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CONTENTS

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   REVIEW OF LITERATURE

   NEED/IMPORTANCE OF THE STUDY

   STATEMENT OF THE PROBLEM

   OBJECTIVES

   HYPOTHESES

   RESEARCH METHODOLOGY

   RESULTS & DISCUSSION

   FINDINGS

   RECOMMENDATIONS/SUGGESTIONS

   CONCLUSIONS

   SCOPE FOR FURTHER RESEARCH

   ACKNOWLEDGMENTS

   REFERENCES

   APPENDIX/ANNEXURE

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CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

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- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

THE EFFECT OF MERGER AND ACQUISITIONS ON THE SHAREHOLDERS' WEALTH: EVIDENCE FROM THE FOOD INDUSTRY IN INDIA

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ABSTRACT

The objective of this paper is to investigate the impact of merger & acquisition (M&As) deals while acquiring firms in the food industry in India, on shareholders' wealth. A sample of 10 firms involved in M&A deals during 2007 is considered for analysis. The analysis is based on descriptive statistics, correlation matrix, multiple regression, chow breakpoint test, and chow test. The results reveal that for the acquisition of firms in the food industry, the post-merger impact as M&A on the mean variables decreases when compared with the Market Value Added (MVA). The overall shareholders' wealth efficiency ratios increased after the merger for four out of eight corporate firms. The critical value of F (df; 7, 29) is $2.346_{0.05}$, $3.330_{0.01}$ at 5% and 1% level of significance respectively, the fact of which shows that the test statistics – post merger ($6.969_{0.01}$) is greater than the 99% critical value (3.330) of the F-test, leading to a rejection of the null hypothesis. The structural breakpoint test of the F- values for liquidity and financial risk has a positive significance positively with the MVA at 1% and 5% level and this reveals that there is good relationship between the independent and dependent variables taken for analysis. The cost of utilisation, management efficiency, profit, earnings, and growth do not have a significant impact on MVA. The chow F-value ($3.58_{0.01}$) is greater than the table value (df; 8, 44) $2.94_{0.01}$ at the 1% level, and hence, it is significant to state that there is a significant shift (change) in the output (shareholders' wealth) due to the merger during the post-merger study period 2008 - 2010, which supports a good, positively significant impact of M&A of the acquisition firms in the food industry in India after the merger.

KEYWORDS

acquisition; business restructuring; business risk; corporate restructuring; merger.

JEL CLASSIFICATION

G34; L25; M40

INTRODUCTION AND CONCEPTUAL FRAMEWORK

Merger and acquisitions (**M&A**) is a common term used in business in these days. ***M&A*** refers to that aspect of corporate strategy, corporate finance, and management dealing with buying, selling and the combating of different firms that can aid, finance, or help a growing firm in a given industry to grow rapidly without having to create another business entity. All corporate firms that are interested in ***M&A*** have a specific objective behind this process like a *combined economy can often reduce its fixed cost by removing duplicate departments or operation, lowering the cost of revenue, thus increasing profit margins; increased market shares; and cross selling.*

DEFINITION OF MARKET VALUE ADDED

Value-based management and shareholder value analysis were well-known concepts in the 1980s, but there is now a renewed interest in them and also in newer related concepts, such as, market value added (**MVA**). A corporate firm's total market value is equal to the sum of the market value of its equity and the market value of its debt. The ***MVA*** is the difference between the total market value and the book value of the firm. From an investor's point of view, ***MVA*** is the best external measure of a corporate firm's performance. **Stewart (1991)**[1] stated that ***MVA*** is a cumulative measure of corporate performance and that it represents the stock market's assessment from a particular time onwards of the net present value (**NPV**) of all a corporate firm's past and projected capital projects. The ***MVA*** is calculated at a given moment, but in order to assess performance over time, the difference or change in ***MVA*** from one date to the next can be determined to see whether value has been created or destroyed. According to **Nikhil Chandra Shil (2009)**[2] and **Finnegan (1991)**[3] ***MVA*** is identical in meaning to market-to-book ratio. The difference is only that ***MVA*** is an absolute measure and the market-to-book ratio is a relative measure. If ***MVA*** is positive, that means, that the market-to-book ratio is more than one. A negative ***MVA*** means the market-to-book ratio is less than one. If a firm's rate of return exceeds its cost of capital, the firm will sell on the stock markets with a premium compared to the original capital (has positive ***MVA***). On the other hand, firms that have a rate of return smaller than their cost of capital sell with a discount compared to the original capital invested in the firm. Whether a firm has positive or negative ***MVA*** depends on the level of rate of return compared to the cost of capital.

REVIEW OF LITERATURE

The process of ***M&A*** aims at achieving greater efficiency, diversification, and market power. The synergistic gains by ***M&A*** activity may argue from more efficient management, economies of scale and scope, improved production techniques, a combination of complementary resources, redeployment of assets to more profitable uses, and the exploitation of market power. It is argued that ***M&A*** are indispensable strategic tools for expanding product portfolios, entering new markets, acquiring new technology, and building a new generation organization with power and resources, to compete on a global basis.

Azhagaiah and **Sathish Kumar (2011)**[4], in their study *"Corporate restructuring and firms' performance: An empirical analysis of selected firms of across corporate sectors in India"* tested two hypotheses concerning whether there have been significant improvements in the corporate performance of Indian manufacturing corporate firms following the merger event, and for their study, they used a two sample paired t-test. The study findings indicate that Indian corporate firms involved in ***M&A*** have achieved an increase in the liquidity position, operating performance, profitability, and reduce financial and operating risk.

Azhagaiah and **Sathish Kumar (2011)**[5], in a study titled *"Mergers and Acquisitions: An Empirical Study on the Short-term Post- merger Performance of Corporate Firms in India"* examined a sample consisting of 20 acquiring firms during the period 2007. The study used ratio analysis and two sample paired t test for

compare the operating performance of the sample acquirer firms in the pre- and post-merger period. The study findings indicate that merging corporate firms in India appear to have performed better financially after the merger, as compared to their performance in the pre-merger period.

Azhagaiah and **Sathish Kumar (2011)**[6], in a study titled *"A study on the short-run profitability of acquirer firms in India"* enquired into the impact of business restructuring on the profitability of the chemical industry in India with a sample of 10 acquiring firms in the same industry during 2007. The study used gross profit ratio (**GPR**), operating profit ratio (**OPR**), and net profit ratio (**NPR**) to compare the pre- and post-merger operating performance of the selected acquiring firms in India, with two sample paired 't' test during the study period of three years before and three years after the period of ***M&A***. The study findings indicate that there has been a significant increase in short-run post-merger ***OPR*** of four acquirer firms, ***GPR*** of five acquirer firms, and ***NPR*** of five acquirer firms although there has been an increase in ***OPR***, ***GPR***, and ***NPR***. The study finally indicates that there is a significant positive impact of ***M&A*** on the short-run post-merger profitability of acquirer firms of the chemical industry in India.

Antony Akhil (2011)[7], in an analysis *"Post-merger profitability of selected banks in India"* examined the impact of the banks merged in India from 1999 to 2011. Between 1999 and 2011, around 18 ***M&A*** took place in the Indian banking sector. The study samples were six acquirer banks selected, three of them were public sector banks and three were private sector banks. The study used two sample paired t-test. The study findings indicate that there is a significant difference in the profitability ratios, like (growth of total assets ratio, growth of net profit ratio, return on assets ratio, return on equity ratio, and net interest margin ratio) of banks in the post-merger scenario.

Malabika Deo and **Mohammad Aasif Shah (2011)**[8], in a work entitled *"Shareholder wealth effects to merger announcements in Indian industry"* addressed the financial implications of the acquirer and target shareholders wealth in the Indian information technology industry (**IT**) that occurred from January 2000 to June 2010. The study which consisted of a sample of 28 merger announcements both by independent and controlling bidder firms, applied a constant market model to evaluate acquirer and target shareholders wealth. The study findings indicate that merger announcements in the ***IT*** sector have no significant impact on the bidder portfolio. ***M&A*** create significant positive abnormal returns for target shareholders only.

Madan Mohan Dutta and **Suman Kumar Dawn (2012)**[9], in a paper *"Merger and acquisitions in Indian banks after liberalisation: An analysis"* attempted to examine the Indian banking industry post liberalization and critically examined the reasons for the ***M&A***, and analyzed whether these ***M&A*** can be considered as successful or not. The study investigates the performance of merged banks in terms of its growth of total assets, profits, revenue, deposits, and number of employees. The performance of merged banks is compared taking four years of prior-merger and four years of post-merger. The study findings indicate that the post-merger periods were successful and saw a significant increase in total assets, profits, revenue, deposits, and in the number of employees of the acquiring firms of the banking industry in India. Most of the past studies also attempted, in the same way, to evaluate shareholders wealth in pre- and post-merger periods, but the present study is an attempt to overcome the limitations of the previous studies, and a fair answer will be found with the help of modern statistical tools. This paper aims to fill this gap.

RESEARCH METHODS

STATEMENT OF THE PROBLEMS AND SCOPE OF THE STUDY

When a firm gets 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 in the form of ***M&A***. However, the question often arises whether all the firms that are merged / acquired are ending up with increase in shareholders value? Because in some firms, the operating performance gets reduced after ***M&A,*** therefore, the present study is an attempt to seek answers to the question by analysing the impact of ***M&A*** on the sample of 10 firms in the food industry out of the 11 firms listed in one of the leading Indian stock exchanges in India, namely, the ***Bombay Stock Exchange*** which have undergone ***M&A*** in the same (*related merger*) industry during the period 2007, and attempted to study the shareholders wealth of the acquirer firms in the food industry in India in the short run, that is, during the period of three years before merger and three years after the merger, that is from 2004 to 2006, and 2008 to 2010, hence, the period of the study is six years (from 2004 to 2010, merger year (2007) is not included).

OBJECTIVES OF THE STUDY AND HYPOTHESES DEVELOPMENT

Considering the scope of research on ***M&A*** in the food industry in India, the present study has been aimed at estimating the shareholders' wealth of acquiring firms in the post-merger period. The study has further attempted to investigate and test if there is any significant change in the results achieved by the firms due to ***M&A***.

Based on the objectives the following hypotheses are developed:

Ho#1- There is no significant improvement on the cost of utilization of acquiring firms in the food industry in India after the *M&As*.
Ho#2- There is no significant improvement on the management efficiency of acquiring firms in the food industry in India after the *M&As*.
Ho#3- There is no significant improvement on the profitability of acquiring firms in the food industry in India after the M&As.
Ho#4- There is no significant improvement on the earnings of acquiring firms in the food industry in India after the M&As.
Ho#5- There is no significant improvement on the liquidity of acquirer firms in the food industry in India after *M&As*.
Ho#6- There is no significant improvement on the growth of acquiring firms in the food industry in India after *M&As*.
Ho#7- There is no significant improvement on the financial risk of acquiring firms in the food industry in India after *M&As*.

RESEARCH METHODOLOGY

The study used secondary sources of data, which are collected from the capital market database called ***Centre for Monitoring Indian Economy Private Limited (Prowess CMIE)***. Data on shareholders' wealth ratios for a period of three years prior to the merger and a three years period after the ***M&A*** year for each acquiring firm were collected.

SOURCE OF DATA AND PERIOD OF STUDY

The sample units (firms) drawn are based on the list of firms that ventured into the ***M&A*** process with the help of the comprehensive list provided by the Prowess database of CMIE package.The study period is restricted to 2004 - 2010. The firms, which had gone into ***M&A*** process during the period of 2007, are only considered for the study for want of analysing short run impact of ***M&A***.

SAMPLING DESIGN

Multi-stage sampling technique is used and the different the stages followed are stated below:

Stage 1: 11 firms of the food industry, which had gone into the ***M&A*** processes during the period of 2007, are considered as the base.

Stage 2: The final sample unit consists of 10 firms of the food industry in India, which have complete data pertaining to the period of the study (*see table 1*).

DATA ANALYSIS

Shareholders' wealth ratios were computed for both pre- and post-merger periods for the entire set of sample firms, which have gone through ***M&A*** during the year 2007. The average pre- and post-merger financial performance ratios were compared to study if there was any statistically significant shift (*change*) in shareholders' wealth of the firms due to ***M&A***.

TABLE 1: SAMPLE UNITS OF THE FOOD INDUSTRY IN INDIA (BASED ON THE CALENDAR YEAR 2007)

Sl. No.	Acquirer Firms	Target Firms
1.	Bannari Amman Sugars Ltd.	Maheswara Sugars Ltd.
2.	Dabur India Ltd. (DIL)	Dabur foods Ltd. (DFL)
3.	GL Hotels Ltd.	Mayfair Banquets (P) Ltd.
4.	Indian Hotels Company Ltd.	Hotel Campton Place Ltd.
5.	Mcleod Russel India Ltd.	Moran Tea Co. (India) Ltd.
6.	Siel Ltd.	Mawana Sugars Ltd.
7.	Tata Global Beverage Ltd.	Tezpore Tea Co. Ltd.
8.	United Spirits Ltd.	Whyte and Mackay Ltd
9.	VIP Industries Ltd.	Blow Plast Ltd.
10	Virat Crane Industries Ltd.	Durga Dairy Ltd.

Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

RESEARCH METHODS

The study used "descriptive statistics, correlation matrix, multiple regression analysis, chow breakpoint test, and the chow test". Descriptive statistics, such as, mean and standard deviation is extensively used to deactivate the variation in the value of the independent and dependent variables. Correlation co-efficient is used to analyse the one-to-one relationship between the selected variables. Factor analysis is also used to identify underlying variables, or factors, that explain the pattern of correlations within a set of observed variables. *Table 2* shows the factor analysis undertaken on the whole period merger (pre- and post-merger periods) variables. The variables are rotated through the *Varimax with Kaiser Normalization* method and extracted using principal component analysis; thereby 7 factors are evolved through this factor analysis in this study.

Multiple regression analysis has been used for the purpose of estimating as to which part of the increase the merger had impact, by use of various ratios for finding out the shareholders' wealth of the firms of the food industry in India. The Chow test is used for the purpose of studying the shift in the structure of the cost of utilisation, management efficiency, profit, earnings, liquidity, growth, and financial risk etc., due to ***M&A***.

REGRESSION EQUATION ANALYSIS

The regression equation to analyze the determinants of shareholders' wealth includes the following dependent (explaining) variable and independent (explanatory) variables.

DEPENDENT VARIABLE

MVA is the dependent variable, which is the difference between the total market value and book value of the acquirer firms. From an investor's point of view, ***MVA*** is the best external measure of an acquirer firms' performance. ***MVA*** is the cumulative measure of corporate performance and it represents the stock market's assessment from a particular time onwards of the net present value (**NPV**) of all of a firm's past and projected capital projects. The ***MVA*** is calculated at a given moment, but in order to assess performance over time, the difference or change in ***MVA*** from one date to the next can be determined to see whether value has been created or destroyed, **Stewart** (**1991**). ***MVA*** is identical in meaning to market-to-book ratio. The difference is only that ***MVA*** is an absolute measure and market-to-book ratio is a relative measure. The *positive* ***MVA*** means market-to-book ratio more than one. The *negative* ***MVA*** means market-to-book ratio less than one. If a firm's rate of return exceeds its cost of capital, the firm will sell on the stock markets with a premium compared to the original capital (has positive ***MVA***). On the other hand, firms that have a rate of return smaller than their cost of capital sell with a discount compared to the original capital invested in the firm. Whether a firm has positive or negative ***MVA*** depends on the level of rate of return compared to the cost of capital, **Nikhil Chandra Shil (2009)**. The present study makes an attempt to discover whether value has created or destroyed the percentage change in ***MVA*** due to the ***M&A*** in the post-merger period.

The *MVA* is calculated by
MVA = Market value – Total common equity
Market value = No. of shares outstanding * Market stock price (As on 31st march)
Common equity = Equity + Reserves and surplus

INDEPENDENT VARIABLES

The independent variables are cost of utilisation (***CU***), management efficiency (***ME***), profit (***P***), earnings (***E***), liquidity (***L***), growth (***G***) and financial risk (***FR***).

Equation

$$MVA = \alpha + \beta 1\ CU + \beta 2\ ME + \beta 3\ P + \beta 4\ E + \beta 5\ L + \beta 6\ G + \beta 7\ FR + E$$

RESULTS AND DISCUSSION

Financial literature suggests that a merger decision may be the result of one or more of the following motives: *synergy, agency, and aggressive*. The synergy motive implies that acquiring firms expect synergetic gains that result by acquiring the resources of the two firms. There is a lot of research work evidencing that merged firms show significant improvements in post-merger cash flows. The performance of the selected acquiring firms of the food industry in India in respect of their ***CU***, ***ME***, ***P***, ***E***, ***L***, ***G***, and ***FR*** after the merger have been compared to that of before the merger. Descriptive statistics, correlation matrix, multiple regression analysis, chow breakpoint test analysis, and chow test are used for the purpose of studying the shift in the structure upon ***M&A***. The results of the study are presented from Tables 2 to 8.

TABLE 2: FACTORS OF FACTOR ANALYSIS ON THE IMPACT OF MERGER AND ACQUISITIONS ON THE SHAREHOLDERS' WEALTH PERFORMANCE IN THE FOOD INDUSTRIES IN INDIA

Factors	Eigen value	Variable convergence	Factor loadings
Factor 1 Cost of Utilization (CU)	6.059	Selling and Admi. Expense to Net Sales Ratio	0.993
		Total Expenses to Net Sales Ratio	0.996
		Employee Cost to Net Sales Ratio	0.991
		Raw Materials to Net Sales Ratio	0.994
		Power and Fuel Cost to Net Sales Ratio	0.956
		Other Manufacturing Expenses to Net Sales Ratio	0.914
Factor 2 Management Efficiency (ME)	4.066	Investments Turnover Ratio	0.950
		Inventory Turnover Ratio	0.916
		Fixed Assets Turnover Ratio	0.706
Factor 3 Profit (P)	2.752	Net Profit Ratio	0.850
		NWC to Total Sales Ratio	0.654
		Gross Profit Ratio	0.647
Factor 4 Earnings (E)	1.885	Dividend Yield Ratio	0.812
		Dividend Per Share Ratio	0.647
		Dividend Pay-out Ratio	0.788
		Total Debt to Total Assets Ratio	0.644
Factor 5 Liquidity (L)	1.844	Current Ratio	0.890
		Quick Ratio	0.896
		Operating Profit Per Share	0.668
Factor 6 Growth (G)	1.323	Growth on Sales Ratio	0.868
		Growth on EBDIT Ratio	0.924
Factor 7 Financial Risk (FR)	1.179	Debt Equity Ratio	0.818
		Interest Cover Ratio	0.588

Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

From the factor analysis (*see Table 2*) on the pre- and post-merger shareholders' wealth performance in the food industry in India, it is found that 7 major factors are identified and they are interlinked. In the ***first factor*** (*selling and administration expense to net sales ratio, total expenses to net sales ratio, employee cost to net sales ratio, raw materials to net sales ratio, power and fuel cost to net sales ratio, and other manufacturing expenses to net sales ratio*) is denoted as ***CU***. The ***second factor*** (*investments turnover ratio, inventory turnover ratio, and fixed assets turnover ratio*) is termed as ***ME***. The ***third factor*** (*net profit ratio, NWC to total sales ratio, and gross profit ratio*) is denoted as ***P***. The ***fourth factor*** (*dividend yield ratio, dividend per share ratio, dividend pay-out ratio, and total debt to total assets ratio*) treated as ***E***. The ***fifth factor*** (*current ratio, quick ratio, and operating profit per share ratio*) is described as ***L***. The ***sixth factor*** (*growth on sales ratio and growth on EBDIT ratio*) is denoted as ***G***. And the seventh and last factor (*debt equity ratio and interest cover ratio*) is treated as ***FR***.

To summarize the factors, the variables are appropriately combined together and clearly indicate which variables should be closely monitored. Independent variables, such as, ***CU***, ***ME***, ***P***, ***E***, ***L***, ***G***, and ***FR***, which are grouped together, are found to be highly significant variables identified through factor analysis. So, the firms in the food industry in India that tend to go in for a merger have to carefully analyze those variables before and after merger, since they are closely associated with the performance of acquiring firms.

TABLE 3: DESCRIPTIVE STATISTICS OF BASIC MEASURES OF IMPACT OF MERGER AND ACQUISITIONS ON SHAREHOLDERS' WEALTH OF ACQUIRING FIRMS IN THE FOOD INDUSTRY IN INDIA

Sl. No.	Variables	Pre-Merger		Post-Merger		Impact
		Mean	SD	Mean	SD	
1.	**MVA**	1.11	1.65	2.10	4.15	+
2.	Cost of Utilization	-0.17	0.16	0.17	1.39	+
3.	Management Efficiency	0.15	0.87	-0.15	1.10	-
4.	Profitability	-0.13	0.71	0.13	1.21	+
5.	Earnings	0.01	0.52	-0.01	1.32	-
6.	Liquidity	-0.14	0.98	0.14	1.00	+
7.	Growth	0.17	1.28	-0.17	0.55	-
8.	Financial Risk	0.23	1.05	-0.23	0.89	-

Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

Table 3 shows the descriptive statistics of measures of shareholders' wealth efficiency of acquiring firms in the food industry in India. It is evident that shareholders' wealth measured in terms of ***MVA*** has the maximum mean value and its standard deviation is also higher when compared to that of the other independent variables. The post-merger independent mean value is increased only for ***P***, ***L***, and ***FR*** and the post-merger independent mean value decreases for ***CU***, ***ME***, ***E***, and ***G***. The overall shareholders' wealth efficiency ratios increase after the merger for four out of eight measures.

TABLE 4: MULTIPLE REGRESSIONS ON FACTORS ON SHAREHOLDERS' WEALTH PERFORMANCE OF FIRMS OF FOOD INDUSTRY IN INDIA FOR PRE AND POST-MERGER PERIODS

Sl. No.	Variable	Un-Standardized Coefficients Beta Value					
		Pre-Merger			Post-Merger		
		B	t-Value	P-Value	B	t-Value	P-Value
1.	(Constant) MVA	0.717	0.620	0.542	2.688	4.673	0.000
2.	Cost of Utilization	-1.135	-0.209	0.836	-0.165	-0.456	0.653
3.	Management Efficiency	0.654	1.263	0.220	0.577	1.117	0.276
4.	Profitability	-0.197	-0.327	0.747	-0.812	-1.763	0.092
5.	Earnings	0.447	0.574	0.572	0.475	1.227	0.233
6.	Liquidity	0.144	0.343	0.735	2.719	4.799	**0.000****
7.	Growth	0.006	0.015	0.988	1.324	1.185	0.249
8.	Financial Risk	0.312	0.557	0.583	2.098	3.338	**0.003****
R- Square		**0.142**			**0.689**		
Adjusted R- Square		**-0.130**			**0.590**		
F- Value		**0.522**			**6.969****		
Degrees of Freedom		**7,29**			**7,29**		
Number of Observations		**30**			**30**		

Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

Figures in the parentheses indicate degrees of freedom.

** Significant at 1 per cent level. * Significant at 5 per cent level.

The regression analysis (*see table 4*) shows that the factor ***L*** has a significant positive beta coefficient ($2.719_{0.01}$) with ***MVA*** at 1% level. The acquiring firms have the capacity to meet short-term liability in the post-merger periods and the acquiring firms have the capacity to pay debts as they come due. The acquiring firms are having ability to earn maximum profit from the maximum use of available resources. The ***P*** reflects the final result of a business operation; therefore, the ***P*** is the main base for liquidity as well as solvency.

The factor ***FR*** has a significant positive beta coefficient ($2.098_{0.01}$) with ***MVA*** at 1% level in the post-merger period only. These measures are often used by creditors to determine the ability of the business to repay loans. Debt ratios can be used to determine the overall level of financial risk of a firm. In general, the greater the amount of debt held by a firm the greater the financial risk of bankruptcy. The ratio expresses the relationship between capital contributed by creditors and that contributed by owners. The higher the ratio, the greater the risk being assumed by creditors. A lower ratio generally indicates greater long-term financial safety. A firm with a low debt-to-equity ratio usually has greater flexibility to borrow in the future. A more highly leveraged firm has a more limited debt capacity. Therefore, the study concludes that acquiring firms in the food industry have a positive significant impact in ***L*** and ***FR*** in the post-merger period.

The ***R***- square and adjusted ***R***-square in the pre and post-merger periods is 0.142, and 0.689; and -0.130, and 0.590 respectively. The critical values of F (df, 7, 29) are $2.346_{0.05}$, $3.330_{0.01}$ respectively at 5% and 1% level of significance, which implies that the test statistic for post-merger ($6.969_{0.01}$) is greater than the 99% critical value (3.330) of F-test, hence it is possible to reject the null hypothesis. ***F*** –values, being significant at 1% level, the study indicates that there is a good relationship between the dependent and independent variables taken for the analysis. This is a good significant positive impact of ***M&A*** of the acquiring firms in the food industry after merger.

The regression equation is as follows:

DEPENDENT VARIABLE - SHAREHOLDERS' WEALTH PERFORMANCE = MARKET VALUE ADDED

MVA (Pre-merger)* = 0.717 + -1.135 *CU* + 0.654 *ME* + -0.197 *P* + 0.447 *E* + 0.144 *L* + 0.006 *G* + 0.312 *FR* + *E

The regression equation infers that there is a negative impact of CU, ME, P, E, L, G, and FR on *MVA*.

MVA (Post-merger)* = 2.688 + -0.165 *CU* + 1.117 *ME* + -0.812 *P* + 0.475 *E* + 2.719 *L* + 1.324 *G* + 2.098 *FR* + *E

The regression equation infers that there is a positive impact of *L* and FR on MVA; negative impact of *CU*, *ME*, *P*, *E*, and *G* on *MVA*

TABLE 5: CORRELATION MATRIX OF FACTORS OF SHAREHOLDERS WEALTH FOR PRE-MERGER PERIOD (2004-2006) OF FIRMS OF FOOD INDUSTRY IN INDIA

	(Constant) MVA	CU	ME	P	E	L	G	FR
(Constant) MVA	1							
CU	0.071							
	(0.708)	1						
ME	0.254	**0.382***	1					
	(0.176)	**(0.037)**						
P	-0.069	**0.432***	**0.371***	1				
	(0.716)	**(0.017)**	**(0.044)**					
E	0.169	**-0.406***	-0.134	**-0.421***	1			
	(0.372)	**(0.026)**	(0.479)	**(0.021)**				
L	0.165	**0.452***	**0.432***	0.302	-0.039	1		
	(0.382)	**(0.012)**	**(0.017)**	(0.105)	0.838			
G	-0.048	**0.561****	0.066	0.204	-0.172	0.101	1	
	(0.801)	**(0.001)**	(0.729)	(0.279)	(0.363)	(0.595)		
FR	0.094	**0.523****	-0.181	-0.155	-0.017	0.057	0.105	1
	(0.620)	**(0.003)**	(0.338)	(0.415)	(0.928)	(0.767)	(0.582)	

Source: Complied & edited from the financial statements of selected firms listed-CMIE-prowess package.

Figures in the parentheses indicate degrees of freedom.

** Significant at 1 per cent level. * Significant at 5 per cent level.

The correlation matrix of factors of shareholders' wealth for the pre-merger period (*see table 5*) shows factors that like ***CU***, ***ME***, ***P***, ***E***, ***L***, ***G***, and ***FR*** do not have a significant relationship with ***MVA***. The factors ***ME***, ***P***, and ***L*** have a positive significant relationship with ***CU*** ($0.382_{0.05}$, $0.432_{0.05}$, and $0.452_{0.05}$) at a 5% level. The factor ***E*** has a negative significant relationship with ***CU*** ($-0.406_{0.05}$) at 5% level. The factors ***G*** and ***FR*** have a positive significant relationship with ***CU*** ($0.561_{0.01}$, $0.523_{0.01}$) at a 1% level. The ***P*** and ***L*** have a positive significant relationship with ***ME*** ($0.371_{0.05}$, $0.432_{0.05}$) at a 5% level. The ***E*** has a negative significant relationship with ***P*** ($-0.421_{0.05}$) at a 5% level.

The correlation matrix of factors of shareholders' wealth for the post-merger period (*see table 6*) shows a significant positive ***L*** which has a positive significant relationship with ***MVA*** ($0.655_{0.01}$) at a 1% level, while the factors like ***CU***, ***ME***, ***P***, ***E***, ***G***, and ***FR*** do not have a significant relationship with ***MVA***. The ***FR*** has a negative significant relationship with ***G*** ($-0.463_{0.05}$) at a 5% level.

TABLE 6: CORRELATION MATRIX OF FACTORS OF SHAREHOLDERS WEALTH FOR POST-MERGER PERIOD (2008-2010) OF FIRMS IN THE FOOD INDUSTRY IN INDIA

	(Constant) MVA	CU	ME	P	E	L	G	FR
(Constant) MVA	1							
CU	-0.109 (0.566)	1						
ME	0.002 (0.991)	0.002 (0.991)	1					
P	-0.338 (0.068)	-0.059 (0.758)	-0.141 .457	1				
E	0.171 (0.367)	0.023 (0.906)	0.037 (0.844)	0.101 (0.594)	1			
L	**0.655**** **(0.000)**	-0.089 (0.639)	-0.292 (0.117)	-0.207 (0.273)	0.019 (0.919)	1		
G	-0.076 (0.688)	-0.066 (0.727)	-0.214 (0.255)	-0.205 (0.276)	0.146 (0.440)	-0.132 (0.485)	1	
FR	0.352 (0.057)	-0.002 90.992)	0.091 (0.633)	0.169 (0.373)	0.000 (1.000)	0.014 (0.943)	**-0.463*** **(0.010)**	1

Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

Figures in the parentheses indicate degrees of freedom.

** Significant at 1 per cent level. * Significant at 5 per cent level.

TABLE 7: CHOW TEST ON REGRESSION OF MEASURES OF SHAREHOLDERS WEALTH OF ACQUIRING FIRMS IN THE FOOD INDUSTRY IN INDIA (CHOW BREAKPOINT FOR 2004 TO 2010 WITH EXCEPTION FOR 2007)

Variables	Pre-merger						Post-merger					
	2004		2005		2006		2008		2009		2010	
	F-value	P-value	F-value	P-value	F-value	P-value	F-value	P-value	F-value	P-value	F-value	P-value
CU	0.42	0.65	0.34	0.71	0.65	0.52	0.77	0.46	0.21	0.80	0.25	0.77
ME	0.44	0.64	0.46	0.62	0.68	0.51	0.93	0.39	1.26	0.29	0.24	0.78
P	1.10	0.33	1.66	0.19	1.54	0.22	1.65	0.20	0.63	0.53	0.27	0.76
E	0.41	0.66	0.29	0.74	0.54	0.58	0.96	0.38	0.55	0.57	0.32	0.72
L	0.96	0.38	1.67	0.19	6.44	**0.00**	6.45	**0.00**	4.53	**0.01**	0.26	0.76
G	0.33	0.71	0.24	0.78	0.58	0.56	0.61	0.54	0.25	0.77	0.28	0.75
FR	1.12	0.33	2.03	0.14	2.53	**0.05**	5.18	**0.00**	2.89	**0.05**	0.24	0.78

Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

Figures in the parentheses indicate degrees of freedom.

** Significant at 1 per cent level. * Significant at 5 per cent level.

The Chow breakeven test result on the regressions of the variables, ***CU***, ***ME***, ***P***, ***E***, ***L***, ***G***, and ***FR*** are shown in Table 7. The impact of variables of ***M&A*** on shareholders' wealth is significant (*chow breakpoint*): ***L*** has a significant positive for 2006 and 2008 ($6.4417_{0.01}$ and $6.4506_{0.01}$) and for 2009 ($4.5370_{0.05}$) with the ***MVA*** at a 1% and a 5% level, respectively. The ***FR*** has a significant positive for 2008 ($5.1814_{0.01}$) with the ***MVA*** at a 1% level. The ***FR*** has a significant positive for 2006 and 2009 ($2.5384_{0.05}$ and $2.8993_{0.05}$) with the ***MVA*** at 5% level. Factors such as ***CU***, ***ME***, ***P***, ***E***, and ***G*** do not have a significant relationship with ***MVA.*** Thus, there was a structural breakpoint in the series in 2006, 2008, 2009, and 2010. The structural breakpoint test with ***F***- values for ***L*** and ***FR*** have a significant positive with ***MVA*** at a 1% and 5% level. Therefore, it is found that there is a significant shift in the shareholders' wealth of acquiring firms of food industry in India.

APPLICATION OF CHOW TEST

The *chow test* (**Chow**, **1960**) was originally designed to analyze the same variables obtained in two different data sets to determine if they were similar enough to be pooled together. The method, however, could be used to determine if two regression lines are different from one another (**Howard B. Lee, 2008**).[10] The impact of ***M&A*** on the shareholders' wealth of acquiring firms in the food industry in India can be seen through its structural changes and its impact on the acquiring firms of food industry. For this purpose, the period of study has been divided into two sub periods like pre-merger period from 2004-2006 and post-merger period from 2008-2010. For the purpose of analysing the impact of structural changes in the acquisition of firms in the food industry, the most useful tool is the "chow test".

PROCEDURE FOR APPLYING CHOW TEST

If when the both samples have enough observations to compute a regression equation, i.e., the number of observations exceeds the number of regression parameters estimated, and then the steps of the Chow Test would be

Step 1: To the first n_1 observations, fit the least squares equation:

$Y_1=X_1\,\beta_1+e_1$

Step 2: Compute the residual sum of squares, RSS_g

Step 3: To the second n_2 observations, fit the least squares equation:

$Y_2=X_2\,\beta_2+e_2$

Step 4: Compute the residual sum of squares, RSS_J

Step 5: Pool the $n_1 + n_2$ sample observations to give ***Y*** and ***X*** and fit the least squares regression:

$Y= X\beta+e$

Step 6: Compute the residual sum of squares, RSS_W.

Step 7: The test of the null hypothesis that the n_2 additional observations obey the same relation as the first is given by:

The test statistic is as follows:

$$F = \frac{\{RSS_W - (RSS_g + RSS_j)\} / K}{\{(RSS_g + RSS_j) / (N_1 + N_2 - 2K)\}}$$

This is distributed as F with k and $n_1 + n_2 - 2k$ degrees of freedom.
Where F* is the test statistic
RSS_w = residual sum of squares for the whole sample (restricted model)
RSS_g = residual sum of squares for the pre-merger sub-sample
RSS_j = residual sum of squares for the post-merger sub-sample
N = number of observations
K = number of regressors (including the intercept term) in each unrestricted sub- sample regression
2K = number of regressors in both unrestricted sub sample regressions (whole sample).
Using the above said procedure, the results of the calculated equation is presented in *table 8*.
The chow test for parameter stability confirms that there was a structural change in the estimating equation. The chow test models clearly indicate that for all series under examination, the null hypothesis of more than one structural break time can be rejected, **Bigramo *et al*. (2011)**.[11]

Ho#8- There is no significant improvement in the shareholders' wealth of acquiring firms in the food industry in India after *M&As*.

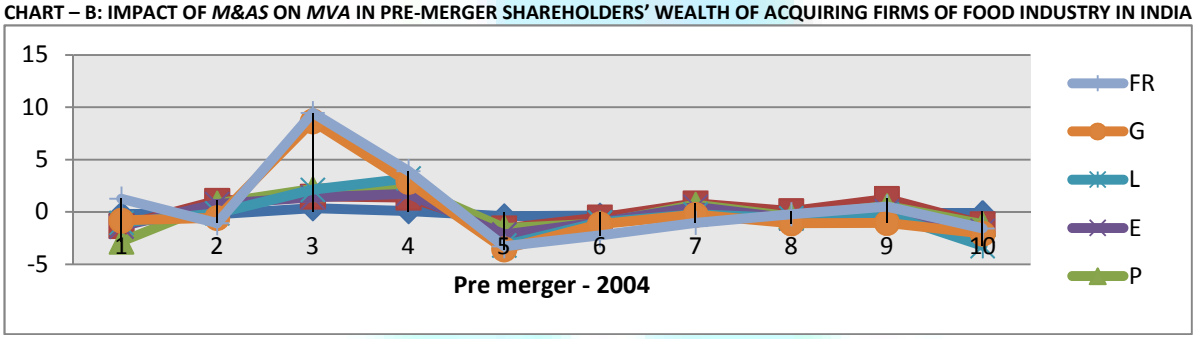
TABLE 8: RESULTS OF CHOW TEST FOR STRUCTURAL SHIFT BETWEEN PRE AND POST-MERGER PERIODS IN INDIAN FOOD INDUSTRY

Sum of Square Residuals			Number of Parameters Estimated	Number of Observations	F-Value	DF	F-Limit
Whole sample	Pre-merger	Post-merger					
369.814	67.934	155.866	8	60	3.588369	8,44	$F_{0.01}$ 2.946 $F_{0.05}$ 2.157 (for V_1=8; V_2=44)

Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

The chow test analysis (*see table 8*) reveals that the F-value ($3.58_{0.01)}$ is greater than the table value (2.946) at a 1% level for df. 8 & 44, And hence, it is significant to assert that there is a significant change in the impact (shareholders' wealth) due to the merger during the study period (2004-2010). Hence, the null hypothesis is rejected. Hence, the study inferred that there has been a significant shift (increase) in ratios (measures) of shareholders' wealth **ME**, **P**, **E**, **L**, and **G** of acquiring firms in the food industry in India, and they show a growing trend over the period after the merger period.

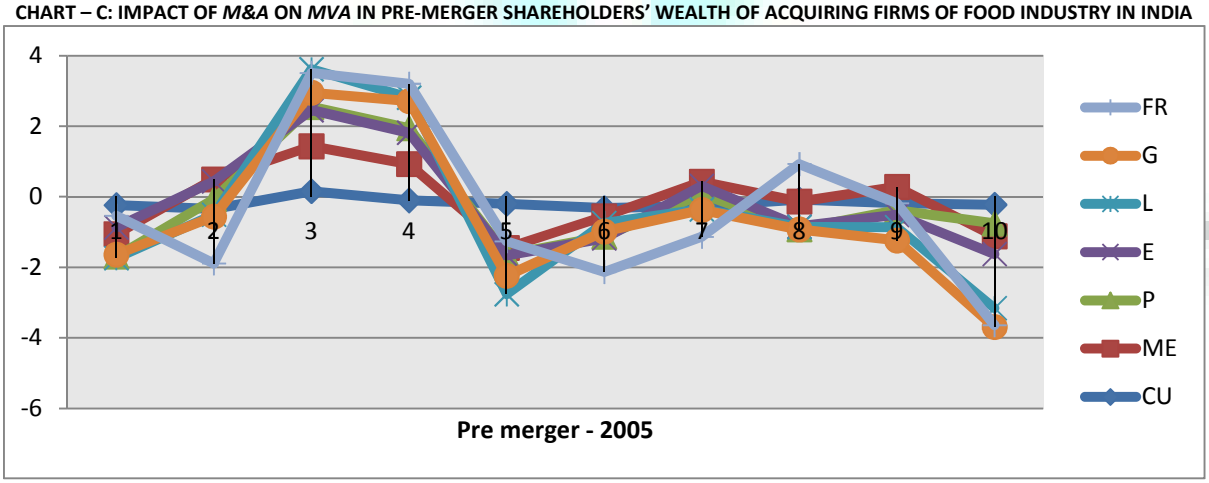
CHART – B: IMPACT OF *M&AS* ON *MVA* IN PRE-MERGER SHAREHOLDERS' WEALTH OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

Chart B reveal that there has been a significant shift (increase) in ratios of shareholders' wealth ***G*** of acquiring firms of food industry in India and the factors that like ***FR***, ***L***, ***E***, ***P***, ***ME***, and ***CU*** do not have a significant shift (increase) in the ratios of shareholders' wealth over the period 2004.

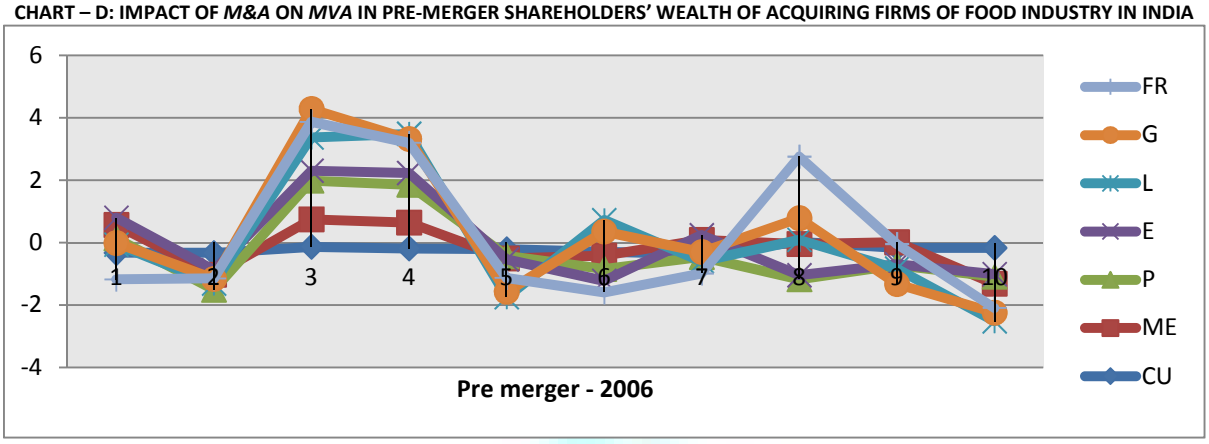
CHART – C: IMPACT OF *M&A* ON *MVA* IN PRE-MERGER SHAREHOLDERS' WEALTH OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

Chart C reveals that there has been a significant shift (increase) in the ratios of shareholders' wealth ***G***, ***L***, ***E***, ***P***, ***CU***, and ***ME*** of acquiring firms in the food industry in India. The chart shows a growing trend over the period of 2005, but the factors like ***FR*** do not have a significant shift (decrease) in the ratio of shareholders' wealth over the period 2005.

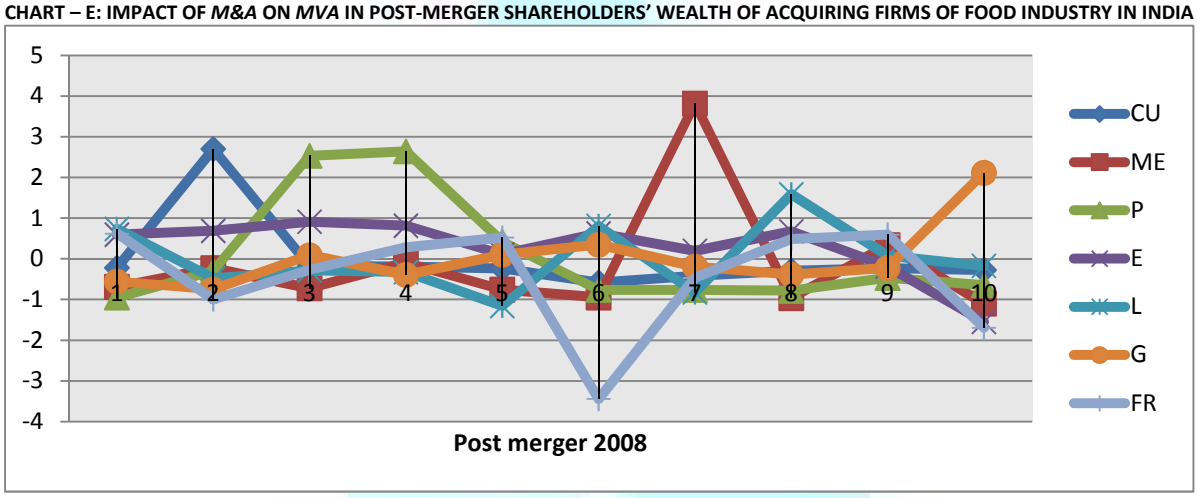
CHART – D: IMPACT OF *M&A* ON *MVA* IN PRE-MERGER SHAREHOLDERS' WEALTH OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

Chart D reveals that there has been a significant increase in the ratios of shareholders' wealth ***G***, ***L***, ***E***, and ***P*** of acquiring firms in the food industry in India. The chart shows a growing trend over the period of 2006, but factors like ***CU*** and ***FR*** do not have a significant shift (decrease) in the ratio of shareholders wealth over the period 2006.

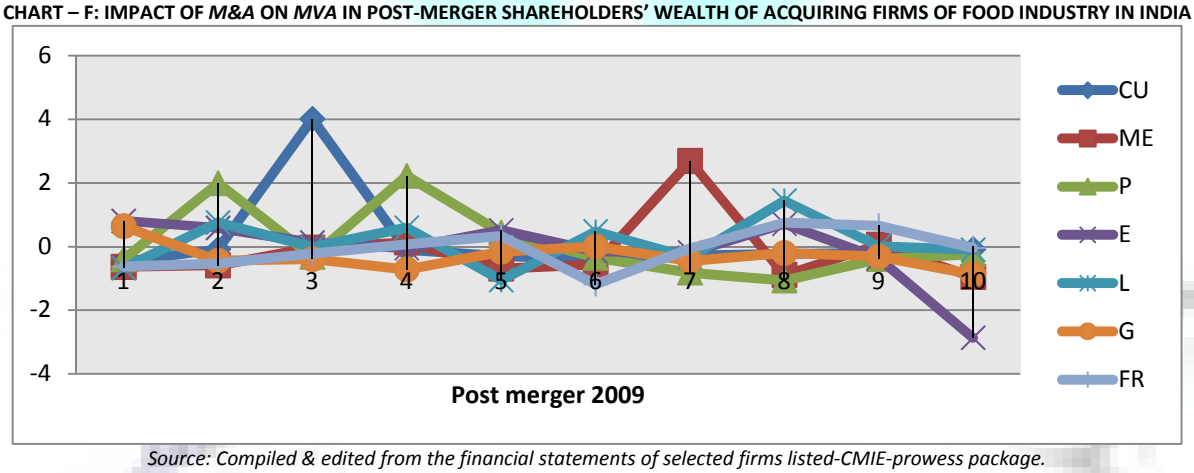
CHART – E: IMPACT OF *M&A* ON *MVA* IN POST-MERGER SHAREHOLDERS' WEALTH OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

Chart-E reveals that there has been a significant increase in the ratios of shareholders' wealth ***ME***, ***P***, ***G***, and ***FR*** of acquiring firms in the food industry in India. The chart shows a growing trend over the period of 2008, but the factors like ***L*** and ***E*** do not have a significant shift (increase) in the ratios of shareholders wealth over the period 2008.

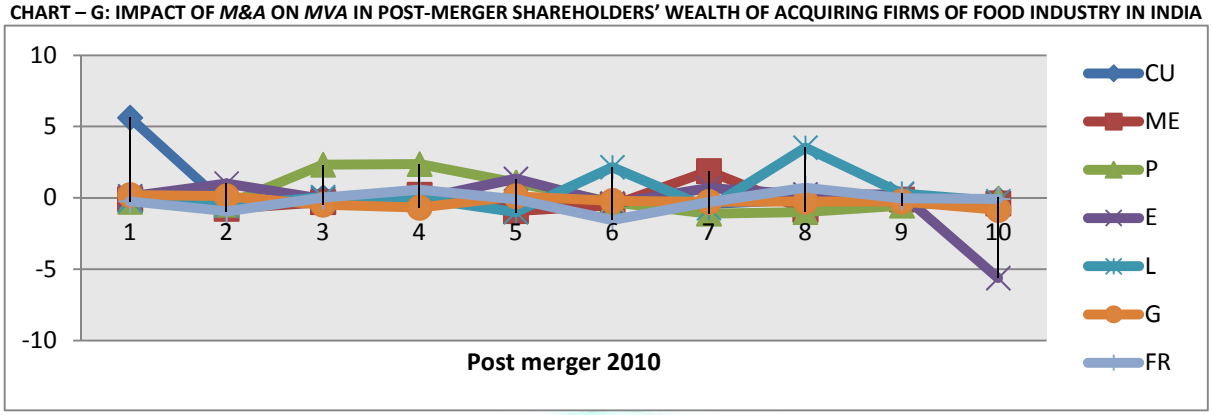
CHART – F: IMPACT OF *M&A* ON *MVA* IN POST-MERGER SHAREHOLDERS' WEALTH OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

Chart F reveal that there has been a significant increase in the ratios of shareholders' wealth ***ME***, ***P***, and ***L*** of acquiring firms in the food industry in India The chart shows a growing trend over the period of 2009, but the factors like ***E*** and ***G*** do not have a significant shift (increase) in the ratios of shareholders' wealth over the period 2009.

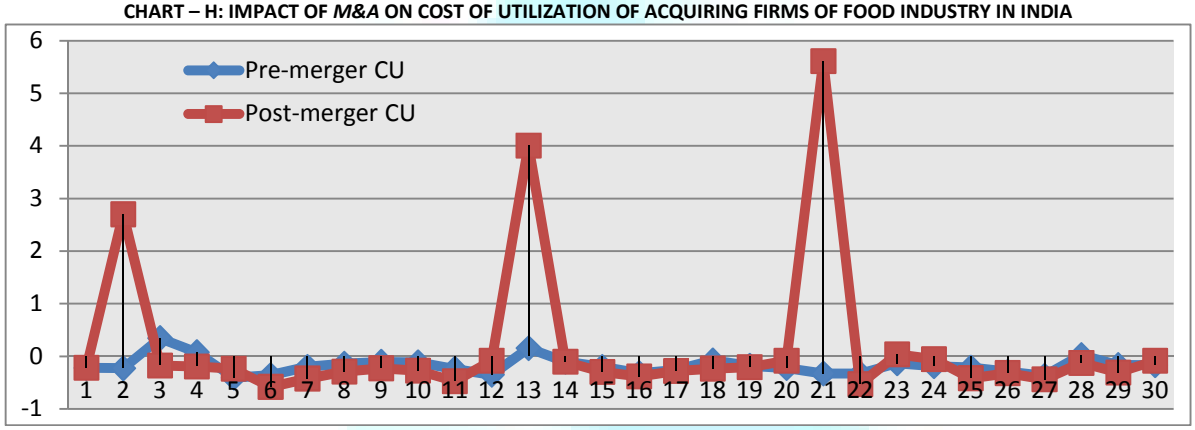
CHART – G: IMPACT OF *M&A* ON *MVA* IN POST-MERGER SHAREHOLDERS' WEALTH OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

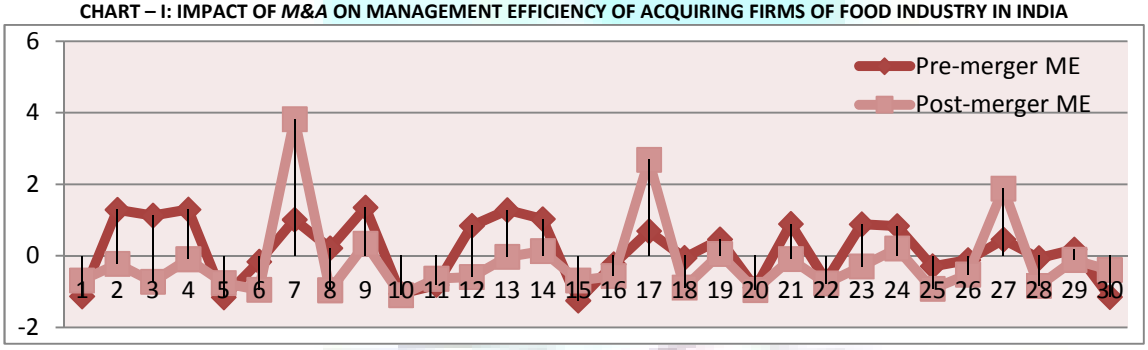
Chart G reveals that there has been a significant increase in the ratios of shareholders' wealth ***P*** and ***L*** of acquiring firms in the food industry India. The chart shows a growing trend over the period of 2010, but the factors like ***ME***, ***E***, and ***G*** do not have a significant shift (increase) in the ratios of shareholders' wealth during the period 2010.

CHART – H: IMPACT OF *M&A* ON COST OF UTILIZATION OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



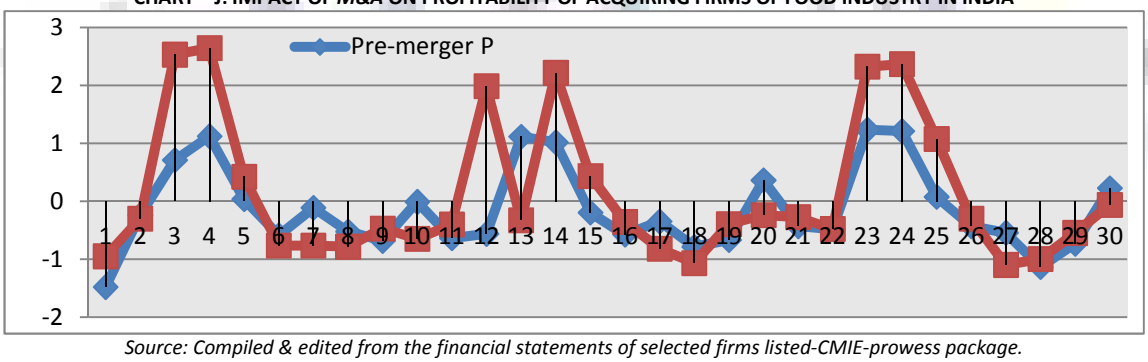
Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

CHART – I: IMPACT OF *M&A* ON MANAGEMENT EFFICIENCY OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



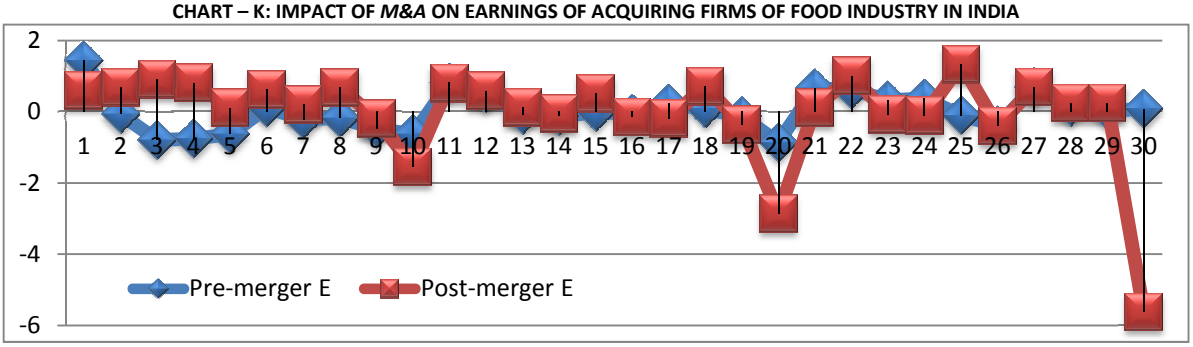
Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

CHART – J: IMPACT OF *M&A* ON PROFITABILITY OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



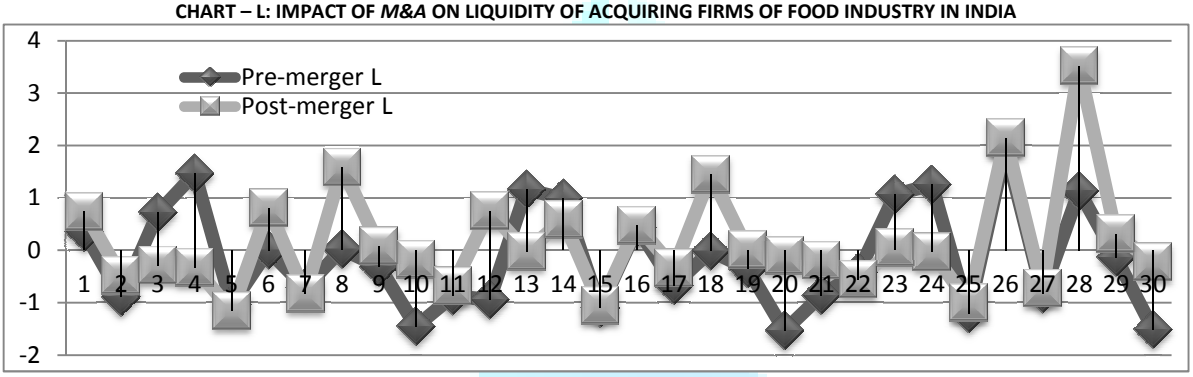
Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

CHART – K: IMPACT OF *M&A* ON EARNINGS OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



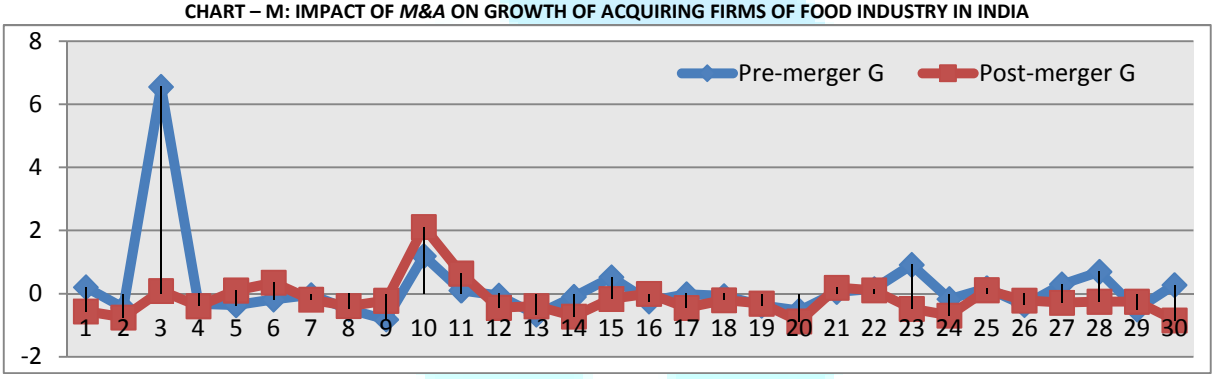
Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

CHART – L: IMPACT OF *M&A* ON LIQUIDITY OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



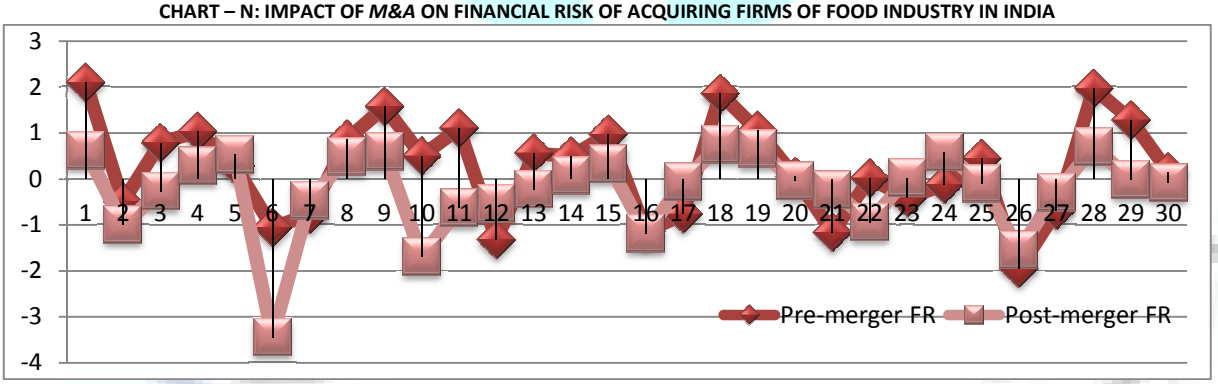
Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

CHART – M: IMPACT OF *M&A* ON GROWTH OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

CHART – N: IMPACT OF *M&A* ON FINANCIAL RISK OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA



Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

Charts H to *N* reveal that there have been significant increases in ratios of shareholders' wealth ***ME***, ***P***, ***L***, ***G***, and ***FR*** of acquiring firms in the food industry in India and it shows a growing trend over the post-merger periods.

CONCLUDING REMARKS

The study examines the shareholders' wealth of acquiring firms in the food industry in India, using descriptive statistics, correlation matrix, multiple regression, factor analysis, chow breakpoint test, and chow test to study if there is a significant shift in the shareholders' wealth of acquiring firms in the food industry in India in the post-merger period of ***M&A*** with the base of annual financial data spanning the years from 2004 through 2010. The acquisitions of firms in the food industry have been subject to a twofold shareholders' wealth change by the ***M&A*** process during the study period.

The post-merger ***independent mean*** value is increased only for ***P***, ***L***, and ***FR***, and the post-merger ***independent mean*** value is decreased for ***CU***, ***ME***, ***E***, and ***G***, thereby one can infer that four out of eight overall post-merger shareholders' wealth ratios (measures) are increased. The ***multiple regressions*** provide empirical evidences in support of the positive relation between the dependent and independent variables. Thus, H_o^5 and H_o^7 have been rejected in case of ***L*** and

FR of acquiring firms of food industry, which fact shows a significant positive correlation between the dependent and independent variables. Thus, H_o^1; H_o^2; H_o^3; H_o^4; and H_o^6 have been accepted in case of ***CU***, ***ME***, ***P***, ***E***, and ***G***, which shows a negative correlation between the dependent and independent variables.

The critical values of ***F*** (DF; 7, 29) are $2.346_{0.05}$, $3.330_{0.01}$, respectively at a 5% and 1% level of significance. This implies that the test statistics for the post-merger periods ($6.969_{0.01}$) is greater than a 99% critical value (3.330) of the F-test; hence it is possible to reject the null hypothesis. The ***F***- values, being significant at a 1% level, reveal that there is a good relationship between the dependent and independent variables considered for the analysis. This is a good significant positive impact of ***M&A*** on shareholders' wealth of the acquiring firms in the food industry over the study period after merger.

The impact of variables of ***M&A*** on shareholders' wealth is significant (chow breakpoint). ***L*** has a significant positive for 2006 and 2008 ($6.4417_{0.01}$ and $6.4506_{0.01}$) and for 2009 ($4.5370_{0.05}$) with an ***MVA*** at a 1% and 5% level respectively. The ***FR*** has a significant positive for 2008 ($5.1814_{0.01}$) with an ***MVA*** at 1% level. The ***FR*** has a significant positive for 2006 and 2009 ($2.5384_{0.05}$ and $2.8993_{0.05}$) with ***MVA*** at 5% level. Factors like ***CU***, ***ME***, ***P***, ***E***, and ***G*** do not have a significant relationship with ***MVA.*** Thus, there was a structural breakpoint in the series in 2006, 2008, 2009, and 2010. The structural breakpoint test with ***F***- values for ***L*** and ***FR*** have a significant positive with ***MVA*** at a 1% and 5% level. Therefore, it is found that there is a significant shift in the shareholders' wealth of acquiring firms in the food industry in India.

The ***chow F-value*** (3.58) is greater than the table value ($2.94_{0.01}$) at a 1% level for df. (8& 44), and hence it is significant asserting that there is a significant change in the output (shareholders' wealth) due to ***M&A*** during the study period (2004-2010). Hence, the null hypothesis is rejected. The study finally concludes that the there is a good relationship between the dependent and independent variables taken for analysis. This is a good significant positive impact of ***M&A*** of the acquiring firms in the food industry in India after merger.

LIMITATIONS AND SCOPE FOR FURTHER STUDIES

- This study is based on secondary data source; the data are collected from CMIE prowess package. Therefore, the quality of the study depends upon the accuracy, reliability, and quality of secondary data source**.**
- The study period is limited to six years only (three years before and three years after the merger period of the year) for want of studying the short-run impact of ***M&A*** on shareholders' wealth; hence the long-run impact could not be estimated.
- The study is limited to only 10 acquiring firms of food industry in India, which had gone into ***M&A*** process during the year 2007, therefore the results of analysis of other industries may vary if undertaken.
- The study has been restricted to acquiring firms of food industry only. The same method of analysis can vary well be extended to other industries too.
- This study have analysed the impact of few variables like ***CU***, ***ME***, ***P***, ***E***, ***L***, ***G***, and ***FR*** on ***MVA***. Further studies could be done considering the shareholders' wealth based on other measures of shareholders' wealth like Economic Value Added (**EVA**) for measuring the impact of ***M&A*** on shareholders' wealth.
- ✓ Studies can also be carried out on the operating performance and shareholders' wealth by comparing the pre and post-merger periods across industries in India; also across countries of the same industry or across industries as well.

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APPENDIX

APPENDIX A – "MULTIPLE REGRESSION" VALUE OF IMPACT OF *M&AS* ON INDEPENDENT VARIABLES OF ACQUIRING FIRMS OF FOOD INDUSTRY IN INDIA

SI. No.	Variables	Pre-Merger	Post-Merger
1.	Cost of Utilization	NS	NS
2.	Management Efficiency	NS	NS
3.	Profitability	NS	NS
4.	Earnings	NS	NS
5.	Liquidity	NS	**
6.	Growth	NS	NS
7.	Financial risk	NS	**
	F- value	NS	**

Figures in the parentheses indicate degrees of freedom.
** Significant at 1 per cent level. * Significant at 5 per cent level.

APPENDIX - B - LIST OF DEALS ANNOUNCED IN FOOD INDUSTRY IN INDIA DURING THE CALENDAR YEAR 2007

Sl. No.	Acquirer Firms	Target Firms
1.	Bannari Amman Sugars Ltd.	Maheswara Sugars Ltd.
2.	Dabur India Ltd. (DIL)	Dabur foods Ltd. (DFL)
3.	Dhunseri Petrochem and Tea Industries Ltd.	Tezpore Tea Company Ltd.
4.	GL Hotels Ltd.	Mayfair Banquets (P) Ltd.
5.	Indian Hotels Company Ltd.	Hotel Campton Place Ltd.
6.	Mcleod Russel India Ltd.	Moran Tea Co. (India) Ltd.
7.	Siel Ltd.	Mawana Sugars Ltd.
8.	Tata Global Beverage Ltd.	Tezpore Tea Co. Ltd.
9.	United Spirits Ltd.	Whyte and Mackay Ltd
10	VIP Industries Ltd.	Blow Plast Ltd.
11	Virat Crane Industries Ltd.	Durga Dairy Ltd.

Source: Compiled & edited from the financial statements of selected firms listed-CMIE-prowess package.

APPENDIX C - DESCRIPTION OF VARIOUS MEASURES USED FOR ANALYSIS

Sl. No.	Ratios	Measure	Description
1.	Selling and administrative expense ratio	Selling and administrative expense x 100 / Net Sales	This ratios relation between selling and administrative expenses to net sales.
2.	Total expenses ratio	Total expenses x 100 / Net Sales	This ratios relation between total expenses to net sales.
3.	Employee cost ratio	Employee cost x 100 Net sales	This ratios relation between employee cost to net sales.
4.	Raw materials expenses ratio	Raw materials x 100 / Net sales	This ratios relation between raw materials expenses to net sales.
5.	Power and fuel cost ratio	Power and fuel cost x 100 / Net Sales	This ratios relation between power and fuel cost to net sales.
6.	Manufacturing ratio	Manufacturing expenses x 100 / Net sales	This ratios relation between manufacturing expenses to net sales.
7.	Investments turnover ratio	Cost of goods sold or sales / Investment	This ratios relation between cost of goods sold or sales to investment.
8.	Inventory turnover ratio	Cost of goods sold or sales / Inventory	This ratios relation between cost of goods sold or sales to inventory.
9.	Fixed assets turnover ratio	Cost of goods sold or sales / fixed assets	This ratios relation between cost of goods sold or sales to fixed assets.
10.	Net profit ratio	Net profit x 100 / Net sales	This ratios relation between net profits to net sales.
11.	NWC to total sales ratio	NWC x 100 / Net sales	This ratios relation between NWC to net sales.
12.	Gross profit ratio	Gross profit x 100 / Net sales	This ratios relation between gross profits to net sales.
13.	Dividend yield ratio	Dividend per equity share x 100 / Market price per share	This ratios relation between dividends per equity share to market price per share.
14.	Dividend per share ratio	Dividend / Number of shares	This ratios relation between dividends to number of shares.
15.	Dividend pay-out ratio	Dividend per equity share x 100 / Earnings per equity share	This ratios relation between dividends per equity share to earnings per equity share.
16.	Total debt to total assets ratio	Total debt x 100 / Total assets	This ratios relation between total debts to total assets.
17.	Current ratio	Current assets / Current liabilities	This ratios relation between current assets to current liabilities.
18.	Quick ratio	Quick assets / Quick liabilities	This ratios relation between quick assets to quick liabilities.
19.	Operating profit per share	Operating profit x 100 / Number of shares	This ratios relation between operating profit to number of shares.
20.	Growth on sales ratio	Current year sales – Previous year sales / Previous sales	This ratios relation between current year sales to previous sales.
21.	Growth on EBDIT ratio	Current year EBDIT – Previous year EBDIT / Previous year EBDIT	This ratios relation between Current years EBDIT to previous year EBDIT.
22.	Debt equity ratio	Debt / Equity	This ratios relation between total debts to total equity.
23.	Interest Cover Ratio	NPBIT /interest on fixed loans or debentures	This ratios relation between NPBIT to interest on fixed loans or debentures.

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