PREDICTING SUCCESS OF MERGERS AND ACQUISITIONS IN MANUFACTURING SECTOR IN INDIA: A LOGISTIC ANALYSIS

Dr. N. M. Leepsa

Assistant Professor, School of Management, National Institute of Technology Rourkela, Rourkela, Odisha, India-769008, Email: leepsan@nitrkl.ac.in, n.m.leepsa@gmail.com, +91-

Contact: (Mobile): 8018190645, (Office): 0661-2462805

Dr. Chandra Sekhar Mishra

Assistant Professor, Vinod Gupta School of Management, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India-721302, Email: csmishra@vgsom.iitkgp.ernet.in, Mobile): +91-9434343011 , (Office): +91-3222-282318, (Residence): +91-3222-282319

PREDICTING SUCCESS OF MERGERS AND ACQUISITIONS IN MANUFACTURING SECTOR IN INDIA: A LOGISTIC ANALYSIS

ABSTRACT

Mergers and acquisitions (M&As) are the significant corporate restructuring activities that attract the attention among shareholders as they focus on wealth creation. The transactions that involve M&A deals are considered as very risky and challenging in nature. Thus, decision in M&A transactions is considered as most important investment decision of a company. It gives an immense opportunity for researchers to examine, observe and analyse the implications of these investment decisions on the value of shareholders wealth. Thus, academicians have done empirical research to know whether mergers and acquisitions finally lead to creation or destruction of company value or not. However, limited studies have analysed the determinants for predicting the success and failure of mergers and acquisitions in India. Hence, this paper attempted to find out the probability of the manufacturing companies in India being successful or unsuccessful after mergers and acquisitions using logistic regression. The period of study is from 2000 to 2008 for M&A deals during 1997 to 2011. In the study, rate of EVA (economic value added) which is considered as a better measure of performance, is used as dependent variable and the independent variables used are M&A Experience, Size of Acquirer, pre M&A current ratio, quick ratio, return on asset, return on capital employed, return on net worth, net profit margin, asset turnover ratio, interest coverage ratio. From the study it is found that the probability of a given firm being successful after M&A increases as the pre M&A current ratio, net profit margin decreases; while its pre M&A quick ratio and asset turnover ratio increases. It is also estimated that the Z score below 0.02 in case of M&A would indicate the company is probably headed for failure, while companies with scores above 0.02 are likely to be successful.

Field of Research: Mergers and Acquisitions, Logistic Regression. Economic Value Added, Indian Manufacturing Companies

PREDICTING SUCCESS OF MERGERS AND ACQUISITIONS IN MANUFACTURING SECTOR IN INDIA: A LOGISTIC ANALYSIS

1.1. Introduction

Mergers and acquisitions are the significant corporate restructuring activities which attract attention among shareholders as they focus on wealth creation. The transactions that involve M&A deals are considered as very risky and challenging in nature. The decision in M&A transactions is considered as most important investment decision of a company. It gives an immense opportunity for researchers to examine, observe and analyse the implications of these investment decisions on the value of shareholders wealth. Thus, academicians have done empirical research to know whether mergers and acquisitions finally lead to creation or destruction of company value or not. The researchers have tried to identify the factors that affect M&A success or failure. The M&A is influenced by number of factors like M&A experience, industry relatedness, size of the acquirer, pre M&A liquidity, pre M&A profitability, Pre M&A solvency. However, limited studies are done to find out the factors that can predict M&A success or failure. Hence, this study makes an attempt to analyse the determinants for predicting the success and failure of mergers and acquisitions in India, that may help not only managers and shareholders of companies, but also for policy makers.

Figure 1 Rationale of the current research
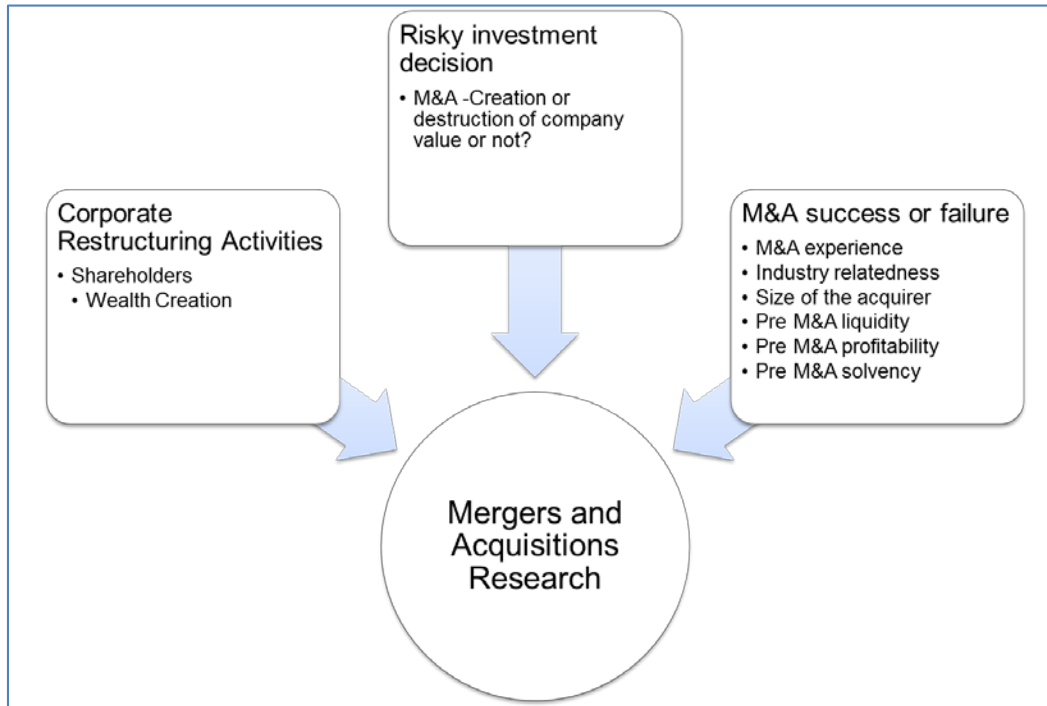
In this study, an attempt has been made to estimate the logistic regression model based on a 407 sample of successful and unsuccessful firms involved in mergers and acquisitions. The results of the study might provide more evidence for accepting or rejecting the M&A strategy as a means for corporate success. Secondly, the results of the current study would also help companies in India find it easier to identify successful and unsuccessful companies in mergers and acquisitions in the future through which the companies could accordingly make strategies for enhancing their global competitiveness. Thus, the results provide inference to the managers regarding the importance of each factor that should be more emphasised while making any M&A decision.

The rest of article is organized as follows: Section 1.2 discusses the concept of Mergers and Acquisitions and its definition that is used in the study. Section 1.3 focusses on the review of literature. Section 1.4 throws light on the research gaps areas found from the literature and the

objectives of the study. Section 1.5 discusses the research methodology adopted and presents the discussion on basic model specification of logistic regression on mergers and acquisitions and Section 1.6 discusses statistical results of logistic regression on likelihood of post M&A success Section 1. 7 presents the concudingremarks of the study by summarisng its findings. Section 1.8 shows the theoretical and practical implication of study from the statistical results on the success of manufacturing companies and conclusion Secton 1.9 presents the limitation and future scope of study.

1.2. Concept of Mergers and Acquisitions

For the current study, mergers and acquisitions have been defined according to definition provided by CMIE Prowess data base, since most of the data are collected from this database. Acquisitions are the takeover transactions where an acquirer company takes over a substantial part of shares of another (target) company. It can be defined in another way as acquisitions are those where a company is being targeted for substantial acquisition of shares by another (acquirer) company. Mergers are transactions where an acquirer company is merging with another company or a target company is being merged into another company.

Figure 2 Mergers and Acquisitions – Definition

(Weston & Copeland, 1992 cited from Daga, 2007)	• **Merger or Acquisition** is a transaction where two or more companies are combined to become one.
(Sudarsanam, 1995)	• **Merger** is a pooling of the interest of two companies into a new enterprise, requiring the agreement by both sets of shareholders
(Daga, 2007).	• **Acquisition** is a purchase by one company (acquirer) of a substantial part of the assets or securities of another (target), normally for the purpose of restructuring the operations of the target firm. The purchase may be of all or a substantial part of the target's voting shares or of a division of the target firm
(Shim & Okamuro, 2011)	• A merger is defined as the integration of two or more firms into a legal enity. • Acquisitions differ from mergers in the sense that a target is not integrated into the acquirer but becomes its subsidiary, so that it does not disappear as a company

1.3. Review of Literature

The substantial growth in the mergers and acquisitions shows its significance in corporate india. From 1999-2000 to 2015-16, there have been 5,236 merger deals , 14,181 acquisition deals that are announced in India with the acquisition consideration of more than Rs.17,400 billioni. But do mergers and acquisitions help improve performance of companies? In regard to this issue, the answer is mix. Post M&A performance can be better, worse or remain same as pre M&A performance. Literature on research in mergers or acquisitions or takeovers and effects of M&A on performance is quite vast. This section attempts to make review of literature on post M&A performance keeping in mind the growing importance of M&A in recent times.

i (Source: Economic Outlook, CMIE).

Figure 3 Volume and Value of Mergers and Acquisitions deals announced in India
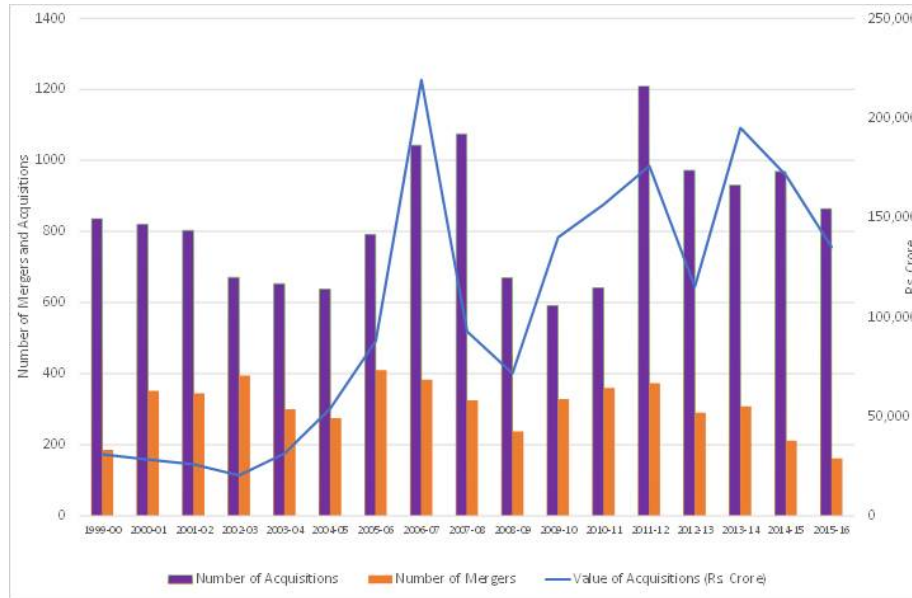
Source: Economic Outlook, CMIE

1.3.1. Summary of Studies on Post M&As Performance

With regard to the company performance and shareholders' return, there are three outcomes namely value created, value conserved, value destroyed (Bruner, 2004). So, are mergers and acquisitions value creating or destroying in nature? To know the answer, study of both Indian and International research papers are made on the works relating to post merger corporate financial performance. As surveyed through literature most of the work is done in USA & UK apart from Malaysia, Japan, Australia, Greece, and Canada. Limited works are done with respect to India. Many studies have been made on the effects of mergers and acquisitions on share prices, shareholder wealth, and the pre and post-merger operating and market performance of the target and acquirer firms. Research on M&As till date has not been able to provide conclusive evidence whether they enhance efficiency or destroy wealth. The past studies have

only discussed whether M&A lead to increase or decrease in performance. Most studies have focused on the post M&A performance using traditional financial parameters which did not reflect any conclusive evidence of whether M&A improves performance of company or not.

Most of the literature suggests that merger fails in creating value for the shareholders. But companies still go for M&A. This might be because of the fact that most of the literatures have taken economic and financial aspects as benchmark for measuring success. Although performance can be measured in terms of financial and non financial parameters, this review finds that most of the studies have considered the financial parameters as performance metrics. Thus, success or failure of mergers and acquisitions needs to be defined. Table No. 1 shows the Definition of success or failure of mergers and acquisitions as given by different authors.

Table 1 Definition of Success Or Failure Of Mergers And Acquisitions

Definition	Evidence
Industry ratios (operating cash flow/total assets) are benchmark of successful mergers. It is not only success that needs to be defined, but also it is important to define failure.	Healy et al. (1992)
Bierich (1988) defined success as the degree of goal achievement	Brouthers, et al., (1998)
The success or failure depends upon the objective or goals for which the M&A deal are done. If acquisitions cannot meet the goals set, then it would be considered as a failure	Rosenzweig, (2006)
A merger is successful if other things remaining same, it increases the total current wealth of the owners of acquiring firm. There is no evidence in the literature on what particular percentage of change would make the merger successful, but any positive increase means success and any negative change means failure and no change means no impact of mergers and acquisitions.	Kumar & Rajib (2007)
According to Richards (1978), a goal is a planned position or result to be achieved. In order to judge success of business combination, it must be clear whose goals are to be followed and what these goals are specifically called	Bosecke, (2009)
Failure is defined as eventual sale and liquidation of business, inability to meet or exceed financial objectives, not achieving the strategic objectives.	DePamphilis (2010)

Most of the studies have defined the success or failure of M&A as economic outcomes through financial performance of firms. This can be the reason for which most studies conclude that M&A fails rather than succeed. The reason is performance should be measured not only in financial terms but also in non-financial terms. Thus, one can conclude that it is not only the economic and financial outcome of an M&A that define success or failure but also the attainment of objectives for which a deal is made shows the success and failure of M&A . Compared to other performance parameters, economic and financial outcomes are used in most of the studies because this is the basic objective behind any company to go for any M&A deals.

In nutshell, it is observed that company performance after M&A are situational and the performance vary accordingly influenced by different factors relating to M&A. Thus, to overcome the situation, the factors affecting M&A needed to be determined and how it can affect need to be explored so as to act accordingly. As far as review of past studies is concerned limited works are done to understand which factors lead to successful or unsuccessful mergers and acquisitions in manufacturing companies in India.

1.3.2. Summary of Studies on Logistic Regression and M&As

Although there are numerous M&A studies using different models such as ordinary least square regressions or linear regressions, multiple regressions, for analysing the influence of different factors on M&A performance, the use of logistic regression is also found in various studies. Table 2 summarises list of such studies along with their objective.

Table 2 Studies on Logistic Regression and Merger & Takeovers

Authors	Objectives
(Walkling, 1985); (Sorensen, 2000); (Pasiouras, et al., 2011); (Yuzbasioglu, 2002); (Tsagkanos, et al., 2006); (Brueckner, 2007); (Kumar & Rajib, 2007); (Agrawal & Sensarma, 2007); (Khoranaa, et al., 2007); (Basu, et al., 2008); (Wang & Branch, 2009); (Branch & Yang, 2010); (Chen, et al., 2009); (Ronnholm, 2010);(Mahmood, et al., 2011); (Banerjee, et al., 2012); (Beccalli & Frantz, 2012); (Alzueta & Lucey, n.d.); (Ali & S.Gupta, n.d.)	• To predict the success and possibility of occurrence of tender offer, takeover or merger event and investigate the key fund-specific factors and industry level factors in determining M&A activity • To identify the characteristics of merging firms and factors that discriminate between the target and bidders in M&A in India. • To predict the merger and takeover success and performance of risk arbitrage and sweetened offers in hostile takeovers.
Source: Collected from past literature	

However, there is scarce literature using logistic regression to predict the result of M&A. Logistic regression is the extension of the multiple regression analysis technique that works on the same principle as of linear regression. In linear regression the dependent variable or the outcome variable is continuous in nature while in logistic regression the outcome variable is binary or dichotomous in nature. It estimates the coefficients through a probabilistic method based on maximum likelihood which means logistic regression is free from the underlying assumption of normality and equal variance of population. Logistic regression provides the conditional probability of an observation belonging to a certain class, given the values of independent variables (co-variates) for the observation. It is based on cumulative probability function and doesn't require the multivariate normality of the co-variates. It incorporates non linear effects and wide range of diagnostics (Yuzbasioglu, 2002).

The likelihood ratio indices provide an indication of the overall explanatory power of the models and similar to R^2 statistic of multiple regressions. A lower likelihood index indicates a

lower proportional reduction in error rate. A positive sign on a parameter, co-efficient indicates that an increase in the associated variable increases the likelihood of success of M&A. On the other hand, a negative sign decreases the likelihood.

1.3.3. Summary of Studies on Economic Value Added as Performace Measure

Traditional accounting measures are criticized as unsatisfactory performance measure as they lack in directing towards the goal of shareholder wealth maximization. Performance measures relating to profitability ignores the cost of capital which is essential for determining value creation for shareholders. Sometimes in certain situations, even if a company gets positive net income as well as higher accounting rate of return, there might be a decline in the shareholder wealth. Earnings might be lesser than the required rate of return that shareholders could have earned by investing in other investment opportunities of similar risk. In the backdrop of limitations of old measures of performance, Economic Value Added (EVA) is considered as a better performance metric. EVA is essentially the difference between profit earned by the company and the cost of capital.

The idea of EVA might be new but the concept is age old. In contemporary economics and finance literature, EVA holds a less debated part as well as plays a crucial role in business performance measurement. In corporate finance, Economic Value Added or EVA, a registered trademark of Stern Stewart & Co, is an estimate of a firm's economic profit – being the value created in excess of the required return of the company's investors (being shareholders and debt holders). EVA is fundamentally indistinguishable to the idea of residual income (net income minus a charge for the cost of equity capital) developed by economists such as Alfred Marshall in the 1890s. He defined economic profit as total net gains less the interest on invested capital at the current rate.

Table 3 Economic Value Added (EVA) as a measure of Performance

Source of Evidence	Research Findings
(Stewart, 1991)	Economic value added (EVA®) is a performance measure which is the difference between the operating profits of the company and the cost of all the capital employed to each that operating profit. It is the only performance metric that is linked with intrinsic market value. It states that if a project or investment brings positive EVA, then it should be accepted or else rejected. EVA increases in three cases (a) if the operating profits of the company are increased by the same capital (b) Suppose furthermore new capital is invested, then the project has to earn more than the old and new capital invested (c) when capital is separate from from business to other profitable opportunities, since it didn't bring an adequate amount of returns to a business. If the EVA is positive then the company has added value to the company for the cash outlay it has made in bringing the resources to firm. If the EVA is negative then value is destroyed. EVA is both a measure of value and of performance. It is the accurate performance metric to appraise company performance
Roztocki& Needy (1999, p1)	EVA iss a single and simple measure that gives a real picture of shareholder wealth creation.
(Hawawini, et al., 2003).	Different authors use different names for the same concept of residual income The Stern Stewart has coined the terms Economic Value Added (EVA) and Market Value Added (MVA) to reflect residual income. Economic profit (EP) is also another version of 'residual income' that measures operating performance
(Schuster & Jameson, 2003).	There are four new measures such as EVA®, Economic Profit, Cash Value Added, or Added Value to know the best measure of shareholder value. Economic Profit (EP) measure, promoted by McKinsey & Co., to measure financial performance. The EP has a strong relationship to discounted cash flow methods. Its basic elements resemble those of the EVA approach, although the necessary conversions from the accounting data are far less intensive. In comparing EVA to EP, there's a strong similarity in the basic calculation, with slight differences in the amount of conversions required, as mentioned, and in the definition of the capital ratio
Ghani et al (2005)	EVA is the real profit of a company that is calculated by deducting all expenses or losses from all revenues or gains including the opportunity cost of capital. The author agrees to Drucker (1995) who states that if business brings profits more than the cost of capital then wealth is created, if not, then wealth is destroyed. Alfred Marshall (1890) also considers that the economic or real profit is the net profit after deducting all interest expenses on capital invested. The author stated Bidle and Bowne (1999)'s definition of EVA as the difference between the profit obtained by the entity and the costs of capital implied for producing or obtaining this profit.

Source of Evidence	Research Findings
(Mohanty, 2006)	A firm earns true profit only if it earns more than the investors expect. And EVA is just another name for this economic profit
(Yao, et al., 2009, p42).	EVA has gained importance in the corporate and investment world as the more current yardstick for company performance
Xiao and Tan (2009)	EVA and rates of EVA are the new measures of performance that correct any biasness due to differences or in accounting policies. EVA has 40% explanatory ability compared to a maximum of 13% from traditional methods. EVA is a more effective measure of M&A performance compared to other traditional methods.
(Ray, 2012).	David Solomon (1965) quantified 'economic profit' as a measure of wealth creation "as the difference between two quantities, net earnings and the cost of capital"
Source: Collected from past literature	

1.4. Research Gaps & Objectives

From the above literature review, it is observed that there have been quite intensive studies on M&A. But there are certain issues on which empirical research has been insignificant. Most of the studies use traditional performance measures. As far as literature review is concerned, studies with respect to post M&A performance in terms of economic profit- which is supposed to be the true profit for shareholders- are few, particularly in India.

In light of these research gaps, the objectives of this study is to examine the likelihood of a given manufacturing company in India being successful or unsuccessful after mergers and acquisitions.

1.5. Research Methodology

In the light of above objective, an attempt is made in this study, to find out the probability of the manufacturing companies in India being successful or unsuccessful after mergers and acquisitions. The details of each statistical tools and techniques used for carrying out the objective are discussed in this section.

1.5.1. Data Sources and Period of Study

The study investigates the pre and post M&A performance of manufacturing companies in India that have gone for M&A deals during the period from 1st January 2000 to 31st December 2008. The data for analysis are collected from various sources such as CMIE Prowess, CMIE Business Beacon, AceEquity database and Capitaline. The data available in the Business beacon database provide useful information on the volume and value of M&A deals announced in India. However, data collected from Centre for Monitoring Indian Economy (CMIE) Prowessdatabase are used to collect data about M&A deals as well as financial data on acquirer and target firms. The firms under analysis represent those where both acquiring and target firms belong to manufacturing companies. The manufacturing sector is selected because highest number of M&A deals are done in this sector. Taking M&A deals only from manufacturing sector would bring heterogeneity in the sample (Sorensen, 2000).

The data were further filtered to find out if financial data for both acquirer and target firm for three year before as well as after M&A event are available or not. For example, for a M&A deal that took place in 2000, the data are collected for the acquirer and target from 1997 to 1999 for pre M&A period and then 2001 to 2003 for post M&A period. Similarly for M&A deals that happen in 2008 data are collected from 2005 to 2007 for pre M&A period and 2009 to 2011 for post M&A period. Thus, for entire study, data from year ending 31st March 1997 to 31st March 2011 are taken for the performance evaluation of the manufacturing companies. This study uses the long term period in terms of three years to evaluate firm performance. A suitably long period is essential to investigate the impact of M&A, since the effect of M&A is not felt effectively (Healy, et al., 1992); (Rau &Vermaelen, 1998); (Ghosh, 2001); (Rahman &Limmack, 2004); Ramakrishnan, 2008). In the study, the year of M&A event data is not used for analysis because

during this year there could be changes in the financial reporting (Healy, et al., 1992); (Ramakrishnan, 2007). Thus, the final sample consists of 407 M&A deals (290 merger deals and 117 acquisition deals). Table 4 shows the sample of year wise M&A as per the Type of Deal:

Table 4 Sample as per the Type of Deal

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Merger	27	39	33	29	29	42	43	30	18	**290**
Acquisition	11	7	8	9	10	15	18	28	11	**117**
Total	38	46	41	38	39	57	61	58	29	**407**
Source: Compiled from CMIE Prowess Database										

The industry classification is made based on the CMIE Prowess industry classification that categorises the manufacturing sector into nine industries as given in Table 5. Industry types as per the Prowess classification are under Chemical, Diversified, Food and Beverage, Machinery, Metals & Metal Products, Miscellaneous, Non Metallic Mineral Products, Textiles, Transport Equipment industries. Table 5 classifies the sample into different type of industry of acquirer and target companies.

Table 5 Sample as per the Type of Industry of Acquirer and Target

Industry	Acquirer Industry			Target Industry		
	Merger	**Acquisition**	**Total**	**Merger**	**Acquisition**	**Total**
Chemicals	98	37	135	96	33	129
Diversified	18	6	24	3	2	5
Food and Beverage	39	17	56	44	15	59
Machinery	39	12	51	40	14	54
Metal and Metal Products	27	14	41	29	19	48
Miscellaneous Manufacturing	5	4	9	9	7	16
Non Metallic and Mineral Products	19	6	25	21	8	29
Textiles	26	10	36	28	10	38
Transport Equipment	19	11	30	20	9	29
	290	117	407	290	117	407
Source: Compiled from CMIE Prowess Database						

Table 6 shows the sample as per different categories of deal characteristics:

Table 6 Sample as per different categories of Deal Characteristics

Categories	Merger	%	Acquisition	%	Total	%
Related Deals	224	73%	81	27%	305	75%
Unrelated Deals	66	65%	36	35%	102	25%
With M&A Experience	159	67%	80	33%	239	59%
Without M&A Experience	131	78%	37	22%	168	41%
Large Target	31	67%	15	33%	46	11%
Small Target	259	72%	102	28%	361	89%
Source: Compiled from CMIE Prowess Database						
Note: Explanation for these terms are given in subsequent sections						

Each acquirer and target company belongs to specific industry. Thus, each company is affected by rules and regulations of the industry to which it belongs. Economic factors also affect a specific industry. Therefore, different past studies have used suitable control sample that is completely different from the experimental sample to examine the post M&A performance to know whether the firm performance is because of M&A and isolate the influence of industry and economic factors. Adjusting the effects of the external environment makes M&A performance analysis meaningful (Bild, et al., 2002); (Ramaswamy&Waegelein, 2003); (Ramakrishnan, 2008). As per these studies, the pre M&A and post M&A performance are measured taking control firms and each measure are adjusted for industry adjusted performance. So control firms are selected for each industry based on two criteria (a) manufacturing companies that have not gone for any M&A deals during the sample period (b) financial data are available for the sample period. Table 7 shows the number of companies in each control group for EVA measure.

Table 7 Sample of Control Firms for Industry Average EVA Performance

Industry	Economic Value Added								
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Chemical	236	256	286	295	307	325	410	411	192
Diversified	8	8	9	9	9	9	10	9	7
Food and Beverage	148	163	199	218	231	263	316	319	134
Machinery	138	143	163	176	163	171	176	209	101

Industry	Economic Value Added								
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Metal and Metal Products	99	107	164	159	176	179	198	231	90
Miscellaneous Manufacturing	58	64	78	88	97	101	106	136	56
Non Metallic and Mineral Products	50	55	59	64	68	66	71	79	41
Textiles	162	159	170	189	196	199	225	258	132
Transport	42	52	63	73	78	86	102	105	48
Source: Compiled from CMIE Prowess Database									

Table 8 shows the number of companies in each control group for traditional ratios.

Table 8 Sample of Control Firms for Industry Average performance for Traditional Ratios

Industry	Traditional Parameters								
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Chemical	180	202	215	222	219	232	289	277	43
Diversified	6	6	7	7	7	7	9	8	3
Food and Beverage	114	126	151	167	171	181	203	189	25
Machinery	107	109	118	122	132	133	167	156	29
Metal and Metal Products	94	106	126	136	141	145	177	173	24
Miscellaneous Manufacturing	55	65	72	75	75	80	91	85	8
Non Metallic Mineral Products	41	43	48	47	48	47	51	43	7
Textiles	161	155	161	162	154	173	195	182	32
Transport	36	39	51	60	62	71	83	78	4
Source: Compiled from CMIE Prowess Database									

After that, based on the availability of financial data for the sample period, data were collected in relation to M&A year. The number of control firms differ traditional measures and EVA measure because of availability of data.

1.5.2. Financial Measures of Performance

In the light of the research objectives of the study, variables and their definitions are adopted from existing literature. All the financial ratios are computed with the help of data collected from CMIE Prowess. Financial measures used in the study are discussed below in detail:

1.1.1. Traditional Financial Ratios

The different traditional financial parameters used for the study and the definitions of variables are listed in Table 9.

Table 9 Definition of Variables

Financial Parameters	Variables	Definitions
Liquidity	Current Ratio (CR)	Current Assets/ Current Liabilities
	Quick Ratio (QR)	Quick Assets/ Current Liabilities
Profitability	Return on Capital employed (ROCE)	Profit Before Interest and Tax/Average Capital Employed
	Return on Net Worth (RONW)	Profit after Tax/ Average Net Worth
	Return on Assets (ROA)	Profit after Tax/ Total Assets
	Net Profit Margin (NPM)	Profit after Tax /Sales
Leverage	Interest Coverage Ratio (ICR)	Interest/Profit Before Interest and Tax
Efficiency	Asset Turnover Ratio (ATR)	Sales/ Average Total Assets
Source: Collected from various existing literature - (Ooghe&Balcaen, 2000); (Mantravadi& Reddy, 2007); (Kumar &Rajib, 2007); (Vanitha&Selvam, 2007); (Kumar & Bansal, 2008); (Kumar, 2009); (Saboo&Gopi, 2009).		

The ratios are not collected directly from the data source. Rather data for acquiring firm and target firms are collected separately and then each value is combined for pre and post M&A period separately and then the ratios are calculated (Healy, et al., 1992); (Ramakrishnan, 2008). After that, financial ratios are normalised because the sample of 407 firms consist of acquiring and target from different industries in the manufacturing sector, and the data span over a longer period of time i.e. 1992-2011. The time period might be affected by different economic

conditions. The sizes of companies also differ significantly. All the financial performance parameters are adjusted for the control groups.

1.1.2. Economic Value Added

Pandey (2005) also views that the concept of economic profitability is equivalent to the concept of economic value added (EVA). This study basically takes EVA, a measure of economic profit which is defined as the spread between return on equity and cost of equity. From equityholders' point of view, economic value added is expressed as net profit over and above the charge of equity capital (Net Worth). The charge for equity capital, otherwise known as cost of equity, is measured with the help of capital asset pricing model (CAPM).

Following Pandey (2005), an alternative formula that is taken for the study is below:

Economic Value Added (EVA)= Net Profit – Cost of Equity *Average Net Worth.

K_e is estimated using Capital Asset Pricing Model:

$K_e = R_f + \beta_i (R_m - R_f)$

Where

K_e= Cost of Equity (calculated below)

R_f = Risk Free Rate of Return

R_m= Rate of Return on Market Index

β_i = Beta coefficient

The R_f is taken as 7% while R_m is taken as15%. For the purpose of calculating risk free rate of return, the average yield on the 10 year government bond from 2001-02 till 2010-11 is considered using the average of central government securities (Per cent per annum) for the sample period of study. Data is collected from Reserve Bank of India records. For calculating the market rate of return, the compounded annual growth rate (CAGR) in BSE Sensex is taken

from in 1990-91 to in 2010-11. The CAGR is calculated using the annual averages of share price indices and market capitalisation data collected from Reserve Bank of India website.

Beta Values are collected from the CMIE Prowess database. The beta of scrip is computed by CMIE and stored in the database. It is the slope of the regression line derived by regressing the weekly returns of scrip against the weekly returns on the 'CMIE Overall Share Price Index. The regression is done every year in April and it uses the latest five years of weekly returns for the scrip and for the COSPI.

The EVA results are based on standardized data which are industry adjusted. In this study, the rate of EVA (EVA/Average Net worth) is taken so that it would adjust for the size of the companies. Industry medians are taken for the EVA and rate of EVA measures. The industry-adjusted measures are calculated by deducting the industry financial ratio medians fromindividual sample firm financial ratios.

1.5.3. Basic Specifications for the Study

For the purpose of study, certain assumptions and specifications are made below:

- Log of total assets is taken as the proxy for the size of the companies.

- The median of the total assets of the acquirer company in the acquisition year is taken into consideration for segregating the acquirer into large and small companies.

- Size of acquirer for linear and logistic regression is the log of total assets prior to one year of M&A.

- Experience is a dummy variable with value 1 representing the prior M&A experience of acquirer and 0 otherwise.

1.5.4. Tools and Techniques

For the purpose, three year average pre and post M&A financial ratios are compared to observe, if there is any significant change in long term financial performance due to M&A. Following Vanitha&Selvam (2007); Mantravadi& Reddy (2008); Kumar (2009); Saboo&Gopi (2009) and Usman, et al. (2012).

1.1.3. Logistic Regression

Logistic regression is used to find out the probability of the manufacturing companies in India being successful or unsuccessful after mergers and acquisitions carried out by using logistic regression as per the occurrence or non occurrence of the event (success and failure of M&A) of firms. To define the firms being successful or unsuccessful/ failure after M&A, "Economic Value added (EVA®) or "Economic profit" has been used to segregate the sample firms into successful and unsuccessful M&A deals.

The current study is carried out by using logistic regression as per the occurrence or non occurrence of the event (success and failure of M&A) of firms. In the study, logistic regression is used to analyse the impact of different facts that influence companies becoming successful or companies becoming unsuccessful after mergers and acquisitions. Here the dependent variable is (Y_i) is binary in nature taking the value 1, if the company is successful and 0, if the company is not successful. Let P_i is the probability that a company is successful after merger and/or acquisition and $(1- P_i)$ defines the probability that a company is unsuccessful after merger.The Logit Model is:

$$L_i = log\left(\frac{p}{1-p}\right)$$

$$\text{ß}_0 + \text{ß}_1 Profitability + \text{ß}_2 Liquidity + \text{ß}_3\ Leverage + \text{ß}_4\ Efficiency + \text{ß}_4\ Size$$

$$+ \text{ß}_5 Industry\ relatedness + \text{ß}_6 Method + \text{ß}_7 Experience$$

$$+ + \text{ß}_7 relative\ target\ size + u_i$$

DV=Binary(P_i) & (1-P_i)

IV= M&A Experience, Size of acquirer, CR_{pre123}, QR_{pre123}, ROA_{pre123}, $ROCE_{pre123}$, $RONW_{pre123}$, NPM_{pre123}, ATR_{pre123}, ICR_{pre123}

Where,

L_i=Logit

The dependent variables are:

P_i=Probability that companies become successful after merger and acquisition, success being

(a) Post M&$A \dfrac{EVA}{Average\ Net\ Worth} > Pre\ M\&A \dfrac{EVA}{Average\ Net\ Worth}$

Or

1-P_i=Probability that companies become unsuccessful after merger and acquisition, failure being

Post M&$A \dfrac{EVA}{Average\ Net\ Worth} < Pre\ M\&A \dfrac{EVA}{Average\ Net\ Worth}$

To classify the firms being successful or unsuccessful/ failure after M&A, rate of EVA is used.

The independent variables are

X_1= M&A Experience;

X_2=Size of Acquirer

X_3=Pre M&A return on net worth;

X_4=Pre M&A interest coverage ratio;

X_5=Pre M&A asset turnover ratio;

X_6 = Pre M&A current ratio;

X_7 = Pre M&A quick ratio;

X_8 = Pre M&A return on assets;

X_9 = Pre M&A return on capital employed;

X_{10} = Pre M&A net profit margin;

υ_i= Random Disturbance Term

1.5.5. Model Specification and Variables

A proper specification of the dependent variable (success or failure) need to be incorporated and independent variables need to include consideration of all available information concerning the firm's performance prior to the deal, thus making it successful or unsuccessful. Hence, rate of EVA which is true measure of profit as well as index score that takes the weight of different financial performance are taken as criteria for deciding successful or unsuccessful. The independent variable takes financial ratios prior to M&A and other factors like size and experience prior to deal.

In the descriptive statistics table, the sample is categorized into two parts to distinguish between successful and failure companies in mergers and acquisitions. In the study, the likelihood ratio test results are also shown in each table for each model since it is an indicator that is similar to the R^2 statistic of multiple regression and indicates the explanatory ability of the logistic model. The difference of logit is formulated into an odds ratio. The odds ratio is the ratio of the odds of an event occurring in one group to the odds of it occurring in another group. It means the odd ratio shows the probability of success to the probability of failure. The odd ratio for each model is also shown for each specific model. Therefore, the higher the odds ratio, the

more positive are the impacts of the independent variable on the probability of merger and acquisition success.

A cut-off point for logistic regression is determined using a point of 0.50 that companies can be assigned to groups with respect to their scores i.e. after the logistic regression is run, at the cut off score identified at 0.05, the result found a z score that would determine the level from which a company would be successful or failure after merger and acquisition. The companies that have scores below the cut-off will be considered as possible failure companies and vice versa.

The descriptive statistics of independent variables using the rate of EVA were found which are shown in table 10.

Table 10 Descriptive Statistics of Independent Variables using rate of EVA

Descriptive Statistics	Successful Companies		Failure Companies	
	Mean	Std. Deviation	Mean	Std. Deviation
1. M&A Experience	0.57	0.50	0.61	0.49
2. Size of acquirer	5.91	1.95	5.95	1.84
3. CR_{pre123}	-0.07	0.35	-0.01	0.33
4. QR_{pre123}	-0.03	0.34	-0.08	0.31
5. ROA_{pre123}	0.05	0.27	0.04	0.28
6. $ROCE_{pre123}$	0.03	0.33	0.01	0.30
7. $RONW_{pre123}$	0.03	0.26	0.04	0.26
8. NPM_{pre123}	0.03	0.26	0.03	0.25
9. ATR_{pre123}	0.03	0.36	-0.05	0.40
10. ICR_{pre123}	0.02	0.28	0.01	0.25

The numbers of failure M&A cases are more compared to success consistent with the earlier studies.

1.6. Discussion of Logistic Regression Results using Rate of EVA

This section investigates the results for finding determinants associated with the likelihood of a manufacturing firm becoming successful or unsuccessful in a merger or an acquisition. Table 11 shows the results of the logistic regression performed to determine which characteristics in

acquiring firms make a firm more likely to be successful after mergers and acquisitions using

Rate of EVA.

Table 11 Logit Estimates using rate of EVA as Dependent Variable

Independent Variables	Merger and Acquisition		Acquisition		Merger	
	Coefficient (β)	Odd RatioExp(β)	*Coefficient* (β)	Odd Ratio	Coefficient (β)	Odd Ratio Exp(β)
Constant	-0.06 (-0.16)	0.94	-1.01 (-1.33)	0.36	0.19 (0.44)	1.21
1. M&A Experience	-0.27 (-1.16)	0.76	0.16 (0.30)	1.17	-0.40 (-1.50)	0.67
2. Size of Acquirer	0.05 (0.73)	1.05	0.13 (0.95)	1.14	0.03 (0.36)	1.03
3. CR_{pre123}	-2.73 (-4.87***)	0.07	-3.96 (-3.13***)	0.02	-2.31 (-3.44***)	0.10
4. QR_{pre123}	2.94 (4.79***)	18.92	5.18 (3.53***)	177.68	2.24 (3.16***)	9.39
5. ROA_{pre123}	0.78 (0.95)	2.18	2.72 (1.45)	15.18	0.28 (0.29)	1.32
6. $ROCE_{pre123}$	-0.01 (-0.01)	0.99	-2.32 (-1.69*)	0.10	0.51 (0.84)	1.67
7. $RONW_{pre123}$	-0.29 (-0.43)	0.75	-1.18 (-0.71)	0.31	-0.26 (-0.34)	0.77
8. NPM_{pre123}	-1.44 (-1.84*)	0.24	0.14 (0.08)	1.15	-1.45 (-1.56)	0.23
9. ATR_{pre123}	0.74 (2.33**)	2.10	1.32 (1.73*)	3.74	0.68 (1.80*)	1.97
10. ICR_{pre123}	0.17 (0.27)	1.19	-0.61 (-0.39)	0.54	0.13 (0.19)	1.14
Number of Observations	407		117		290	
f(beta'x) at mean of independent variables	0.250		0.245		0.250	
Likelihood ratio test: Chi-square(10)	36.0484 [0.0001]		27.18 [0.0024]		20.5291 [0.0246]	
Number of cases correctly predicted	254 (62.4%)		81 (69.2%)		175 (60.3%)	
Mean dependent variable	0.49		0.44		0.51	
McFadden R-squared	0.06		0.16		0.05	
S.D. Dependent variable	0.25		0.24		0.25	

Adjusted R-squared	0.02	0.03	-0.003
Log-likelihood	- 63.94	-66.54;	190.72;
Akaike criterion	549.88;	155.08;	403.44
Schwarz criterion	593.97	185.46	443.80
Hannan-Quinn	567.33	167.41	419.61
Z score	Less than 0.02-Failure 0.02 and Above-Success	Less than 0.02-Failure; 0.02 and Above-Success	Less than 0.01-Failure while 0.01 and Above-Success

Note: ***, ** and, * represent statistical significance at the 1 %, 5 % and 10 % levels respectively. The figure in the bracket represents the z statistics values.

Using EVA, the results of logistic regression were found for M&A are shown in table 7.3. The estimated coefficient on current ratio (liquidity), net profit margin (profitability) are negative and statistically significant (Ravenscraft& Scherer, 1987); (Singh, 1975); (Newbould, 1970); cited from (Daga, 2007). The estimated coefficients of quick ratio (liquidity), asset turnover ratio (efficiency) are positive and statistically significant (Pawaskar, 2001); (Kumar &Rajib, 2007). Thus, it can be concluded that the lower pre M&A current ratio and profitability, increases the probability of a given firm being successful after M&A; whereas the probability of M&A being successful increases with increase in the pre M&A quick ratio and efficiency. Prior M&A Experience, pre M&A return on capital employed, return on net worth, interest coverage ratio and acquirer size do not impact on the probability of the firm being successful after M&A. At the cut off value of 0.50, the model correctly predicted 150 failure cases while 104 success cases. There are 153 cases where the successful companies are classified as unsuccessful and vice versa. These are the number of misclassifications.

The results of logistic regression using the EVA were found for acquisition is shown in table 7.3. Excluding the constant, p-value was highest for variable NPMpre123. The estimated coefficients of current ratios (liquidity), return on capital employed and return on net worth (profitability) are negative and statistically significant; whereas the estimated coefficients of

quick ratio (liquidity), asset turnover ratio (efficiency) are positive and statistically significant. Thus, it can be concluded that in case of acquisition, the lower the pre acquisition current ratio and return on capital employed and return on net worth, increases the probability of a given firm being successful after acquisition. Whereas the probability of M&A being successful increases with increase in the pre M&A quick ratio and asset turnover ratio (efficiency). Prior M&A Experience, Pre M&A return on assets, return on net worth, net profit margin, interest coverage ratio and acquirer size do not impact on the probability of the firm being successful after acquisition. Net profit margin is not found to be significant in classifying the companies to successful or unsuccessful after M&A.At the cut off value of 0.50, the model correctly predicted 51 failure cases while 30 success cases. There are 36 cases where the successful companies are classified as unsuccessful and vice versa.

The results of logistic regression using the EVA were found for mergers are shown in table 7.3. Excluding the constant, p-value was highest for variable ICR_{pre123}. The estimated coefficient on current ratio (liquidity) is found to be negative and statistically significant. The estimated coefficients of quick ratio (liquidity), asset turnover ratio (efficiency) are positive and statistically significant. Thus, it can be concluded that in case of merger, the lower the pre merge current ratio, increases the probability of a given firm being successful after merger; whereas the probability of M&A being successful increases with increase in the pre M&A quick ratio and asset turnover ratio (efficiency). M&A experience, size of the acquirer, the company's profitability and solvency variables like return on assets, return on capital employed, return on net worth, net profit margin, interest coverage ratio has emerged as insignificant variables in explaining merger activity in the Indian economy as far as the manufacturing sector is concerned. The implication for quick ratio (liquidity) might be, the likelihood of a company to be

successful increases with increases in the liquidity of firm in pre merger period because liquidity shows the ability of a company to meet its short term debt obligations and good financial health. At the cut off value of 0.50, the model correctly predicted 85 failure cases while 90 success cases. The numbers of cases where the successful companies are classified as unsuccessful vice versa are 115. These are the number of misclassifications.

From the entire logistic regression models, it is found that size of acquirer and prior M&A experience do not predict a merger or acquisition to be successful or not. It shows that post M&A rate of EVA success or failure does not support the size and experience hypothesis, which states that with increase in experience there will be either successful merger or acquisition due to experience in handling integration, selection of right target or a unsuccessful merger or acquisition by the over confidence of mangers. Similarly a large acquirer might be successful because of its market power that would help to reduce the cost of capital for its heavy raw material purchase or a small acquirer will be successful because they go for small but strategically fit targets.

Likelihood ratio test shows the explanatory power of model. Here a likelihood ratio test is at 0.0001 for M&A, at 0.0024 for acquisition and at 0.0246 for merger. It indicates the logistic model provides a better explanation of a firm's success for merger probability. A further a lower likelihood ratio for acquisition index. The index is even lower with the both merger and acquisition sample.

Few conclusions were drawn from the logistic regression and its predictive accuracy. The financial ratios were very useful in identifying the characteristics for successful and unsuccessful firms after post merger and acquisition performance. From the prediction model, classification accuracy for all the models was above 60% consistent with past findings from literature

28

(Sorensen, 2000). Quick ratio, an indicator of liquidity was the only significant financial ratio in all the models discussed above, that identified the characteristics of manufacturing firm to be successful or unsuccessful after M&A. `

1.7. Concluding Remarks

For the study, logistic regression is used to predict the impact of different factors that influence companies becoming successful or unsuccessful after mergers and acquisitions. Increase in rate of EVA in the post M&A period compared to the pre M&A period is considered as successful or unsuccessful. The logistic regression results using the rate of EVA parameter found that the number of 'correctly predicted' cases is 254 (62.4 percent) for both M&A, 81 (69.2 percent) for acquisition, 175 (60.3 percent) for mergers. The probability of a given firm being successful after M&A increases as the pre M&A current ratio, net profit margin decreases; while its pre M&A quick ratio and asset turnover ratio increases. It is also estimated that the Z score below 0.02 in case of M&A would indicate the company is probably headed for failure, while companies with scores above 0.02 are likely to be successful. The Z score below 0.01 in case of merger would indicate the company is probably headed for failure, while companies with scores above 0.01 are likely to be successful. Out of the various factors considered, quick ratio is the most significant predictor of M&A success. Thus, managers should give more importance to company's liquidity position.

1.8. Implications for Theory and Practice

The practice of making M&A deals have gone manifold in recent days in manufacturing companies in India. Although, companies in India have adopted M&As as a vital strategy for growth, still there is a possibility that company could be successful or unsuccessful after M&A. Hence, the current studypredicts post M&A success of manufacturing companies in India. The

study contributes to the theory and practice of M&A literature in several ways.This study shown the potential prediction power of various factors that affect M&A success, thereby allowing the managers to understand and differentiate between the significant and insignificant factors affecting M&A success. It provides important managerial implications as to which factor managers should take into consideration before making an M&A deal so that they can improve their corporate strategy and planning and help the company to improve by appraising its approaches on the key areas.

In earlier studies, logistic regression has been used to predict characteristics of acquirer and target companies for possible M&A deal. This study has important implication to theory of M&A literature because logistic regression has been used to find out the characteristics of manufacturing firms to know if they would be successful or not after adopting M&A as a growthstrategy. Besides, in this study, EVA is considered as performance metric to predict the success of M&A which reflects a true picture of company performance. Apart from it, the study has predicted performance separately for merger and acquisition. Hence, the results of the logistic regression model in this study have contributed new findings to the existing literature on mergers and acquisitionssuccess. These findings might bring new insights on the role of various determinants of M&A success for the better company's performance.

1.9. Limitations and Scope for Future Research

In this study there were many limitations to get more appropriate results which can be considered as prolific avenues for future research. To begin with, the study has focused on companies only in the manufacturing sectordue to limitation of time and resources. This study limits its scope to few independent variables used in logit model which might not be adequate to predict the M&A success. Future studies can be made taking into account more factors.

References

Agrawal, M. & Sensarma, R., 2007. Determinants of Merger Activity: Evidence From India. *International Journal of Financial Services Management,* 2(4), pp. 277 - 288.

Ali, R. & S.Gupta, G., 1998. *Corporate Takeovers in Malaysia: Discriminant Analysis for Bidders and Target Firms.* [Online] Available at: http://web.usm.my/aamj/5.1.2000/5-1-1.pdf [Accessed 25 December 2012].

Alzueta, J. P. & Lucey, B. M., n.d.*Predicting takeovers using a Multi-Period Logistic Model: A Dynamical Analysis.*[Online] Available at: http://69.175.2.130/~finman/Reno/Papers/Predicting_Takeovers_Multiperiod_Model_Dynamical _Analysis_AUTHORS_JPA_BML.pdf

Banerjee, P. et al., 2012. *An Analytical Study of Returns and Characteristics of Indian Cross-Border Acquisitions.* [Online] Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2147624&download=yes [Accessed 12 December 2012].

Basu, D., Dastidar, S. G., & Chawla, D., 2008. Corporate Mergers and Acquisitions in India Discriminating between Bidders and Targets. *Global Business Review*, *9*(2), 207-218.

Beccalli, E. & Frantz, P., 2012. The Determinants of Mergers and Acquisitions. *Journal of Financial Services Research,* pp. 1-27.

Bild, M., Cosh, A. D., Guest, P. &Runsten, M., 2002.*Do Takeovers Create Value?: A Residual Income Approach on UK Data.* England: ESRC Centre for Business Research, University of Cambridge.

Bosecke, K., 2009. Fundamentals. In: *Value Creation in Mergers, Acquisitions, and Alliances.* First ed. Germany: Springer, pp. 5-24.

Branch, B. & Yang, T., 2010. The Performance of Merger / Risk Arbitrage and Sweetened Offers in Hostile Takeovers. *Banking and Finance Review,* pp. 1-14.

Brouthers, K. D., Hastenburg, P. V. &Ven, J., 1998. If Most Mergers Fail Why Are They So Popular?.*Long Range Planning,* 31(3), pp. 347-353.

Bruner, R. F., 2001. Does M&A Pay?. In: R. F. Bruner, ed. *Applied Mergers and Acquisitions.* United States: John Wiley & Sons, Inc, pp. 1-41.

Daga, V., 2007.*Post Merger Profitability Analysis of Shareholders: Evidence from Europe.* [Online] Available at: http://edissertations.nottingham.ac.uk/1094/1/07MAlixvd1.pdf[Accessed 12 November 2011].

DePamphilis, D. M., 2010.*Mergers, Acquisitions, and Restructuring Activities.*Fifth ed. USA: Academic Press.

Ghosh, A., 2001. Does Operating Performance really improves following Corporate Acquisitions?.*Journal of Corporate Finance*, 7(2), pp. 151-178.

Hawawini, G., Subramanian, V. &Verdini, P., 2003. Is Performance Drived by Industry or Firm Specific Factors? A New Look at the Evidence. *Strategic Management Journal,* 24, pp. 1-16.

Healy, P. M., Palepu, K. G. &Ruback, R. S., 1992. Does Corporate Performance Improve after Mergers?.*Journal of Financial Economics,* 31(2), pp. 135-175.

Kumar, B. R. &Rajib, P., 2007. An Analytical Study on Multiple Mergers in India.*Management Review,* 9(1), pp. 1-31.

Kumar, B. R. &Rajib, P., 2007. Characteristics of Merging Firms in India: An Empirical Examination. *Vikalpa,* 32(1), pp. 27-44.

Kumar, B. R. &Rajib, P., 2007. Mergers and Corporate Performance in India: An Empirical Study. *Decision,* 121-147, p. 34 (1).

Kumar, S. & Bansal, L. K., 2008. The Impact of Mergers and Acquisitions on Corporate.*Management Decision,* 46(11), pp. 1531-1543.

Mantravadi, P. & Reddy, A. V., 2007. Relative Size in Mergers and Operating Performance: Indian Experience. *Economic and Political Weekly,* 29 September.pp. 3936-3942.

Mantravadi, P. & Reddy, A. V., 2008. Post-Merger Performance of Acquiring Firms from Different Industries in India.*International Research Journal of Finance and Economics,* 22, pp. 192-204.

Mohanty, P., 2006. Modified TVA-based Performance Evaluation.*IIMB Management Review, September 2006 273,* 18(3), p. 273.

Pawaskar, V., 2001.Effect of Mergers on Corporate Performance in India.*Vikalpa,* 26(1), pp. 19-32.

Rahman, R. A. &Limmack, R., 2004. Corporate Acquisitions and the Operating Performance of Malaysian Companies.*Journal of Business Finance & Accounting,* 31(3&4), pp. 359-400.

Ramakrishnan, K., 2007. Mergers in Indian Industry: Performance and Impacting Factors. *Business Strategy,* pp. 1-7.

Ramakrishnan, K., 2008. Long-Term Post-Merger Performance of Firms in India.*Vikalpa,* 33(2), pp. 47-63.

Ramaswamy, K. P. &Waegelein, J. F., 2003.Firm Financial Performance Following Mergers.*Review of Quantitative Finance and Accounting,* 20, pp. 115-126.

Ray, S., 2012. Efficacy of Economic Value Added Concept in Business Performance Measurement. *Advances in Information Technology and Management,* 2(2), pp. 260-267.

Ronnholm, G., 2010. *An Econometric Analysis of the Merger Decisions of the Swedish Competition Authority during 1993-2009.* Stockholm: Department of Economics, Stockholm University.

Roztocki, N. & Needy, K. L., 1999. *EVA for Small Manufacturing Companies.*s.l., 1999 SAM International Management Conference, pp. 461-469.

Saboo, S. &Gopi, S., 2009. *Comparison of Post-Merger Performance of Acquiring firms (India) involved in Domestic and Cross-Border Acquisitions.* [Online] Available at: http://mpra.ub.uni-muenchen.de/19274/1/Comparison_of_Post-

Merger_Performance_of_Acquiring_Firms_India_involved_in_Domestic_and_Cross-Border_Acquisitions.pdf[Accessed 20 November 2012].

Shim, J. &Okamuro, H., 2011. Does Ownership Matter in Mergers? A Comparative Study of the Causes and Consequences of Mergers by Family and Non-Family Firms.*Journal of Banking and Finance,* pp. 193-203.

Singh, A., 1975. Take-Overs, Economic Natural Selection and the Theory of the Firm: Evidence from the Post War United Kingdom Experience, *Economic Journal*, 85(339), pp. 497-515.

Singh, P., Suri, P. &Sah, R., 2012. Economic Value Added in Indian Cross Border. *International Journal of Business Research ,*12(2), pp. 160-164.

Sorensen, D. E., 2000. Characteristics of Merging Firms.*Journal of Economics and Business,* 52, pp. 423-433.

Tsagkanos, A., Georgopoulos, A. &Siriopoulos, C., 2006. Predicting Takeover Targets: New Evidence from a Small Open Economy. *International Research Journal of Finance and Economics,* pp. 183-193.

Vanitha, S. &Selvam, M., 2007.Financial Performance of Indian Manufacturing Companies during Pre and Post Merger.*International Research Journal of Finance and Economics,* Issue 12, pp. 7-35.

Walkling, R. A., 1985. Predicting Tender Offer Success: A Logistic Analysis.*Journal of Financial and Quantitative Analysis,* 20(4), pp. 461-478.

Wang, J. & Branch, B., 2009.Takeover Success Prediction and Performance of Risk Arbitrage.*Journal of Business & Economic Studies,* 15(2), pp. 10-25.

Xiao, X. & Tan, L., 2009.*Research on M&A Performance of Listed Companies in China Based on EVA.* Beijing, International Conference on Electronic Commerce and Business Intelligence, 2009.(pp. 337-340). IEEE..

Yao, L. J., Sutton, S. G. & Chan, S. H., 2009.Wealth Creation from Information Technology Investments using the EVA.*The Journal of Computer Information Systems,* 50(2), pp. 42-48.

Yook, K. C., 2004. The Measurement of Post-Acquisition Performance Using EVA.*Journal of Business and Economics,* 42(3&4), pp. 67-83.

Yuzbasioglu, A., 2002. *An Empirical Analysis of Takeover Predictions in the UK: Application of Artificial Neural Networks and Logistic Regression,* Plymouth Business School: University of Plymouth.