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Have Acquisitions Impacted the Performance of the Indian Pharmaceutical Industry?

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Abstract:

The study seeks to find out whether there is variation in the performance of Indian pharmaceutical firms that have acquired other firms in the industry. The measures for the impact assessment are synergistic in approach. A total of 109 mergers and acquisition (M&A) events in the time period from 1999 to 2011 were considered for the analysis. The total events included 47 Indian pharmaceutical firms who were acquirers in the sale of assets, takeovers, and minority and substantial acquisitions of other pharmaceutical firms. The variables selected for testing the hypothesis were measures of profit, operating efficiency, research and development function, financial risk and market value. The paper suggests that the expected gains from such a transaction shall be more in market valuations than in other areas like operating efficiency, research and development, and return on capital employed. Though the study reports an increase in debt solvency and a greater allocation of expenses towards research and development after the transaction, the statistical tests do not reveal a significant change even a year after the M&A event's announcement on the stock exchange/media. Since the study incorporates measures of performance including market value and the firm's internal measures of performance, it presents an integrated view of the variation in performance of the acquirer firm after one year of the occurrence of the M&A event. The study is unique in terms of the overall assessment of the impact of acquisitions in the Indian pharmaceutical industry.

Keywords: *Mergers and acquisitions, Performance, Indian pharmaceutical firms, profitability, financial risk, ratio analysis*

1.Introduction

Pharmaceutical companies in India could improve their growth prospects over the last three decades by acquiring a critical size of product portfolio and sales force. In the year 2005, Indian government signed a General Agreement on Tariffs and Trade (GATT). Signing the agreement meant that the Indian pharmaceutical companies will abide the global rules.The competition was going to be stiff in the future by significantly curtailing the reverse engineering process (except for compulsory license) which has since then been the backbone of industry (Adarkar*et al.*, 2001). The generic pharmaceutical industry witnessed a high level of merger and acquisition to augmentthe competitive positioning in a moving market. The cash inflow has increased after 2005 and reached its maximum value in 2009 (USD Million 361.94) implying a sharp increase in the selling off of assets by the firms in the industry

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(figure 1). This was followed by a heightened acquisition of assets by the Indian firms including both domestic and international targets reaching a cash outflow of USD Million 111.88 in 2011 for the industry. The drugs and pharmaceutical index also rose continuously since 1993 especially after 2003 (figure 2).

There was a rising trend of shift of growth to new markets and the prominence of first-to-market and difficult-to-formulate products alongside buyeramalgamation for generic firms (Karwal, 2009).

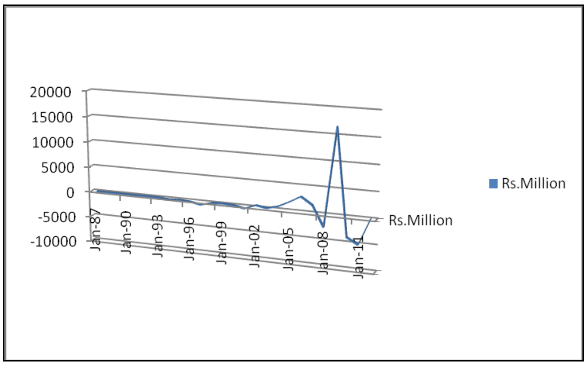

Figure 1. Net cash flow due to M&A in Indian pharmaceutical industry

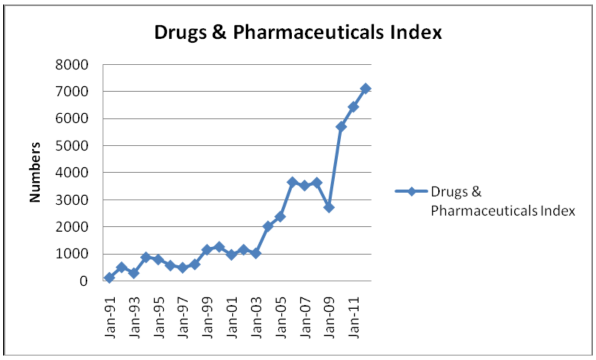

Figure 2. Drug and pharmaceutical index
(Data source: Compiled for the time period 1987-2011from the database of the Centre for Monitoring Indian Economy)

Mergers and acquisitions involve purchase of the stocks of an established firm in an amount sufficient to confer control. Healy *et al.* (2007) state that mergers and acquisitions (M&A) with highly overlapping acquirers and targets were strategic as they outperformed those done in unrelated businesses. The present study seeks to (a) examine whether such an impact can be seen in the performance of acquirer pharmaceutical firms in India on account of the M&A and (b) identify the measures of performance that exhibit a significant change after the M&A. For the purpose of the study, acquirer firms which have been active in the acquisition of assets of similar or complementary businesses are selected from the Indian pharmaceutical industry. The terms mergers and acquisitions have been treated synonymously in the study in terms of their role as a strategic tool for value creation. This is in light of the observation by Halpern (1983) that M&A are usually examined as a single homogenous group. Raphael *et al.* (1989) have also stated that firms may be grouped together on the basis of a common motive for both mergers and acquisition.

2. Review of literature

The study reviews the main components of the synergy effect and identifies the measures of performance to be assessed for the same. Merger of firms of the same industry result in a better improvements in market power (Chatterjee, 1986; Montgomery, 1985). As such merger enablesthe merged firms to eradicate the under performers in management, attainthe economies of scale, increase the prices, accomplish higher distribution clout, introduce more product variety, and reduce competitive activities. Houston *et al.* (2001) found that analysts' estimates of increases in the combined bank value associated with a merger are mainly due to the estimated cost savings rather than the projected revenue enhancements. Brigham and Pettit (1969) discovered significant economies of scale arising out of horizontal mergers in the savings and loan industry. Neely and Rochester (1982) have argued about the merger-related gains in the value of the firm in terms of increase in profitability or decrease in risk. They define post-merger synergy as the increase in efficiency due to economies of scale or vertical integration, the rise in market power, and a decrease in systematic risk/risk of bankruptcy. Pawaskar (2001) used financial ratios of profitability, growth, leverage, liquidity, and tax provisions to analyse the impact on operating performance of 36 acquiring firms between1992-95. He found out that the profitability of the merged firms had improved post the acquisition due to financial synergies and growth in the asset base. Ravenscroft and Scherer (1987) in their study on US mergers found no indication that on an average the acquirers raised their operating profitability net of merger-related accounting adjustments. Mantravadi and Reddy (2007) recommended that mergershave resulteddeterioration in the net profit margin in case of Indian firms. Their study also suggested that profitability ratios in India showed no changesafter mergers. Merging firms also saw a decline in the ROCE and no improvements in the operating efficiency. Ravenscroft and Scherer (1987) examined how mergers of the period 1950-70 affected the operating efficiency and profitability of the merging firms and did not find any strong evidence of improvements in the performance in the post-merger period. There is no common view on the impact of acquisition studied through the operating performanceusing accounting measures.

3. Research methodology

Past researches have addressedthe indication of the equity market responses of the studied firms, the buyer firms, and the collectivecapital effects for buyers and targets (Fraser and Zhang, 2009). These studies only measure the instant market discernments of the subsequent, long-run effects of merging the firms. Suchacuities may or may not be accurate. Manifestation of information asymmetry, shareholders are unlikely to respond to managers' unsubstantiated claims about the merger's benefits. Rather, they are likely to respond only after corroborating evidence emerges, for example, in the form of corporate earnings reports (Phillipatos and Baird, 1996). Healy *et al.* (1992) examined the operating performance of the "combined" firm 3 years before and 3 years after the merger in terms of asset productivity in the form of operating cash flow return on assets. Mueller (1980) researched on a few nations of Europe and The USA. For identifying M&A profitability he utilized net profit margin, return on Assets and return on equity. For much of his surprise, the acquiring firms reported worse returns in the 5 years after acquisition than their non-acquiring counterparts. Healy *et al.* (2007) indicated that accounting measures of performance represent the actual economic benefits generated by M&A, while the takeover announcement returns represent the investors' expectations of the takeover benefits which may be due to market inefficiencies. Verbrugge*et al.* (1976) favored the use of return on net worth as a gauge of profitability performance. The present study seeks to investigate whether corporate acquisitions create synergistic gains as suggested by the normative literature and reflected in corporate performance.

The hypothesis proposed for testing in the study is:

H_0. The performance does not differ significantly in the pre- (*t-1*) and post-acquisition (*t+1*) conditions for the acquirer pharmaceutical firms in India (*t* being the year of the merger/ acquisition).

The variables selected for testing the hypothesis are measures of profit, operating efficiency, research and development function, financial risk and market value. They are enumerated as follows:

1 Profit – PAT (Profit after Tax) as a percentage of the total income /net worth /capital employed termed as return on income, return on net worth and return on capital employed respectively.
2 Operating efficiency – Finished goods turnover (times), operating expenses as a percentage of the total income.
3 Research and development – Research expenses as a percentage of operating expenses.
4 Financial risk – Debt to equity ratio, interest cover ratio (times).
5 Market value of the firm – Earnings per share, market value to book value of assets.

The current study comprises of Indian pharmaceutical firms who are the acquirers or merged. Acquirer firmswere affianced in the acquisition of assets and takeover. The merged pharmaceutical firm is one into which the other pharmaceutical firms are being merged. The pharmaceutical firms are classified under the National Industrial Classification (NIC) (2008) as Group 210.

M&A of 109 firms were taken up for study in the period from 1999 to 2011. These events were announced on the stock exchange. The total events included 47 Indian pharmaceutical firms which were acquirers in the sale of takeover, assets, and minority and significant acquisition of pharmaceutical firms. The relatedness of the acquirer and target firms in broad terms, i.e., NIC Group 210, may still lead to some amount of aggregation bias as there may be various degrees of relatedness which may, in turn,

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have different impacts on value creation (Capron, 1999).

The size of the acquirer firm is measured in terms of decile 1, 2, 3, 4, and 5 as per the classification of the Centre for Monitoring Indian Economy (CMIE) database which divides the companies into ten deciles by size (value of assets). 45 firms were categorized as having decile 1, 11 firms were in the decile 2 category, 6 firms had size categorized under decile 3, while decile 4 and decile 5 category had 3 and 2 firms, respectively. Since most of the firms were large firms, the industry effects can be considered to be largely limited for the study.

The acquirer firms taken for the secondary data analysis were public companies with the exception of one private firm. The transactions included in the study involved both domestic as well as cross-border targets.

Paired-t test or t test for related samples was conducted to compute the effect of M&A on selected variables in pre- (t-1) and post- (t+1) conditions with "t" being the year of M&A. The test statistics for the paired observation t test is

$$t = \frac{\bar{d} - \mu_d}{\frac{s_d}{\sqrt{n}}}$$

Where, n is the total number of pairs, $\bar{d}$ is the mean of pair differences, $\mu_d$is the mean population difference and $S_d$is the Standard deviation of sample difference

. When, null hypothesis is true and the population mean difference is μ_d, the statistic has a t distribution with (n-1) degree of freedom.The data for the variables were accessed from the Prowess database of CMIE.

4. Results of the data analysis of selected financial ratios for before and after theacquisition

The paired t test establishes that there is no significant difference for the relevant measure of performance of the acquirer firm (Table I).

4.1. Impact on Profit measures due to the M&A

The mean values of PAT as % of total income in the year previous and after the acquisition for the selected transactions was found to be 9.48(SD=8.06) &7.27(SD = 13.3) respectively indicating a fall in values after M&A. However, 27 transactions showed higher values after acquisition transactions for the acquirer firms. There was a significant effect of M&A on this ratio of return on income at $p<.05$ level for the two conditions [Paired-t statistic (1,108) =4.922, p = 0.029] & the two sub samples have different variances.

Returns on net worth ratio in the year previous and after the acquisition for the selected transactions was found to be 15.02(SD=47.95) &17.76 (SD = 35.01) respectively indicating a rise in values after M&A. The effect of M&A on this ratio at $p < 0.05$ level for the two conditions [Paired-t statistic (1,108) = 0.058, p = 0.810] when tested for the homogeneity of variances is found to be insignificant.

Returns on capital employed in the year prior to and after the acquisition for the selected transactions were found to be 11.41 (SD = 11.63) and 14.2 (SD = 26.62) respectively, indicative of a rise in the values after the M&A. This establishesinsignificant effect of the M&A on PAT as a percentage of the capital employed at $p < 0.05$ level for the two conditions [Paired-t statistic (1,108) = 1.580, p = 0.477] when tested for the homogeneity of variances.

4.2 Impact on efficiency measures due to the merger and acquisition

The mean values of finished goods turnover in the year prior to and after the acquisition for the selected transactions were found to be 16.57 (SD = 14.83) and 16.27 (SD = 16.62) respectively, indicating a slight fall in the values after the M&A. There was no significant effect of M&A on the finished goods turnover at $p < 0.05$ level for the two conditions [Paired-t statistic (1,116) = 0.029, p = 0.865] when tested for the homogeneity of variances.

The mean values of operating expenses as a percentage of the total income in the year previous and after the acquisition for the selected transactions were found to be 88.53 (SD = 7.01) and 86.92 (SD = 16.4) respectively, indicating a slight fall in the values after the M&A. There was no significant effect of the M&A on the operating expenses as a percentage of the total income at $p < 0.05$ level for the two conditions [Paired-t statistic (1,126) = 2.43, p = 0.121] when tested for the homogeneity of variances.

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4.3 Impact on research and development measures due to the merger and acquisition

The mean values of research expenses as a percentage of the total operating expenses in the year prior to and after the acquisition for the selected transactions were found to be 4.94 (SD = 6.0) and 5.63 (SD = 4.5) respectively, indicating a rise in the values after the M&A. There was no significant effect of the M&A on research expenses as a percentage of the total operating expenses at $p < 0.05$ level for the two conditions [Paired-t statistic (1,126) = 0.524, p = 0.472] when tested for the homogeneity of variances.

4.4 Impact on liquidity measures due to the merger and acquisition

The mean values of debt to equity ratio in the year prior to and after the acquisition for the selected transactions were found to be 0.90 (SD = 1.22) and 1.00 (SD = 1.66) respectively, indicating a rise in the values after the M&A. There was no significant effect of M&A on the debt to equity ratio at $p < 0.05$ level for the two conditions [Paired-t statistic (1,120) = 0.615, p = 0.434] when tested for the homogeneity of variances.

The mean values of interest cover in the year prior to and after the acquisition for the selected transactions were found to be 11.34 (SD=20.35) and 26.79 (SD = 102.92) respectively, indicating a rise in the values after the M&A. There was a significant effect of the M&A on interest cover ratio at $p < 0.05$ level for the two conditions [Paired-t statistic (1,126) = 5.385, p = 0.022] when tested for the homogeneity of variances.

4.5 Impact on measures of the market value of acquirer firms due to the merger and acquisition

The mean values of interest cover in the year prior to and after the acquisition for the selected transactions were found to be 4.06 (SD = 95.4) and 11.42 (SD = 34.5) respectively, indicating a rise in values after the M&A. There was no significant effect of the M&A on earnings per share ratio at $p < 0.05$ level for the two conditions [Paired-t statistic (1,126) = 0.25, p = 0.62] when tested for the homogeneity of variances.

The mean values of market value to book value of assets in the year prior to and after the acquisition for the selected transactions were found to be 1.6 (SD = 1.78) and 3.2 (SD = 6.24) respectively, indicating a rise in values after the M&A. There was a significant effect of the M&A on the ratio at $p < 0.05$ level for the two conditions [Paired-t statistic (1,126) = 4.16, p = 0.04] when tested for the homogeneity of variances.

Table I: Results of Paired *t* test

S.No.	Performance terms	Ratio	Calculation of ratio	N	Correlation	Significance at 95% confidence	Null Hypotheses (H_o)
1	Profitability	Return on Income	Profit after tax or PAT (Sales revenue after deduction of all expenses including taxes)/Total income in % terms	55	.604	.000	Rejected
		Return on Net Worth	PAT/Net Worth in % terms	55	.082	.554	Accepted
		Return on Capital Employed	PAT/Capital Employed in % terms	55	.260	.055	Accepted
2	Operating efficiency	Finished Goods Turnover	Cost of goods sold/Value of inventory of finished goods	58	.048	.726	Accepted
		Operating Expenses Ratio	Operating Expenses/Total Income	61	-.090	.657	Accepted
3	Research and development (R&D)	Research Intensity	R&D expenses/Total operating expenses	39	.222	.078	Accepted
4	Financial risk	Debt to	Total	61	.211	.102	Accepted

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		equity ratio	liabilities/Shareholder's equity				
		Interest Coverage	Earnings before Interest and Taxes/ Interest Expenses	64	.765	.000	Rejected
5	Market value of firms	Earnings per share	Net income available to common shareholders/Total no. of common outstanding shares	64	.124	.330	Accepted
		Market value to book value of assets	Fair market value of assets in arm's length transaction/original costs of asset less any depreciation, amortization or impairment costs made against the asset	27	-.388	.002	Rejected

4.6 Result of hypothesis testing

The hypothesis H_0 is not rejected for the following variables: PAT/net worth, PAT/capital employed, cost of goods sold/value of inventory of finished goods, operating expenses/total income, R&D expenses/total operating expenses, and total liabilities/shareholder's equity and earnings per share (table I). The null hypothesis is rejected for the variables PAT as a percentage of the total income, interest cover ratio, market value to book value of assets.

5. Discussion and managerial implications

The profitability indicators of the return on net worth and return on capital employed show higher values after the event. The acquirer firms showed an improvement in the abovementioned profitability ratios but there is no significant statistical difference between their mean values before and after the M&A event. The third measure of the performance of profitability, i.e., PAT of the total income as a percentage shows a significant decrease after the event. It implies that there is a relatively larger increase in expenses, including interest and taxation than an increase in the total combined income of the acquirer firm after the event, resulting in low values of the ratio.

The measures of efficiency, i.e., finished goods turnover and operating expenses of the total income as a percentage show a marginal fall, which is not statistically significant after the event. The reduced values of the ratios indicate a greater efficiency immediately a year after the event. It has been achieved in production as well as other operational areas of the organization. In a study conducted on acquisition by non USA based banks acquiring USA based banks in the period 1980–2001, Cornett *et al.* (2006) have also found that the merged banks had improved operating performance and bigger gains were achieved in the merger of large banks.

The results of the study indicate that the ratio of the research expenditure as a part of the total operating expenses in percentage terms has increased, though not significantly after the event. There is evidence of a higher level of resource allocation for research purposes after acquiring/merging with a target firm in the results of the study.

Both the leverage measures, i.e., debt to equity ratio and interest cover ratio show a rise in values after the M&A event, implying that though the financial risk increases, it can be managed with enhanced earnings. There was a statistically significant change in the interest cover ratio after the event, thereby implying that the Indian acquisitions financed by debt were generating more cash after the event to pay off their debt obligations. Mergers provided a chance for augmenting the debt capacity. Firms unexploited debt capacity shall be assimilated for enriching the debt limits of the pooled firm. Additional values can be created from this additional debt capacity

The market value measures in the study, i.e., earnings per share and market value to book value of assets show a rise in their values after the M&A,

indicating the bullish market sentiments for the transaction. The ratio of market value to book value of assets shows a significant increase a year after the event, suggesting the possibility of abnormal stock market returns up to a year after the announcement of the transaction. The return to shareholder's equity and the market valuation of the acquirer firm's assets show an increased value creation for the shareholders.

The study provides some implications for the managers involved in the transactions of purchasing assets/stocks of related firms. The expected gains from such a transaction may be greater in market valuations than in other areas like operating efficiency, R&D, and ROCE. Though the study reports increase in debt solvency and greater allocation of expenses towards R&D after the transaction, the statistical tests do not reveal a significant change even a year after the M&A event's announcement on the stock exchange/media. Another important implication would also be related to the significant increase in other expenses resulting in a reduced proportion of PAT in the total income in the short term. The long term implications can be researched using a longer post-merger assessment window and understanding the Indian institutional environment and firm-specific variables leading to higher expenses and reduced PAT margins. Further research can include a control group of firms which did not engage in M&A and their performance can be compared with the acquirer firms' performance to get a better understanding on the implications of M&A on the performance.

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