Effect of Merger and Acquisitions on Growth Position and Cost of Utilization: Evidence from Manufacturing Industry in India

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A merger is a combination of two or more different firms into one; the desired effect being not just the accumulation of assets and liabilities of the different firms, but to achieve several other benefits such as, economies of scale, acquisition of cutting edge technologies, obtaining access into sectors / markets with established players, etc. The present paper is carried out with the objective of studying what shift-in-structure (improvement) is experienced especially in the growth (G) position and cost of utilization (CU) after M&As by studying 39 selected acquiring manufacturing firms in India. The firms, which had gone into the M&As process during the financial year 2006–07 are only considered for the study. Paired samples t-test is applied to study the G position and CU of these firms in the pre-and post-merger periods. The study found that the G position has significant difference for 38 out of 39 firms and CU has significant difference for 27 out of 39 manufacturing firms, which fact reveals that they are well managed and they have used their internal resources to expand profits.

Keywords: Merger & acquisition, Post-merger growth position, Cost of utilization

INTRODUCTION

The term *'merger'* is not defined under either the Companies Act 1956, or the Income Tax Act 1961, or any other Indian law. In general, in a merger, the acquiring firms would cease to be in existence and would merge into a single existing firm. The synergy is the foundation stone for merger and acquisitions *(M&As)*. Combination of two firms allows for *cost savings and earnings growth and,* as a result, *increased operating performance and shareholders' wealth.* Yet *M&As* activity brings not only rewards but also puts in risks. Corporate culture may clash, opportunities for synergy and may be misconceived, and redundancies may weaken operational capabilities.

Researchers introduced the symbol of marriage to describe *M&As*, which means that *M&As*, like marriage, has all the problems of integrating two separate firms into one working combination (Levinson, 1970). Researchers reported that the unsuccessful *M&As* are

> Merger premiums were positively related to the asset growth and profitability of targets and to the growth of core deposits of acquirers and negatively related to the return on assets and the assets growth of acquirers.

not a new phenomenon. Since 1970s, extensive evidence that has shown between 50–80% of *M&As* are financially unsuccessful (Ellis and Pekar, 1978 and Marks, 1988). *"Employee problems"* was attributed as being responsible for 33%–50% of all merger failures (Davy *et al*., 1988). Merger premiums were positively related to the asset growth and profitability of targets and to the growth of core deposits of acquirers and negatively related to the return on assets and the assets growth of acquirers (Cheng *et al*., 1989). Cost efficiency improved in most of the *M&As* of banks (Fixler and Zieschang, 1993). The above literature provides an overview of the undergone of the *M&As* firms in the pre and post-merger performance. Hence, an attempt has been made in the present study to analyse the impact of *M&As* on growth *(G)* position and cost of utilization *(CU)* considering the models used in the stated studies.

LITERATURE REVIEW

Levine and Aaronovitch (1981) found that there was no evidence of any significant difference between the acquiring and target firms for the profit related variables and their growth. Krishna (1986) found that the target firms in the 1971-1979 periods were characterized by low growth and thereby low leverage. Rhoades (1987) found that the merger premiums were positively related to the high growth of target banks, and target banks located in high growth markets. Variables that capture the profitability of target banks were found to be insignificant or brought mixed results, and no variables of acquiring firms were found to have significant impact in the post-merger period.

Cheng *et al*. (1989) concluded that the merger premiums were positively related to the asset growth and profitability of the target firms but the growth of core deposits of acquiring firms were negatively related to the return on assets and the growth of assets of acquiring firms. Ravenscroft and Scherer (1989) found that the mergers result in economies of scale or scope, the post-merger profits should be higher than the pre-merger profits and /or their industry averages. Cornett and Tehranian (1992) concluded that the merger was assumed to improve performance in terms of profitability by reducing costs or by increasing revenues. Healy *et al*. (1992) found that the acquiring firms have significant improvement on the *synergies, economy of scale, cost savings, increased products, and rationalization of distribution channels* in the post-merger period.

Lee *et al*. (1996) concluded that the horizontal acquisitions showed a strongest predictive ability with the variables viz *assets growth*, and *sales growth,* showing a significant improvement in the post-merger period. Vennet (1996) concluded that the improved cost efficiency was found in cross-border acquisitions. Harari (1997) analyzed on *cost efficiency*, *economies of scale*, and the scope of the Taiwanese banking industry, specifically focusing on how bank mergers affect cost efficiency, and concluded that the bank merger activity was positively related to cost efficiency. According to Hopkins (1999), Peng and Wang (2004), Epstein (2005), and Duncan and Mtar (2006) *M&As* could enhance cost efficiency. Azhagaiah and Sathishkumar (2012) concluded that the factor *'growth'* did not have a significant relationship with shareholders' wealth.

Dhinaiya (2012) found that there were minor variations in the performance after *M&As* but it was not

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Forced merger deals in Indian banking did not give improved financial performance during post-merger period except for State Bank of India.

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statistically significant. Sharma (2012) there was no difference in the i.e. the *M&A's* significantly financial Tata Group. Verma and concluded that significant financial ratios had not affected the performance of Mohanraj (2012) found that there was a significant change in the financial performance of the acquiring banks and concluded that forced merger deals in Indian banking did not give improved financial performance during post-merger period except for State Bank of India.

The cited literature provided an overview of impact of *M&As* on growth *(G)* position and cost of utilization *(CU)* of manufacturing firms in the post-merger period and different valuation models associated with the measurement of impact of *M&As*. The previous studies, by and large, attempted to study the short-run impact say three years prior to merger and after the merger period. With these evidences and background an attempt has been made in the present study, to study the impact of *M&As* on the *G* position and *CU* of Indian manufacturing firms in the long-run i.e., five years prior to merger year and five years after the merger year.

STATEMENT OF THE PROBLEM AND SIGNIFICANCE OF THE STUDY

When a firm is merged with another or is acquired by the profit-making firm, it benefits both the firms; hence, it is the order of the day that all firms are interested in resorting to corporate restructuring *(CR)* in the name of *M&As*.

However, the question that often arises is whether all the firms those are merged / acquired result in increase in *G* position and *CU?* Because, in some firms, there has been a negative performance after *M&As*, which is generally unexpected therefore, the present paper is an attempt to seek answers to the stated question by analysing the impact of *M&As* on *G* position

and *CU* by studying 39 selected manufacturing firms in India, which are listed in one of the leading Indian stock exchanges in India viz the *Bombay Stock Exchange*, and which have undergone *M&As* in the same *(related merger)* industry during the financial year 2006 – 2007, and an attempt has been made to study the *G* position and *CU* of the manufacturing firms in India in the long-run, that is, during the period of five years (2002 to 2006) before merger and five years (2008 to 2012) after merger, hence the period of the study is ten years (i.e., from 2002 to 2012; merger year 2006 – 2007 is the base).

OBJECTIVES AND HYPOTHESES OF THE STUDY

The paper is primarily designed to examine the relevant benefits expected by adopting *M&As* strategy by the acquiring manufacturing firms in India. The motives behind the *M&As* are, in general, shareholders' wealth maximization, profit maximization, and financial and operating risk minimisation. The present paper attempts to analyse the impact of *M&As* on *G* position and *CU* of selected manufacturing firms in India. More specifically, the present paper proposes

➢ To study the effect of *M&As* on *G* position in respect of *G* in Sales Ratio; Operating Profit Ratio; EBIT Ratio; Fixed Assets Ratio; Total Assets Ratio of manufacturing firms in India after merger.

➢ To study the effect of *M&As* on *CU* in respect of Raw material to Sales Ratio, Power and Fuel to Sales Ratio, Employee Cost to Sales Ratio, Selling and Administrative Cost to Sales Ratio, and Total Cost to Sales Ratio of manufacturing firms in India after merger.

The study has attempted to test if there is any significant change in the results achieved by the manufacturing firms due to *M&As*. Based on the objectives, the following hypotheses are developed:

$H0_1$: There is no significant mean difference between the *growth position* of manufacturing firms in India before and after the *M&As* process.

$H0_2$: There is no significant mean difference between the *cost of utilization* of manufacturing firms in India before and after the *M&As* process.

RESEARCH METHODOLOGY

Sampling Design

Table 1: Number of Merger and Acquisitions of Manufacturing Firms during 2001-2002 to 2011-2012 in India

Year	Number of *M&As* Deal Announcement	*M&As* Deal Completed
2001-02	164	138
2002-03	133	114
2003-04	141	110
2004-05	147	113
2005-06	211	176
2006-07	228	179
	-After elimination of subsequent merger {M (75) + S (65)}	140
	-Data availability for {M (39) + S (24)}	063
	-Final sample (manufacturing firms) for the study	039
2007-08	202	176
2008-09	131	108
2009-10	201	147
2010-11	170	109
2011-12	073	024

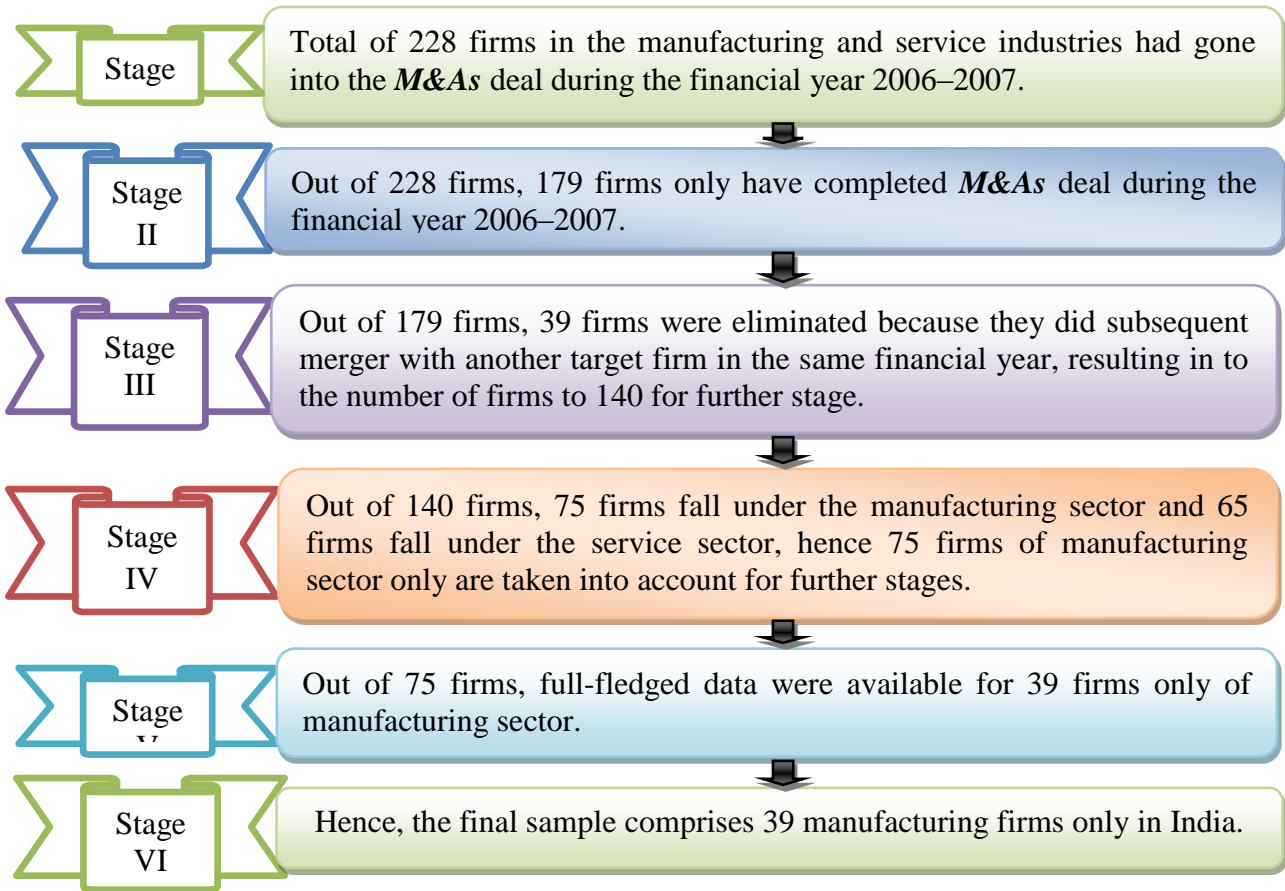*Source: Compiled Data collected from PROWESS Database Provided by CMIE.*
M-Manufacturing industry; S-Service industry

DATA SOURCE AND PERIOD OF THE STUDY

The study used secondary sources of data, which were collected from the capital market database called *Centre for Monitoring Indian Economy Private Limited (Prowess CMIE)*. Data on *G* position as well as on *CU* for a period of five years prior to the merger year (2006–07) and five years after the merger year for each manufacturing firm were collected. The number of *M&As* is highest in 2006–07 *(vide table 1)* in terms of *M&As* deal announcement (228) as well as *M&As* deal completed (179). Hence, the sample units (firms) are based on the list of firms that ventured into the *M&As* process during 2006–07 only and are considered for the study for want of analysing the long-run impact of *M&As* on *G* position and *CU*. The study period is restricted to 10 years ranging from 2002 to 2012 considering the year 2006–07 as the year of merger.

Sampling Procedure

Multi-stage non-random sampling technique is used for selection of ultimate sample units and the different stages followed are shown in figure–A. The number of M&As held in the manufacturing sector in India during 2006–2007 is shown in Table 2.

Stage	Total of 228 firms in the manufacturing and service industries had gone into the *M&As* deal during the financial year 2006–2007.
Stage II	Out of 228 firms, 179 firms only have completed *M&As* deal during the financial year 2006–2007.
Stage III	Out of 179 firms, 39 firms were eliminated because they did subsequent merger with another target firm in the same financial year, resulting in to the number of firms to 140 for further stage.
Stage IV	Out of 140 firms, 75 firms fall under the manufacturing sector and 65 firms fall under the service sector, hence 75 firms of manufacturing sector only are taken into account for further stages.
Stage V	Out of 75 firms, full-fledged data were available for 39 firms only of manufacturing sector.
Stage VI	Hence, the final sample comprises 39 manufacturing firms only in India.

Fig. 1: Sampling Procedure

Research Methods and Tools

A paired samples t-test is used to study whether there is a significant mean difference between the mean scores of the same measure used in two different conditions. Both the measures are used on each unit in a sample, and the test is based on the paired differences between these two periods. The null hypothesis is that the difference in the mean values is zero. The paired sample t-test has been used by use of the following formula:

$$t = \frac{|\bar{d}|}{S/\sqrt{n}} \sim t_{n-1} \, dt$$

$$\text{where, } \bar{d} = \Sigma d / n \text{ and } d = x - y \text{ or } y - x$$

$$S = \sqrt{\frac{\Sigma (d - \bar{d})^2}{n - 1}}$$

Table 2: Sector wise Number of Merger and Acquisitions held in the Manufacturing Industry in India during 2006–2007

Sl. No.	Name of the Industry	No. of mergers (before elimination of subsequent M&As)	No. of firms went for subsequent M&As	No. of mergers (after elimination of subsequent M&As)	Full-fledged data available in the data source
1.	Food and Beverage	17	04	13	07
2.	Machinery	16	04	12	06
3.	Non-metallic Mineral Products	10	01	09	05
4.	Chemicals	24	06	18	12
6.	Textiles	10	01	09	05
7.	Metals and Metal Products	08	01	07	01
8.	Transport Equipment	05	03	02	01
9.	Miscellaneous Manufacturing	05	00	05	02
Total Number of Firms		**95**	**20**	**75**	**39**

Source: Compiled Data collected from PROWESS Database Provided by CMIE.

Impact of Merger and Acquisitions on Growth Position and Cost of Utilization

Impact of M&As on Growth of Manufacturing Firms

Growth *(G)* in terms of comparing mean *G* on Sales Ratio *(GOSR);* Operating Profit Ratio *(GOPR;* EBIT Ratio *(GOEBITR);* Fixed Assets Ratio *(GOFAR);* and Total Assets Ratio *(GOTAR)* between pre-and post-merger periods is carried out in order to analyse the impact of *M&As* on the *G* in various contexts of the manufacturing firms which entered into merging activities.

Growth on Sales Ratio *(GOSR)* derives from current year sales when compared to the previous year sales *(vide table 4).* The excess of current year sales over the previous year sales indicates that the firm has experienced *G* on sale. It is inferred *(vide Table 4)* that the G in terms of GOSR is significant at 1% and 5% level respectively after the M&As process. The GOSR in the post-merger period is increased for all the 39 acquiring manufacturing firms.

Growth on Operating Profit Ratio *(GOPR)* measures the profitability and soundness of the firm. A high ratio is obviously the desired outcome, while a low ratio indicates the managerial inefficiency and excessive selling and distribution expenses. It establishes the relationship between the current year operating profit and the previous year operating profit. It is inferred *(vide table 4)* that the *G* in

terms of *GOPR* of *ACC Ltd, ADF Foods Ltd, Ambuja Cements Ltd, Archies Ltd, Aurobindo Pharma Ltd, Caplin Point Laboratories, Coromandel International, Dalmia Bharat Sugar, Emami Ltd, India Cements Ltd, Indian Oil Corpn. Ltd, Jain Irrigation Systems Ltd, Modi Naturals Ltd, Motherson Sumi Systems, NCL Industries Ltd, Pfizer Ltd, Reliance Industries Ltd, Sangam (India) Ltd, Sterlite Technologies Ltd, Thermax Ltd, United Breweries Ltd, United Spirits Ltd, and Visaka Industries Ltd* is significant at 1% and 5% level respectively after the *M&As* process. The *GOPR* in the post-merger period is increased for 35 out of 39 acquiring manufacturing firms.

Growth on EBIT Ratio *(GOEBITR)* measures the firm's earning power from ongoing operations. A high ratio is obviously the desired outcome. It establishes the relationship *between the EBIT of the current year and the EBIT of the previous year. It is inferred (vide table 4) that the G in terms of GOEBITR of ACC Ltd, ADF Foods Ltd, Archies Ltd, Aurobindo   Pharma Ltd, Caplin Point Laboratories, Coromandel International, Emami Ltd, India Cements Ltd, Indian Oil Corpn. Ltd, Inducto Steel Ltd, Jain Irrigation Systems Ltd, KLRF Ltd, Motherson Sumi Systems, NCL Industries Ltd, Permanent Magnets Ltd, Pfizer Ltd, Reliance Industries Ltd, Sangam (India) Ltd, Sterlite Technologies Ltd, Thermax Ltd, Uflex Ltd, United Breweries Ltd, United Spirits Ltd, and Visaka Industries Ltd* is at 1% and 5% level respectively after the **M&As** process. The **GOEBITR** in the post-merger period is increased for 35 out of 39 acquiring manufacturing firms.

Growth on Fixed Assets Ratio *(GOFAR)* measures the capital adequacy of a firm. A high ratio is obviously the desired outcome. It establishes the relationship between the current year's fixed assets and the previous year's fixed assets. It is inferred *(vide table 4)* that the *G* in terms of *GOFAR* of *ACC Ltd, ADF Foods Ltd, Ambuja Cements Ltd, Archies Ltd, Arvind Ltd, Aurobindo Pharma Ltd, Batliboi Ltd, Blue Star Ltd, BSL Ltd, Caplin Point Laboratories, Chromatic India Ltd,*

Coromandel International, EID-Parry (India) Ltd, India Cements Ltd, Indian Oil Corpn. Ltd, Indo Rama Synthetics, Jain Irrigation Systems Ltd, JB Chemicals & Pharma, KLRF Ltd, Modi Naturals Ltd, Motherson Sumi Systems, NCL Industries Ltd, Novopan Industries Ltd,   Reliance Industries Ltd, Sangam (India) Ltd, Spentex Industries Ltd, Sterlite Technologies Ltd, Thermax Ltd, Uflex Ltd, United Breweries Ltd, United Spirits Ltd, and Visaka Industries Ltd is significant at 1% and 5% level respectively after the *M&As* process. The *GOFAR* in the post-merger period is increased for 38 out of 39 acquiring manufacturing firms.

Table 3: Descriptions of Financial Ratios Used to Study the Growth Position of Acquiring Manufacturing Firms in India

Sl. No.	Variables	Description	Inference
1.	Growth on sales ratio	Current year sales – Previous year sales / Previous year sales	Increase in **GOSR** is considered positive for a firm's survival and profitability. It may result in increased dividends for shareholders.
2.	Growth on operating profit ratio	Current year operating profit - Previous year operating profit / Previous year operating profit	The ratio indicates the operational efficiency of the firm. A high, stable ratio is the obvious desired outcome. A low ratio indicates the managerial inefficiency.
3.	Growth on EBIT ratio	Current year EBIT – Previous year EBIT / Previous year EBIT	The ratio indicates firm's earning power from ongoing operations. High, stable ratio is obviously the desired outcome.
4.	Growth on fixed assets ratio	Current year fixed assets – Previous year fixed assets / Previous year fixed assets	The ratio indicates capital adequacy of a firm. A high, stable ratio is obviously the desired outcome.
5.	Growth on total assets ratio	Current year total assets – Previous year total assets / Previous year total assets	The ratio indicates that the past growth rate is a good indicator of the future growth rate, with low (high) asset growth indicating high (low) future returns. High, stable ratio is obviously the desired outcome.

Growth on Total Assets Ratio *(GOTAR)* expresses the relationship between the total current year assets and the total previous year assets. A high ratio is obviously the desired outcome. It is inferred *(vide table 4)* that the *G* in terms of *GOTAR* of *ACC Ltd, ADF Foods Ltd, Ambuja Cements Ltd, Archies Ltd, Arvind Ltd, Aurobindo Pharma Ltd, Batliboi Ltd, Bilpower Ltd, BSL Ltd, Caplin Point Laboratories, Chromatic India Ltd, Coromandel International, EID-Parry (India) Ltd, Emami Ltd, India Cements Ltd, Indian Oil Corpn. Ltd, Indo Rama Synthetics, Inducto Steel Ltd, Jain Irrigation Systems Ltd, JB Chemicals & Pharma, KLRF Ltd, Modi Naturals Ltd, Motherson Sumi Systems, NCL Industries Ltd, Permanent Magnets Ltd, Pfizer Ltd, Reliance Industries Ltd, Sangam (India) Ltd, Spentex Industries Ltd, Sterlite Technologies Ltd, Thermax Ltd, Uflex Ltd, United Breweries Ltd, United Spirits Ltd, and Visaka Industries Ltd* is significant at 1% and 5% level respectively after the *M&As* process. The *GOTAR* in the post-merger period is increased for 38 out of 39 acquiring manufacturing firms.

Table 4: Impact of *M&As* on Growth Position of Manufacturing Firms in India during 2001-2002 to 2011-2012 in India

Sl. No.	Name of the firms	GOSR		GOPR		GOEBITR		GOFAR		GOTAR	
		t-value	p-value	t-value	p-value	t-value	p-value	t-value	p-value	t-value	p-value
1.	ACC Ltd.	-23.21	**0.000****	-5.06	**0.007****	-3.13	**0.035***	-5.58	**0.005****	-4.46	**0.011***
2.	ADF Foods Ltd.	-27.28	**0.000****	-12.87	**0.000****	-8.22	**0.001****	-6.80	**0.002****	-7.70	**0.002****
3.	Ambuja Cements Ltd.	-11.77	**0.000****	-4.52	**0.011***	-2.74	0.052	-4.72	**0.009****	-5.50	**0.005****
4.	Archies Ltd.	-5.53	**0.005****	-4.97	**0.008****	-2.95	**0.042***	-5.78	**0.004****	-27.19	**0.000****
5.	Arvind Ltd.	-1.93	0.125	0.01	0.999	-0.79	0.470	-5.39	**0.006****	-6.24	**0.003****
6.	Aurobindo Pharma Ltd.	-6.29	**0.003****	-4.23	**0.013***	-3.88	**0.018***	-10.93	**0.000****	-14.87	**0.000****
7.	Batliboi Ltd.	-3.22	**0.032***	-0.32	0.762	-0.66	0.540	-7.71	**0.002****	-11.52	**0.000****
8.	Bilpower Ltd.	-10.28	**0.001****	-2.45	0.070	-2.40	0.074	-2.38	0.076	-6.33	**0.003****
9.	Blue Star Ltd.	-22.35	**0.000****	-1.55	0.195	-0.52	0.631	-11.91	**0.000****	-1.26	0.275
10.	BSL Ltd.	-4.62	**0.010***	-1.71	0.162	-1.84	0.139	-8.43	**0.001****	-8.61	**0.001****
11.	Caplin Point Laboratories	-24.35	**0.000****	-5.72	**0.005****	-6.30	**0.003****	-9.04	**0.001****	-6.90	**0.002****
12.	Chromatic India Ltd.	-1.85	0.137	1.66	0.171	0.48	0.651	-2.79	**0.049***	-2.82	**0.047***
13.	Coromandel International	-6.13	**0.004****	-5.85	**0.004****	-7.25	**0.002****	-19.37	**0.000****	-6.31	**0.003****
14.	Dalmia Bharat Sugar & In.	-2.85	**0.046***	-3.89	**0.018***	-1.83	0.140	-2.29	0.083	-2.49	0.067
15.	EID-Parry (India) Ltd.	-0.27	0.797	0.63	0.558	-1.27	0.270	-3.92	**0.017***	-5.29	**0.006****
16.	Emami Ltd.	-5.75	**0.005****	-5.01	**0.007****	-5.09	**0.007****	-2.06	0.108	-3.62	**0.022***
17.	India Cements Ltd.	-19.36	**0.000****	-5.14	**0.007****	-5.85	**0.004****	-10.67	**0.000****	-23.13	**0.000****
18.	Indian Oil Corpn. Ltd.	-9.03	**0.001****	-4.79	**0.009****	-3.78	**0.019***	-4.78	**0.009****	-11.70	**0.000****
19.	Indo Rama Synthetics	-19.34	**0.000****	-0.70	0.518	0.63	0.559	-7.95	**0.001****	2.93	**0.043***

20.	Inducto Steel Ltd.	-1.97	0.120	-0.35	0.739	-8.24	**0.001****	-0.02	0.984	-5.26	**0.006****
21.	Jain Irrigation Systems Ltd.	-9.21	**0.001****	-7.51	**0.002****	-4.72	**0.009****	-5.03	**0.007****	-5.70	**0.005****
22.	JB Chemicals & Pharma.	-1.33	0.253	-1.80	0.145	-1.44	0.223	-9.31	**0.001****	-18.45	**0.000****
23.	KLRF Ltd.	-8.46	**0.001****	-2.59	0.061	-2.98	**0.041***	-5.13	**0.007****	-5.30	**0.006****
24.	Marksans Pharma Ltd.	-0.73	0.505	0.34	0.746	0.35	0.742	-2.50	0.067	-1.02	0.365
25.	Modi Naturals Ltd.	-3.99	**0.016***	-4.95	**0.008****	-1.23	0.285	-8.06	**0.001****	-10.38	**0.000****
26.	Motherson Sumi Systems	-1.20	0.294	-4.07	**0.015***	-4.11	**0.015***	-4.32	**0.012***	-5.72	**0.005****
27.	NCL Industries Ltd.	-5.86	**0.004****	-6.73	**0.003****	-6.36	**0.003****	-5.42	**0.006****	-9.91	**0.001****
28.	Novopan Industries Ltd.	-1.98	0.118	1.52	0.203	1.68	0.167	-6.19	**0.003****	-1.60	0.183
29.	Permanent Magnets Ltd.	-3.52	**0.024***	-2.33	0.080	-9.06	**0.001****	-1.23	0.285	-3.63	**0.022***
30.	Pfizer Ltd.	-3.26	**0.031***	-5.22	**0.006****	-4.84	**0.008****	0.13	0.899	-7.11	**0.002****
31.	Reliance Industries Ltd.	-5.17	**0.007****	-10.12	**0.001****	-11.62	**0.000****	-4.66	**0.010***	-8.30	**0.001****
32.	Sangam (India) Ltd.	-6.53	**0.003****	-4.89	**0.008****	-5.02	**0.007****	-16.16	**0.000****	-11.29	**0.000****
33.	Spentex Industries Ltd.	-27.19	**0.000****	-1.03	0.359	-0.89	0.419	-9.45	**0.001****	-4.16	**0.014***
34.	Sterlite Technologies Ltd.	-8.03	**0.001****	-3.52	**0.024***	-3.49	**0.025***	-3.11	**0.036***	-5.86	**0.004****
35.	Thermax Ltd.	-10.34	**0.000****	-15.12	**0.000****	-9.69	**0.001****	-8.60	**0.001****	-4.86	**0.008****
36.	Uflex Ltd.	-4.59	**0.010***	-2.14	0.099	-3.35	**0.028***	-5.91	**0.004****	-23.42	**0.000****
37.	United Breweries Ltd.	-5.44	**0.006****	-7.42	**0.002****	-7.34	**0.002****	-7.37	**0.002****	-12.60	**0.000****
38.	United Spirits Ltd.	-6.44	**0.003****	-11.01	**0.000****	-9.81	**0.001****	-6.15	**0.004****	-5.79	**0.004****
39.	Visaka Industries Ltd.	-16.36	**0.000****	-4.70	**0.009****	-4.60	**0.010***	-11.13	**0.000****	-26.06	**0.000****

Source: Computed results based on the compiled & edited data collected from the financial statements of selected firms listed-CMIE-prowess package.

*Significant at 5% level; **Significant at 1% level

Impact of M&As on Cost of Utilization of Manufacturing Firms

Cost of utilization *(CU)*, in terms of comparing mean Raw Material Cost to Sales Ratio *(RM_SR)*, Power and Fuel Cost to Sales Ratio *(P&F_SR)*, Employee Cost to Sales Ratio *(EC_SR)*, Selling and Administrative Cost to Sales Ratio *(S&AC_SR)*, and Total Cost to Sales Ratio *(TC_SR)* between the pre-and post-merger periods are carried out in order to analyse the impact of *M&As* on the *CU* of the firms that entered into merging activities. The results of the analysis are shown in Table 6.

Raw material Cost to Sales Ratio *(RM_SR)* expresses the relationship between raw material cost and sales. A low ratio is favourable from the management point of view. It is inferred *(vide table 6)* that the *CU* in terms of *RM_SR* of *ACC Ltd, ADF Foods Ltd, Aurobindo Pharma Ltd,* and *Emami Ltd* is significant (t= 6.19, $P<0.01$; 3.80, $P<0.05$; 6.24, $P<0.01$; and 14.09, $P<0.01$) at 1% and 5% level respectively after the *M&As* process. The *RM_SR* in the post-merger period is decreased for 14 out of 39 acquiring manufacturing firms.

Power and Fuel Cost to Sales Ratio *(P&F_SR)* expresses the relationship between power and fuel cost and sales. A low ratio is desirable from the management point of view. It is inferred *(vide table 6)* that the *CU* in terms of *P&F_SR* of *Blue Star Ltd, Coromandel International, India Cements Ltd, KLRF Ltd, Motherson Sumi Systems, NCL Industries Ltd, Pfizer Ltd, Thermax Ltd, United Breweries Ltd,* and *Visaka Industries Ltd* is significant (t= 4.05, $P<0.05$; 4.87, $P<0.01$; 10.11, $P<0.01$; 7.64, $P<0.01$; 15.70, $P<0.01$; 2.92, $P<0.05$; 3.23, $P<0.05$; 3.44, $P<0.05$; 4.34, $P<0.05$; and 4.28, $P<0.05$) at 1% and 5% level respectively after the *M&As* process. The *P&F_SR* in the post-merger period is decreased for 25 out of 39 acquiring manufacturing firms. Employee Cost to Sales Ratio *(EC_SR)* expresses the relationship between employee cost and sales. A low ratio is favourable from the management point of view. It is inferred *(vide table 6)* that the *CU* in terms *EC_SRs* of *Bilpower Ltd, NCL Industries Ltd, Permanent Magnets Ltd, Thermax Ltd,* and *United Breweries Ltd* is significant (t= 4.42, $P<0.05$; 5.30, $P<0.01$; 5.02, $P<0.01$; 3.18, $P<0.05$; and 4.83, $P<0.01$) at 1% and 5% level respectively after the *M&As* process. The *EC_SR* in the post-merger period is decreased for 20 out of 39 acquiring manufacturing firms.

Table 5: Descriptions of Financial Ratios Used to Study the Cost of Utilization of Acquiring Manufacturing Firms in India

Classification of Financial Ratios	Variables	Description	Inference
Cost of Utilization	Raw materials to Net sales ratio	Raw materials / Net sales	The ratio indicates the portion of sales which consumed by the raw material expenses. A low ratio is favourable from the management point of view.
	Power and fuel to Net sales ratio	Power and fuel / Net sales	The ratio indicates the portion of sales which is consumed by the power and fuel expenses. A low ratio is desirable from the management point of view.
	Employee cost to Net sales ratio	Employee cost / Net sales	The ratio is used to describe firm's employee costs relative to its overall sales. A low ratio is favourable from the management point of view.
	Selling and administrative cost to Net sales ratio	Selling and administrative cost / Net sales	The ratio is used to describe firm's selling & administrative cost relative to its overall sales. A low ratio is desirable from the management point of view.
	Total costs to Net sales ratio	Total costs / Net sales	The ratio helps management to take decision by comparing a ratio from one period to the other. Low cost-to-sales ratio discloses high operating efficiency. However, a high cost-to-sales ratio does not necessarily always mean low operating efficiency over time.

Selling and Administrative Cost to Sales Ratio *(S&AC_SR)* expresses the relationship between selling & administrative cost and sales. A low ratio is desirable from the management point of view. It is inferred (vide table 6) that the CU in terms of S&AC_SR of Coromandel International, Motherson Sumi Systems, Novopan Industries Ltd, Pfizer Ltd, Reliance Industries Ltd, and Thermax Ltd is significant (t= 5.30, P<0.01; 3.42, P<0.05; 3.30, P<0.05; 8.92, P<0.01; 3.59, P<0.05; and 4.93, P<0.01) at 1% and 5% level respectively after the M&As process. The S&AC_SR in the post-merger period is decreased for 24 out of 39 acquiring manufacturing firms.

Total Cost to Sales Ratio *(TC_SR)* expresses the relationship between total cost and sales. A low cost-to-sales ratio shows high operating efficiency. It is inferred (vide table 6) that the CU in terms of TC_SR of ADF Foods Ltd, Emami Ltd, and United Spirits Ltd is significant (t= 6.13, P<0.01; 3.01, P<0.05; and 3.41, P<0.05) at 1% and 5% level respectively after the M&As process. The TC_SR in the post-merger period is decreased for 20 out of 39 acquiring manufacturing firms.

SUMMARY OF FINDINGS

Test of Hypothesis - Growth Parameter: The impact of M&As on the G aspect of the manufacturing firms is tested by use of the paired samples t–test, and the hypothesis developed is: H_o^1- "There is no significant mean difference between the growth aspect of manufacturing firms in India before and after the M&As process".

The result of t–test reveals that H_0^1 is rejected for most of the manufacturing firms in India. Overall, it is inferred from the comparison of *G* aspect ratios between the pre-and post-merger periods that there is a significant mean difference (shift positively) for 38 out of 39 manufacturing firms at 1% and 5% level respectively before and after the *M&As* process. Test of Hypothesis - Cost of Utilization Parameter: The impact of M&As on the CU aspect of the manufacturing firms is tested by use of the paired samples t–test, and the hypothesis developed is: H_o^2- "There is no significant mean difference between the cost of utilization aspect of manufacturing firms in India before and after the M&As process".

ble 6: Impact of *M&As* on Cost of Utilization of Manufacturing Firms in India during 2001-2002 to 2011-2012 in India

Sl. No.	Name of the firms	RM_SR		P&F_SR		EC_SR		S&AC_SR		TC_SR	
		t-value	p-value	t-value	p-value	t-value	p-value	t-value	p-value	t-value	p-value
1.	ACC Ltd.	6.19	**0.003****	-1.69	0.165	1.91	0.129	2.72	0.053	0.29	0.783
2.	ADF Foods Ltd.	3.80	**0.019***	-3.62	**0.022***	-2.69	0.054	-0.01	0.989	6.13	**0.004****
3.	Ambuja Cements Ltd.	-2.23	0.089	1.89	0.131	-2.50	0.067	-0.99	0.376	-1.62	0.180
4.	Archies Ltd.	1.27	0.273	-0.48	0.654	-5.36	**0.006****	0.82	0.458	0.50	0.637
5.	Arvind Ltd.	-9.21	**0.001****	0.94	0.398	-7.54	**0.002****	-0.71	0.514	-6.55	**0.003****
6.	Aurobindo Pharma Ltd.	6.24	**0.003****	-0.30	0.754	-6.23	**0.003****	-0.63	0.560	2.04	0.111
7.	Batliboi Ltd.	-1.15	0.312	2.38	0.075	-0.31	0.771	-0.81	0.460	0.49	0.647
8.	Bilpower Ltd.	-2.89	**0.044***	2.62	0.058	4.42	**0.012***	1.15	0.314	-1.23	0.286
9.	Blue Star Ltd.	0.77	0.484	4.05	**0.015***	2.17	0.095	-0.20	0.849	0.65	0.546
10.	BSL Ltd.	-0.62	0.568	-6.14	**0.004****	-4.19	**0.014***	-2.33	0.080	-0.62	0.564
11.	Caplin Point Laboratories	0.54	0.617	1.69	0.166	1.67	0.168	1.93	0.126	1.19	0.300
12.	Chromatic India Ltd.	-9.48	**0.001****	1.26	0.275	0.09	0.930	1.85	0.137	0.17	0.873
13.	Coromandel International	-2.66	0.056	4.87	**0.008****	2.66	0.056	5.30	**0.006****	0.30	0.775
14.	Dalmia Bharat Sugar & In.	-1.24	0.281	1.17	0.305	0.72	0.509	1.40	0.232	-0.65	0.548
15.	EID-Parry (India) Ltd.	-1.42	0.227	1.44	0.222	0.51	0.637	-1.07	0.344	-1.53	0.200
16.	Emami Ltd.	14.09	**0.000****	-0.98	0.382	-2.91	**0.044***	-7.20	**0.002****	3.01	**0.039***
17.	India Cements Ltd.	-0.37	0.727	10.11	**0.001****	0.70	0.519	1.68	0.167	2.24	0.088
18.	Indian Oil Corpn. Ltd.	-2.56	0.062	-0.58	0.591	-1.55	0.194	2.75	0.051	-2.54	0.064
19.	Indo Rama Synthetics	-1.84	0.138	-2.40	0.074	-0.42	0.690	0.50	0.642	-2.30	0.082

20.	Inducto Steel Ltd.	0.79	0.471	0.43	0.686	0.11	0.914	2.52	0.065	0.86	0.438
21.	Jain Irrigation Systems Ltd.	-1.60	0.184	1.04	0.357	0.99	0.378	2.63	0.058	2.02	0.113
22.	JB Chemicals & Pharma.	1.39	0.237	-0.23	0.826	-3.89	**0.018***	-1.41	0.230	-1.52	0.201
23.	KLRF Ltd.	0.24	0.820	7.64	**0.002****	-1.20	0.295	-1.52	0.201	-1.44	0.222
24.	Marksans Pharma Ltd.	1.40	0.234	-0.63	0.558	-24.60	**0.000****	-1.08	0.338	-1.19	0.297
25.	Modi Naturals Ltd.	-1.05	0.352	0.76	0.489	0.49	0.648	1.84	0.139	0.29	0.786
26.	Motherson Sumi Systems	-6.14	**0.004****	15.70	**0.000****	-1.54	0.196	3.42	**0.027***	-3.82	**0.019***
27.	NCL Industries Ltd.	0.31	0.770	2.92	**0.043***	5.30	**0.006****	-2.09	0.105	2.22	0.090
28.	Novopan Industries Ltd.	-4.47	**0.011***	-0.98	0.381	-1.40	0.234	3.30	**0.030***	-2.13	0.099
29.	Permanent Magnets Ltd.	-3.11	**0.036***	2.74	0.051	5.02	**0.007****	-0.40	0.708	-1.19	0.299
30.	Pfizer Ltd.	-0.04	0.969	3.23	**0.032***	-2.22	0.090	8.92	**0.001****	1.93	0.125
31.	Reliance Industries Ltd.	-3.09	**0.036***	0.03	0.972	0.62	0.564	3.59	**0.023***	-1.76	0.153
32.	Sangam (India) Ltd.	0.92	0.410	-2.13	0.100	-3.22	**0.032***	1.86	0.136	-0.74	0.499
33.	Spentex Industries Ltd.	-0.15	0.887	-0.41	0.702	-1.40	0.232	0.23	0.829	-0.99	0.374
34.	Sterlite Technologies Ltd.	-0.69	0.523	0.48	0.654	1.59	0.186	1.85	0.138	1.01	0.368
35.	Thermax Ltd.	-4.64	**0.010***	3.44	**0.026***	3.18	**0.033***	4.93	**0.008****	0.39	0.712
36.	Uflex Ltd.	0.13	0.901	-2.67	0.055	-4.65	**0.010***	-0.64	0.555	-0.51	0.633
37.	United Breweries Ltd.	-2.14	0.099	4.34	**0.012***	4.83	**0.008****	0.39	0.714	2.11	0.102
38.	United Spirits Ltd.	-0.17	0.868	2.44	0.071	2.15	0.097	1.80	0.145	3.41	**0.027***
39.	Visaka Industries Ltd.	-2.30	0.082	4.28	**0.013***	1.03	0.360	1.84	0.139	-0.34	0.751

Source: Computed results based on the compiled & edited data collected from the financial statements of selected firms listed-CMIE-prowess package.

*Significant at 5% level; **Significant at 1% level.

The result of the t–test reveals that H_0^2 is rejected for most of the manufacturing firms in India. Overall, it is inferred from the comparison of *CU* ratios between the pre-and post-merger periods that there is a significant mean difference (shift positively) for 19 out of 39 manufacturing firms at 1% and 5% level respectively before and after the *M&As* process.

CONCLUSION AND POLICY PRESCRIPTIONS

The study examined the impact of *M&As* on *G* aspect and *CU* aspect of acquiring manufacturing firms in India, using *paired samples 't' test* to study if there is a significant shift-in-structure (improvement) in the *G* position and *CU* of manufacturing firms in the post-merger period based on the annual financial data spanning the years from 2002 – 2012, for a period of five years prior to the merger (2002–2006) and five years after the merger (2008–2012) for each of the manufacturing firms in India. The study has been carried out with a sample of 39 manufacturing firms, which had gone into the *M&As* process during the financial year 2006–07.

The study proves that for most of the acquiring manufacturing firms, there is a significant difference in *G* position in the post-merger period. It reveals that the acquiring manufacturing firms are well managed and they have used their owned resources to maximize profits. Further, most of the acquiring manufacturing firms increase the *CU* by way of better control of expenses in the post-merger periods. Therefore, the study reveals that there is a significant difference (shift) in the *G* position as well as in the *CU* of the acquiring manufacturing firms in India after *M&As*.

Limitations and Scope for Further Studies
  ➢ The study is mainly based on secondary data and is restricted to the acquiring manufacturing firms in India, and are categorized into *food & beverage, machinery, non-metallic mineral product, chemical, textiles, metals & metal products, transport equipment, and miscellaneous categories*, hence the study kept the other sectors outside the purview of analysis.
  ➢ The firms which originally went in for the *M&As* process in 2006–07, and subsequently entered in to *M&As* process with some other firm(s) are ignored in the study for the simple reason that it requires a further attempt to explore the series of impact of *M&As* on *G* position and *CU*.

> The present study has used *paired samples t-test* only as a measure to study the *G* position and *CU* of acquiring manufacturing firms in India. Further studies may be conducted using criterion variables viz *Market Value Added (MVA) and Economic Value Added (EVA)* with help of *other appropriate research methods.*

> Further studies can be undertaken to analyze the efficiency and performance of banking and financial service industry in the post-merger period using CRAMEL and CAMELS models of research methods.

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