05.4 There is no significant variation in the value of industry adjusted “Cash Flows/Operating Assets” for combined firm, between pre and post merger scenario.

H05.5 There is no significant variation in the value of raw “Cash Flows/Market Value of Assets” for combined firm, between pre and post merger scenario.

H05.6 There is no significant variation in the value of industry adjusted “Cash Flows/Market Value of Assets” for combined firm, between pre and post merger scenario.

H05.7 There is no significant variation in the value of raw “Cash Flows/Sales” for combined firm, between pre and post merger scenario.

H05.8 There is no significant variation in the value of industry adjusted “Cash Flows/Sales” for combined firm, between pre and post merger scenario.
H0. There is no significant variation in the value of combined Economic Value Added (weighted average EVA) scaled by various parameters, between pre and post merger scenario.

H0.1 There is no significant variation in the value of raw “EVA based on book value data” for combined firm, between pre and post merger scenario.

H0.2 There is no significant variation in the value of raw “EVA based on market value data” for combined firm, between pre and post merger scenario.

H0.3 There is no significant variation in the value of raw “EVA based on Gordon Growth Ke & market value data” for the combined firm, between pre and post merger scenario.

Category 2- M&A performance based on median value of measures:

H0. There is no significant variation in the value of combined ROA (weighted average ROA) between pre and post merger scenario.

H0.1 There is no significant variation in the value of raw ROA for combined firm, between pre and post merger scenario.

H0.2 There is no significant variation in the value of industry adjusted ROA for combined firm, between pre and post merger scenario.

H0.3 There is no significant variation in the value of combined ROE (weighted average ROA) between pre and post merger scenario.

H0.4 There is no significant variation in the value of raw ROE for combined firm, between pre and post merger scenario.

H0.5 There is no significant variation in the value of industry adjusted ROE for combined firm, between pre and post merger scenario.

H0.6 There is no significant variation in the value of combined Net Profit Margin (weighted average NP Margin) between pre and post merger scenario.
H0_{1.1} There is no significant variation in the value of raw NP Margin for combined firm, between pre and post merger scenario.

H0_{1.2} There is no significant variation in the value of industry adjusted NP Margin for combined firm, between pre and post merger scenario.

H0_{1.6} There is no significant variation in the value of combined EPS (weighted average EPS) between pre and post merger scenario.

H0_{1.10.1} There is no significant variation in the value of raw EPS for combined firm, between pre and post merger scenario.

H0_{1.10.2} There is no significant variation in the value of industry adjusted EPS for combined firm, between pre and post merger scenario.

H0_{1.11} There is no significant variation in the value of combined Cash Flows (weighted average Cash Flows) scaled by various parameters, between pre and post merger scenario.

H0_{11.1} There is no significant variation in the value of raw "Cash flows/Total Assets" for combined firm, between pre and post merger scenario.

H0_{11.2} There is no significant variation in the value of industry adjusted "Cash Flows/Total Assets" for combined firm, between pre and post merger scenario.

H0_{11.3} There is no significant variation in the value of raw "Cash Flows/Operating Assets" for combined firm, between pre and post merger scenario.

H0_{11.4} There is no significant variation in the value of industry adjusted "Cash Flows/Operating Assets" for combined firm, between pre and post merger scenario.

H0_{11.5} There is no significant variation in the value of raw "Cash Flows/Market Value of Assets" for combined firm, between pre and post merger scenario.

H0_{11.6} There is no significant variation in the value of industry adjusted "Cash Flows/Market Value of Assets" for combined firm, between pre and post merger scenario.
There is no significant variation in the value of raw “Cash Flows/Sales” for combined firm, between pre and post merger scenario.

There is no significant variation in the value of industry adjusted “Cash Flows/Sales” for combined firm, between pre and post merger scenario.

There is no significant variation in the value of combined Economic Value Added (weighted average EVA) scaled by various parameters, between pre and post merger scenario.

There is no significant variation in the value of raw “EVA based on book value data” for combined firm, between pre and post merger scenario.

There is no significant variation in the value of raw “EVA based on market value data” for combined firm, between pre and post merger scenario.

There is no significant variation in the value of raw “EVA based on Gordon Growth Ke & market value data” for the combined firm, between pre and post merger scenario.

Category 3- Impact of various merger characteristics on post merger performance measures:

There is no significant impact of various merger characteristics on the post merger combined ROA(weighted average ROA of acquirer and target).

There is no significant impact of various merger characteristics on the post merger raw ROA of combined firm.

There is no significant impact of various merger characteristics on the post merger industry adjusted ROA of combined firm.

There is no significant impact of various merger characteristics on the post merger combined ROE(weighted average ROE of acquirer and target).

There is no significant impact of various merger characteristics on the post merger raw ROE of combined firm.
There is no significant impact of various merger characteristics on the post merger industry adjusted ROE of combined firm.

There is no significant impact of various merger characteristics on the post merger combined NP Margin (weighted average NP Margin of acquirer and target).

There is no significant impact of various merger characteristics on the post merger raw NP margin of combined firm.

There is no significant impact of various merger characteristics on the post merger industry adjusted NP margin of combined firm.

There is no significant impact of various merger characteristics on the post merger combined EPS (weighted average EPS of acquirer and target).

There is no significant impact of various merger characteristics on the post merger raw EPS of combined firm.

There is no significant impact of various merger characteristics on the post merger industry adjusted EPS of combined firm.

There is no significant impact of various merger characteristics on the post merger combined Cash Flows (weighted average Cash Flows of acquirer and target) scaled by various parameters.

There is no significant impact of various merger characteristics on the post merger raw "Cash Flows/Total Assets" of combined firm.

There is no significant impact of various merger characteristics on the post merger industry adjusted "Cash Flows/Total Assets" of combined firm.

There is no significant impact of various merger characteristics on the post merger raw "Cash Flows/Operating Assets" of combined firm.

There is no significant impact of various merger characteristics on the post merger industry adjusted "Cash Flows/Operating Assets" of combined firm.
H0_{17,5} There is no significant impact of various merger characteristics on the post merger raw “Cash Flows/Market Value of Assets” of combined firm.

H0_{17,6} There is no significant impact of various merger characteristics on the post merger industry adjusted “Cash Flows/Market Value of Assets” of combined firm.

H0_{17,7} There is no significant impact of various merger characteristics on the post merger raw “Cash Flows/Sales” of combined firm.

H0_{17,8} There is no significant impact of various merger characteristics on the post merger industry adjusted “Cash Flows/Sales” of combined firm.

H0_{18} There is no significant impact of various merger characteristics on the post merger combined Economic Value Added (weighted average EVA of acquirer and target).

H0_{18,1} There is no significant impact of various merger characteristics on the post merger combined raw “EVA based on book value data” for combined firm.

H0_{18,2} There is no significant impact of various merger characteristics on the post merger combined raw “EVA based on market value data” for combined firm.

H0_{18,3} There is no significant impact of various merger characteristics on the post merger combined raw “EVA based on Gordon Growth Ke and market value data” for combined firm.

Methodology

For the purpose of this study, the mergers and acquisitions done during the period 1999 to 2007 are considered for evaluation. The performance of these deals is analyzed for the period 5 years prior to acquisition and 5 years after the acquisition. Only domestic mergers taking place in India are selected. For the purpose of this study list of domestic mergers and acquisitions is received from Economic Times Intelligence Group. The final sample size obtained is 67 domestic M&A deals.
Calculation of Financial Measures

For the evaluation of financial performance nineteen financial performance measures are calculated. These measures include the raw firm measures as well as industry adjusted measures.

Profitability Measures

i. Return on Assets (ROA) of the combined firm
ii. Industry Adjusted ROA for the combined firm
iii. Return on Equity (ROE) of the combined firm
iv. Industry Adjusted ROE for the combined firm
v. Net Profit Margin of the combined firm
vi. Industry Adjusted Net Profit Margin for the combined firm
vii. Earnings per Share (EPS) of the combined firm
viii. Industry Adjusted EPS for the combined firm

Cash Flow Measures

Cash flows from Operations are taken from CMIE Prowess data base which is calculated as per accounting standard AS-3. These CFFO are deflated/scale in 4 ways, by Net Sales, Total Assets, Operating Assets and Market Capitalization. They are deflated/scaled in order to make them comparable across the size i.e. to eliminate the impact of size. This is done because CFFO are absolute figure which is not comparable across the firms. By scaling the CFFO by above said parameters, they become comparable across the firms. Thus following eight cash flow measures are calculated

i. ‘CFFO/Total Assets’ of the combined firm
ii. Industry Adjusted ‘CFFO/Total Assets’ for the combined firm
iii. ‘CFFO/Operating Assets’ of the combined firm
iv. Industry Adjusted ‘CFFO/Operating Assets’ for the combined firm
v. ‘CFFO/Market Value of Assets’ of the combined firm
vi. Industry Adjusted ‘CFFO/Market Value of Assets’ for the combined firm
vii. ‘CFFO/Sales’ of the combined firm
viii. **Industry Adjusted ‘CFFO/Sales’ for the combined firm**

**Economic Value Added**

Economic Value Added is calculated in three ways where method of calculation differed based on the method of calculation of cost of equity $K_e$, weight of debt $W_d$, and weight of equity $W_e$ in the capital structure of sample firm. Therefore three EVA values are calculated for each combined firm. The following formulae were used for the calculation of EVA:

- **EVA** = NOPAT - ($WACC \times$ Capital Invested)

Where,

- **NOPAT** = EBIT*(1-T)
  - EBIT = PBT + Interest - Other Income
  - T (Tax Rate) = Provision for tax/Profit Before Tax
  - *Adjustments in the calculation of tax rate(T)*: Wherever $T$ was -ve value because of -ve value of PBT or very high value, it was converted to zero. This was done because the -ve or very high value of $T$ will lead to distorted value of EVA which may be extraordinarily low or high, respectively.

- **Capital Invested** = Net Fixed Assets + Current Assets - Current Liabilities
- **WACC** = $W_d \times K_d \times (1-T) + W_e \times K_e$
  - $K_d$ = Interest expense/Total Interest bearing liabilities
  - $K_e$, $W_d$, and $W_e$ are calculated in three ways:

  ➢ **Method I** $K_e = \frac{(Net\ Profit-Preference\ Dividend)}{Net\ Worth}$
  ➢ $W_d$ (Weight of Debt) = Total Interest bearing borrowings/(Total Interest bearing borrowings + Net Worth)
  ➢ $W_e$ (Weight of Equity) = Net Worth/(Total Interest bearing borrowings + Net Worth)

  ➢ **Method II** $K_e = \frac{(Net\ Profit-Preference\ Dividend)}{Market\ Capitalization}$
  ➢ $W_d$ (Weight of Debt) = Total Interest bearing borrowings/(Total Interest bearing borrowings + Market Capitalization)
- $W_e$ (Weight of Equity) = Net Worth/(Total Interest bearing borrowings + Market Capitalization)
- **Method III** $K_e$ (gorden growth model) = $D_0*(1+g)/P_0 + g$
  - Where $D_0$ = Dividend paid for the current year
  - $g$ (growth rate) = $b$ (retention ratio)*$r$ (return on equity)
  - $P_0$ = Current Market Price per Share

- $W_d$ (Weight of Debt) = Total Interest bearing borrowings/(Total Interest bearing borrowings + Market Capitalization)
- $W_e$ (Weight of Equity) = Net Worth/(Total Interest bearing borrowings + Market Capitalization)

*Adjustments in the calculation of market capitalization, $K_d$ and $K_e$*

- Wherever Market Capitalization was not available, Net Worth was used in place of Market Cap.
- Wherever total borrowings were equal to zero, $K_d$ was taken as zero.
- Wherever $K_e$ (or $W_e$) was $-ve$ value because of $-ve$ value of PAT or $-ve$ value of Net Worth, it was taken as zero.

Here cost of equity $K_e$ has not been calculated using CAPM model. The reason is that for applying CAPM, beta value has to be calculated for all the target and acquirer firms for each of the five pre and post merger years. For this purpose the daily closing value of these stock-scrips and index are needed for ten-ten years. Such data is not available completely for all the acquirer and target companies. Therefore, for the calculation of $K_e$, Gorden-Growth and other methods have been applied.

Thus we received three types of EVA by applying above mentioned three methods of calculating $K_e$, $W_d$ and $W_e$. By applying these three methods EVA is calculated for each year for each acquirer and target firm. After that the combined EVA for each pair of acquirer and target is calculated for each of the 5 years pre & post-acquisition. The EVA is aggregated by applying the total assets as weights.
Statistical Analysis & application of statistical tools

Calculation of Mean and Median performance measures and application of paired t-test: After calculating all the performance measures for each pair of acquirer & target firm for 5 years in pre and post-acquisition period, their mean and median values for firm measures and industry adjusted measures are calculated. On these pre and post merger performance measures paired t-test is applied to test for any significant difference in performance measure between pre & post merger scenario.

Multiple Regression Analysis

Previous research work indicates that following factors may impact the post merger performance:

- Pre-merger performance
- Size of Target Company
- Level of promoters' stake in acquirer company
- Relatedness of the merger
- Mode of Payment
- Nature of merger whether group or non-group merger
- Level of debt in the acquirer company
- Structure of combination as merger or acquisition

In order to find out the effect of pre-merger performance and merger characteristics on the post merger performance measures, multiple regressions is applied for each of the 19 financial performance measures.

Classification of entire sample into nine subsamples based on select industries

Entire sample was subdivided into nine subsamples on the basis of select industries, in order to check that whether M&A performance differs across industries. For the select industries five years pre and post merger means are calculated for each company. Then on the pre and post mean values paired t-test is applied to see any significant difference in performance caused by M&A. This is done for all the above discussed 19 performance measures.
Subsample based on multiple mergers

Out of the entire sample one subsample is created including the mergers done by acquirer who are involved into multiple mergers. This is done to analyse the phenomenon of acquirer learning as a result of multiple mergers. Then on the pre and post mean values of financial measures, paired t-test is applied to see any significant difference in pre & post merger performance.

Interpretation of the results based on hypothesis testing

M&A performance based on mean of five year performance measures

The aggregate mean values of 5 pre-merger years and 5 post-merger years for total 67 firms are compared. This is done for each measure for firm values and industry adjusted values by applying two tailed paired t-test.

1. Raw ROA between the pre merger and post merger scenario This has been found that there exists a significant variation in the mean value of raw ROA for combined firm between the pre merger and post merger scenario. The result of paired sample t-test indicates that p value is equal to 0.04 which is less than 0.05 (95% level of significance), which is an indication of the existence of significant difference of raw firm ROA between pre and post-merger scenario.

2. Industry Adjusted ROA between the pre merger and post merger scenario No significant variation is found in the mean value of industry adjusted ROA for combined firm between the pre merger and post merger scenario. The result of paired sample t-test indicates that p value is equal to 0.30 which is more than 0.05 (95% level of significance), which indicates no significant difference in the industry adjusted ROA.

3. Raw ROE between the pre merger and post merger scenario There is no significant difference in the mean value of pre merger and post merger raw ROE for combined firm. The result of paired sample t-test indicates that p value is equal to 0.68 which is more than 0.05 (95% level of significance), which indicates no significant difference in raw firm ROE.
4. Industry Adjusted ROE between the pre merger and post merger scenario: No significant variation is found in the mean value of industry adjusted ROE for combined firm between the pre merger and post merger scenario. The result of paired sample t-test indicates that p value is equal to 0.93 which is more than 0.05 (95% level of significance), which indicates no significant difference in the industry adjusted ROE.

5. Raw Net Profit Margin between the pre merger and post merger scenario: When the mean Net Profit margin is tested statistically, for combined firm, no significant difference is found between pre and post merger NP Margin. This is indicated by the p value of 0.22 (p<.05).

6. Industry Adjusted Net Profit Margin between the pre merger and post merger scenario: When the mean industry adjusted Net Profit margin is tested statistically, for combined firm, no significant difference is found between pre and post merger industry adjusted NP Margin. This is indicated by a p value of 0.22 (95% level of significance).

7. Raw EPS between the pre merger and post merger scenario: There is no significant difference in pre and post merger EPS of combined firm, indicated by p value of 0.15 (95% level of significance).

8. Industry Adjusted EPS between the pre merger and post merger scenario: There is no significant difference in pre and post merger EPS of combined firm, indicated by p value of 0.91 (95% level of significance).

9. Raw ‘Cash Flow/Total Assets’ between the pre merger and post merger scenario: There is no significant impact, caused by mergers in the Cash flows/Total assets parameter for the combined firm. This is indicated by the p value of 0.76 (95% level of significance), when paired t-test is applied on pre and post merger values of sample firms.

10. Industry Adjusted ‘Cash Flow/Total Assets’ between the pre merger and post merger scenario: There is no significant impact, caused by mergers in the industry adjusted Cash flows/Total assets parameter for the combined firm. This is indicated by the p value of 0.26 (95% level of significance), when paired t-test is applied on pre and post merger values of sample firms.
11. Raw 'Cash Flow/Operating Assets' between the pre merger and post merger scenario. For "Cash Flow/Operating Assets" parameter, p value is 0.73 (95% level of significance), which indicates no difference in pre and post merger value.

12. Industry Adjusted 'Cash Flow/Operating Assets' between the pre merger and post merger scenario. For industry adjusted 'Cash Flow/Operating Assets' parameter, p value is 0.76 (95% level of significance), which indicates no difference in pre and post merger value.

13. Raw 'Cash Flow/Market Value of Assets' between the pre merger and post merger scenario. In case of "Cash Flows/Market value of Assets" for combined firm, paired t-test resulted in the p value of 0.08 (95% level of significance). This indicates no difference between pre and post merger performance.

14. Industry Adjusted 'Cash Flow/Market Value of Assets' between the pre merger and post merger scenario. In case of industry adjusted "Cash Flows/Market value of Assets" for combined firm, paired t-test resulted in the p value of 0.33 (95% level of significance). This indicates no difference between pre and post merger performance.

15. Raw 'Cash Flow/Sales' between the pre merger and post merger scenario. The paired t-test resulted in the p value of 0.37 (95% level of significance) for the Cash flow/Sales measure of combined firm. This indicates no significant variation in pre and post merger value of this measure.

16. Industry Adjusted 'Cash Flow/Sales' between the pre merger and post merger scenario. The paired t-test resulted in the p value of 0.33 (95% level of significance) for the Cash flow/Sales measure of combined firm. This indicates no significant variation in pre and post merger value of this measure.

17. Raw EVA based on book values between the pre merger and post merger scenario. This has been found that there exists a significant variation in the mean value of raw EVA for combined firm between the pre merger and post merger scenario, when calculated on the basis of book value data. The result of paired sample t-test indicates that p value is equal to 0.00 which is less than
0.01 (99% level of significance) and 0.05 (95% level of significance), which is an indication of the existence of significant difference in the EVA.

18. Raw EVA based on market values When the paired t-test is applied on the pre and post merger values of EVA of combined firms, calculated based on market value data, the significant variation is found. It is reflected by the p value of 0.00 (99% level of significance).

19. Raw EVA based on Gordon Growth model For the EVA calculated on the basis of market value data and Gordon Growth Ke, significant difference is found in the value of this measure between the pre and post merger period. This is reflected by the p value of 0.00 (99% level of significance).

M&A performance based on cross-sectional median for each year

The aggregate median values of 67 sample firms for each of the 5 pre-acquisition years are compared with aggregate median values for each of the 5 post-acquisition years respectively. This is done for each measure for firm values and industry adjusted values by applying paired two tailed t-test.

1. Raw ROA between the pre merger and post merger scenario This has been found that there exists a significant variation in the median value of raw ROA for combined firm between the pre merger and post merger scenario. The result of paired sample t-test indicates that p value is equal to 0.03 which is less than 0.05 (95% level of significance), which is an indication of the existence of significant difference of raw firm ROA.

2. Industry Adjusted ROA between the pre merger and post merger scenario No significant variation is found in the median value of industry adjusted ROA for combined firm between the pre merger and post merger scenario. The result of paired sample t-test indicates that p value is equal to 0.60 which is more than 0.05 (95% level of significance), which indicates no significant difference in the industry adjusted ROA.

3. Raw ROE between the pre merger and post merger scenario There is significant difference in the median value of pre merger and post merger raw ROE for combined firm. The result of paired sample t-test indicates that p
value is equal to 0.001 which is less than 0.05 (95% level of significance), which indicates significant difference in raw firm ROE.

4. **Industry Adjusted ROE between the pre merger and post merger scenario** Significant variation is found in the median value of industry adjusted ROE for combined firm between the pre merger and post merger scenario. The result of paired sample t-test indicates that p value is equal to 0.037 which is less than 0.05 (95% level of significance), which indicates significant difference in the industry adjusted ROE.

5. **Raw Net Profit Margin between the pre merger and post merger scenario** When the median Net Profit margin is tested statistically, for combined firm, significant difference is found between pre and post merger NP Margin. This is indicated by a p value of 0.035 (95% level of significance).

6. **Industry Adjusted Net Profit Margin between the pre merger and post merger scenario** When the median industry adjusted Net Profit margin is tested statistically, for combined firm, no significant difference is found between pre and post merger industry adjusted NP Margin. This is indicated by a p value of 0.74 (95% level of significance).

7. **Raw EPS between the pre merger and post merger scenario** There is no significant difference in pre and post merger EPS of combined firm, indicated by p value of 0.39 (95% level of significance).

8. **Industry Adjusted EPS between the pre merger and post merger scenario** There is no significant difference in pre and post merger EPS of combined firm, indicated by p value of 0.43 (95% level of significance).

9. **Raw ‘Cash Flow/Total Assets’ between the pre merger and post merger scenario** There is no significant impact, caused by mergers in the Cash flows/Total assets parameter for the combined firm. This is indicated by the p value of 0.80 (95% level of significance), when paired t-test is applied on pre and post merger values of sample firms.

10. **Industry Adjusted ‘Cash Flow/Total Assets’ between the pre merger and post merger scenario** There is no significant impact, caused by mergers in the industry adjusted Cash flows/Total assets parameter for the combined firm.
This is indicated by the p value of 0.36 (95% level of significance), when paired t-test is applied on pre and post merger values of sample firms.

11. Raw ‘Cash Flow/Operating Assets’ between the pre merger and post merger scenario For “Cash Flow/Operating Assets” parameter p value is 0.16 (95% level of significance), which indicates no difference in pre and post merger value.

12. Industry Adjusted ‘Cash Flow/Operating Assets’ between the pre merger and post merger scenario For industry adjusted “Cash Flow/Operating Assets” parameter p value is 0.20 (95% level of significance), which indicates no difference in pre and post merger value.

13. Raw ‘Cash Flow/Market Value of Assets’ between the pre merger and post merger scenario In case of “Cash Flows/Market value of Assets” for combined firm, paired t-test resulted in the p value of 0.48 (95% level of significance). This indicates no difference between pre and post merger performance.

14. Industry Adjusted ‘Cash Flow/Market Value of Assets’ between the pre merger and post merger scenario In case of industry adjusted “Cash Flows/Market value of Assets” for combined firm, paired t-test resulted in the p value of 0.57 (95% level of significance). This indicates no difference between pre and post merger performance.

15. Raw ‘Cash Flow/Sales’ between the pre merger and post merger scenario The paired t-test resulted in the p value of 0.79 (95% level of significance) for the Cash flow/Sales measure of combined firm. This indicates no significant variation in pre and post merger value of this measure.

16. Industry Adjusted ‘Cash Flow/Sales’ between the pre merger and post merger scenario The paired t-test resulted in the p value of 0.35 (95% level of significance) for the Cash flow/Sales measure of combined firm. This indicates no significant variation in pre and post merger value of this measure.

17. Raw EVA based on book values between the pre merger and post merger scenario This has been found that there does not exists any significant variation in the median value of raw EVA for combined firm between the pre merger and post merger scenario, when calculated on the basis of book value
data. The result of paired sample t-test indicates that p value is equal to 0.055 which is more than 0.05 (95% level of significance), which is an indication of the existence of no significant difference in the EVA.

18. Raw EVA based on market values When the paired t-test is applied on the pre and post merger values of EVA of combined firms, calculated based on market value data, the significant variation is found. It is reflected by the p value of 0.021 (95% level of significance).

19. Raw EVA based on Gordon Growth model For the EVA calculated on the basis of market value data and Gordon Growth Ke, no significant difference is found in the value of this measure between the pre and post merger period. This is reflected by the p value of 0.054 (95% level of significance).

Impact of various characteristics of merger on post merger performance parameters: Results of Regression Analysis

In order to determine the impact of various independent variables (target size, promoter’s stake etc.) including pre-merger performance on post-merger financial performance of the select companies, multiple regression technique has been used.

1. Interpretation of the results for post merger ROA

Results of regression shows that the significance of F = 0.00, which concludes that the model is fit for multiple regression. Also the value of $R^2$ is 0.35, which indicates 35% variation in dependent variable is explained by the set of independent variables.

The results of multiple regression shows that pre merger performance has a significant positive impact ($p=0.00$) and $\beta= 0.68$. However, rest of the independent variables (size of target, promoter’s stake in acquirer, relatedness, mode of payment, group/non group companies, debt ratio of acquirer and structure as merger or acquisition) does not have any significant impact.

2. Interpretation of the results for post merger industry adjusted ROA

For industry adjusted ROA, significance of F is found to be 0.12. From this it can be concluded that the model is not fit for regression.
3. Interpretation of the results for post merger ROE

For ROE, significance of $F$ is found to be 0.82. From this it can be concluded that model is not fit for regression.

4. Interpretation of the results for post merger industry adjusted ROE

Results of regression shows that the significance of $F = 0.00$, which concludes that the model is fit for multiple regression. Also the value of $R^2$ is 0.56, which indicates 56% variation in dependent variable is explained by the set of independent variables.

The results of multiple regression shows that pre merger performance has a significant positive impact ($p=0.00$) and $\beta = 1.05$. However, rest of the independent variables (size of target, promoter’s stake in acquirer, relatedness, mode of payment, group/non group companies, debt ratio of acquirer and structure as acquisition/merger) does not have any significant impact.

5. Interpretation of the results for post merger Net Profit Margin

For Net Profit Margin, significance of $F$ is found to be 0.22. From this it can be concluded that model is not fit for regression.

6. Interpretation of the results for post merger industry adjusted Net Profit Margin

For industry adjusted Net Profit Margin, significance of $F$ is found to be 0.21. From this it can be concluded that model is not fit for regression.

7. Interpretation of the results for post merger EPS

For EPS, significance of $F$ is found to be 0.15. From this it can be concluded that model is not fit for regression.

8. Interpretation of the results for post merger industry adjusted EPS

For industry adjusted EPS, significance of $F$ is found to be 0.17. From this it can be concluded that model is not fit for regression.

9. Interpretation of the results for post merger ‘Cash Flows/Total Assets’

Results of regression shows that the significance of $F = 0.01$, which concludes that the model is fit for multiple regression. Also the value of $R^2$ is 0.30, which
indicates 30% variation in dependent variable is explained by the set of independent variables.

The results of multiple regression shows that pre merger performance has a significant positive impact (p=0.00) and \( \beta = 0.60 \). However, rest of the independent variables (size of target, promoter’s stake in acquirer, relatedness, mode of payment, group/non group companies, debt ratio of acquirer and structure as acquisition/merger) does not have any significant impact.

10. Interpretation of the results for post merger industry adjusted ‘Cash Flows/Total Assets’

Results of regression shows that the significance of F = 0.00, which concludes that the model is fit for multiple regression. Also the value of \( R^2 \) is 0.36, which indicates 36% variation in dependent variable is explained by the set of independent variables.

The results of multiple regression shows that pre merger performance has a significant positive impact (p=0.00) and \( p = 0.64 \). However, rest of the independent variables (size of target, promoter’s stake in acquirer, relatedness, mode of payment, group/non group companies, debt ratio of acquirer and structure as acquisition/merger) does not have any significant impact.

11. Interpretation of the results for post merger ‘Cash Flows/Operating Assets’

Interpretation For CFFO/ Operating Assets, significance of F is found to be 0.16. From this it can be concluded that model is not fit for regression.

12. Interpretation of the results for post merger industry adjusted ‘Cash Flows/Operating Assets’

For industry adjusted CFFO/ Operating Assets, significance of F is found to be 0.22. From this it can be concluded that model is not fit for regression.

13. Interpretation of the results for post merger ‘Cash Flows/Market Value of Assets’

Results of regression shows that the significance of F = 0.01, which concludes that the model is fit for multiple regression. Also the value of \( R^2 \) is 0.28, which indicates 28% variation in dependent variable is explained by the set of independent variables.
The results of multiple regression shows that pre merger performance has a significant positive impact \((p=0.01)\) and \(\beta=0.28\). However, rest of the independent variables (size of target, promoter's stake in acquirer, relatedness, mode of payment, group/non group companies, debt ratio of acquirer and structure as acquisition/merger) does not have any significant impact.

14. Interpretation of the results for post merger industry adjusted 'Cash Flows/Market Value of Assets' 

Results of regression shows that the significance of \(F = 0.00\), which concludes that the model is fit for multiple regression. Also the value of \(R^2\) is 0.35, which indicates 35% variation in dependent variable is explained by the set of independent variables.

The results of multiple regression shows that pre merger performance has a significant positive impact \((p=0.00)\) and \(\beta=0.39\). However, rest of the independent variables (size of target, promoter's stake in acquirer, relatedness, mode of payment, group/non group companies, debt ratio of acquirer and structure as acquisition/merger) does not have any significant impact.

15. Interpretation of the results for post merger 'Cash Flows/Sales' 

For CFFO/ Sales, significance of \(F\) is found to be 0.46. From this it can be concluded that model is not fit for regression.

16. Interpretation of the results for post merger industry adjusted 'Cash Flows/Sales' 

For industry adjusted CFFO/ Sales, significance of \(F\) is found to be 0.49. From this it can be concluded that model is not fit for regression.

17. Interpretation of the results for post merger EVA based on book values 

Results of regression shows that the significance of \(F = 0.00\), which concludes that the model is fit for multiple regression. Also the value of \(R^2\) is 0.44, which indicates 44% variation in dependent variable is explained by the set of independent variables.

The results of multiple regression shows that pre merger performance has a significant positive impact \((p=0.00)\) and \(\beta=2.57\). However, rest of the independent variables (size of target, promoter's stake in acquirer, relatedness,
mode of payment, group/non group companies, debt ratio of acquirer and structure as acquisition/merger) does not have any significant impact.

18. Interpretation of the results for post merger EVA based on market values

Results of regression shows that the significance of $F = 0.00$, which concludes that the model is fit for multiple regression. Also the value of $R^2$ is 0.51, which indicates 51% variation in dependent variable is explained by the set of independent variables.

The results of multiple regression shows that pre merger performance has a significant positive impact ($p=0.00$) and $\beta = 1.78$. It is also observed that the intercept has a significant positive impact ($p=0.04$) and $\beta = 664.46$. However, rest of the independent variables (size of target, promoter's stake in acquirer, relatedness, mode of payment, group/non group companies, debt ratio of acquirer and structure as acquisition/merger) does not have any significant impact.

19. Interpretation of the results for post merger 'EVA based on Gordon Growth model'

Results of regression shows that the significance of $F = 0.00$, which concludes that the model is fit for multiple regression. Also the value of $R^2$ is 0.50, which indicates 43% variation in dependent variable is explained by the set of independent variables.

The results of multiple regression shows that pre merger performance has a significant positive impact ($p=0.00$) and $\beta = 2.28$. For the intercept p value is 0.02 and the $\beta = 590.99$. However, rest of the independent variables (size of target, promoter's stake in acquirer, relatedness, mode of payment, group/non group companies, debt ratio of acquirer and structure as acquisition/merger) does not have any significant impact.
Conclusions

Based on the results of hypothesis testing, following conclusions have been drawn:

1. No significant difference is found in the value of profitability and cash flow based performance measures between pre and post-merger scenario. For the Economic Value Added measure the significant improvement is found. In the light of no significant improvement depicted by other performance measures, this significant improvement in EVA may indicate either the better operating profits caused by M&A or may be the result of outlier values in EVA value of sample firms. The improvement in EVA may also be caused by the several adjustments made in its calculation.

2. The results of regression analysis depicts that for ROA, industry adjusted ROE, raw & industry adjusted ‘cash flows/total assets', raw & industry adjusted ‘cash flows/market value of assets' and EVA measure, the performance of M&A can be explained by the variation in the pre-merger performance of merged entities. Mergers and any of the merger characteristics do not seems to have a bearing on these performance measures of merged entities.

3. The results of set of two-two subsamples created on the basis of merger characteristics indicate that more or less there is no significant difference in the pre and post-merger performance of these subsamples. Therefore the difference in the merger characteristics does not seem to lead to different performance of M&A.

4. The results of the subsamples created based on select industries indicate that results of M&A vary across industries. The results of Pharmaceutical, Refinery industry, Construction Building Material industry, Plastic & Packaging industry depicts the better performance of merged companies. In Automobile industry, Textile industry, construction & Equipment industry, Electric & Electronic Appliances industry mergers have not led to any significant difference in performance. In case of chemical industry, results indicate that mergers have led to deterioration in performance.
The improvement in EVA in the overall sample is also explained by the results of select industries. The EVA has shown significant improvement only in Refinery industry and not in any other industry. Therefore, the suspicion raised in the overall sample toward the outlier EVA values in few sample firm, found to be true. It can be concluded that only the M&A in refinery industry are able to generate high EVA which is misleading/distorting the result of overall sample.

5. The firms involved in multiple mergers have shown significant improvement in performance. This indicates that acquirer learn out of their merger & acquisition experience over time.

Thus we can conclude that different results shown by different M&A cases are the manifestation of industry specific factors related phenomenon.

Because the sample comprises of domestic firms involved in M&A from 16 acquirer industries and 67 pairs of sample firms are spread over a period of 1999 to 2007, the results of the study can be generalized in Indian context.

Recommendations

The following are the recommendations based on the results of this study:

1. As depicted by the results of this study that all the mergers are not profitable. The firms should not assume that every M&A will result may into better performance as the growth is not synonymous of improvement in financial performance.

2. The industry specific factors have a bearing on the firm performance; therefore the firms formulating the growth strategy through M&A should study the specific environment pertaining to their industry.

3. The firms should evaluate thoroughly their prior M&A experience as such learning may be helpful in improving the performance of their future acquisitions.
Directions for future research

1. In this study for the evaluation of M&A performance in select industries sample sizes are very small for each industry as they are the subsamples created from the same overall sample, which is not showing improvement in the results but when broken into subsample based on industries some subsamples have shown significant improvement, while others not. This helped us to conclude that industry specific factors have a bearing on M&A performance. However, in order to have a better understanding of this aspect large sample size should be used for each industry and this aspect should be further probed for more number of industries with larger sample sizes.

2. In this study the mergers by the firm involved in multiple M&A have shown significant improvement. However, here also the sample size is very small. Therefore in order to understand the phenomenon of acquirer learning because of multiple merger experience large number of firm involved in multiple merger should be included into sample and this aspect of the work should be improved by future researches.

3. In this study we have used the profitability measures, cash flow measures and EVA for the performance measurement of M&A. There is one more performance measure Market Value Added (MVA) which is not applied here and it helps to analyze the additional value assigned by the market over and above the book value of firm. Future research work can be directed towards the analysis of increase/decrease in MVA of the merged entities before and after the merger.

4. This study has studied the performance of only domestic M&A. The cross-border mergers are not evaluated here and they should be examined in the future studies.