



## Stock market reaction to mergers and acquisitions: An event study of Indian listed firms

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### Abstract

The current study inspects a sample of 69 mergers & acquisition announcements in the Indian manufacturing industry in the period of 2015–2025 to determine the impact of mergers & acquisition announcements on company stock returns. The study used the event study methodology of the market and market-adjusted models to calculate the excess returns, AAR, and CAAR of the company's stock returns over various event periods. During the study period, the study found that not less than 60% of Indian manufacturing companies have positive abnormal returns under both models. According to the market model, before M&A announcements, there is a decreasing AAR with a decreasing event period of -40 days to the date of the Announcement, followed by an increasing AAR with an increasing event window of 1 to +40, and there is no substantial difference in CAAR between before- and after-announcements of mergers & acquisition in the event window of (-40 to -1 day) and (+40 to +1 day). In the market-adjusted model, on event day and 2 days post the Announcement, has a positive and significant AAR. In the event window of (-40 to -1 day) and (+40 to +1 day), it is observed that CAAR is higher in the post-announcement of M&A (10.6%) than the pre-announcement of M&A (1.9%). Finally, the study concludes that the CAAR of the market model is substantially greater than that of the market-adjusted model in the pre-and post-announcements of M&A.

**Keywords:** Event study, M&A announcement, AAR, CAAR, manufacturing industry

### Introduction

A business can grow both internally as well as externally. In either case, the company's goal is to increase the wealth of its current shareholders. The majority of an organization's economic expansion occurs through internal growth, which occurs when a company's current divisions develop via standard corporate finance activities. Mergers, on the other hand, are the most significant instances of growth. Corporate strategy, which includes mergers, acquisitions, transfers of assets, spin-offs, and other transactions, has grown to be a significant force in the global economy and financial environment.

Significant issues regarding business practices and the creation of government policy have been raised by industrialization. On the plus side, M & may be essential to a business firm's positive improvement as it moves through various advancement and growth phases. A company may at some point in its development need M & As in order to successfully enter new market segments and different geographic markets. Competitors' ability to compete successfully in global markets may be dependent on their ability to acquire those skills quickly and effectively

through mergers and acquisitions. In essence, mergers transfer funds to their most efficient and effective uses, thereby growing value for shareholders. They also significantly raise productivity and value.

Many of the researchers concluded that merger and acquisition activities lead to financial gain the long-term profitability of acquiring companies is typically increased through mergers and acquisitions. Substantial long-term returns will also be expected to be received by the investors of the acquired firm by investing in the overall benefits anticipated from the acquirers. shareholders of the acquired company also anticipate realizing significant long-term returns. In contrast, the acquiring companies report mixed profits in the short term. While creating value for the targets due to announcements of M&A, bidders have only short-term value retention instead of value creation or value destruction. Thus, the aim of present research is to study the reaction of share prices in Indian manufacturing industries in particular.

### Review of Literature

S. No	Authors	Model	Findings and Conclusion
1	Suman Monga and Amanpreet (2021) [14]	Market Model	The study notices that excess returns and CAR do not stay for a longer time. Short-term windows have proven to be more beneficial when comparing different sizes of windows in terms of providing returns to an investor.
2	Rai <i>et al.</i> (2021) [11]	Standard event study method and market model	The study discovered that the merger announcement considerably influences both the bidder and target institutions. While the target banks have good effects on the event day and the day after, the bidder banks suffer negative effects later on. It shows that no prior research has looked into how merger announcements affect Indian bidders and target banks' stock returns.
3	Amit Sharma (2017) [3]	Event study methodology	Study shows that global merger announcements in Indian industries impact shareholder wealth, which is positive and significant for bidders and companies.
4	Timcy Sachdeva <i>et al.</i> (2015) [15]	Event study methodology, regression analysis, Generalized sign test	The authors concluded that acquiring company shareholders generated negative but insignificant returns on the post-merger announcement in the short run.
5	Shah & Arora (2014)	Event study methodology	Comparing the pre-announcement and post-announcement returns of the target and

	[12]	and market model	bidder firms' stock prices over a ±2 days event window, the target firm's stock price yields a positive CAAR that is significantly different from zero across all event windows. Bidder firms, unlike target firms, do not exhibit.
6	Arti Trivedi <i>et al.</i> (2013) [4]	Event study methodology and market model	The study reveals that mergers and acquisitions do not create short-term shareholder value and profits for the acquiring company.
7	Smita Kashiramka & N.V. Muralidhar Rao (2013) [13]	Single factor market model, The t-test (t), Patell test (tp), 1976 and BMP test(tbmp), 1991	The study concludes that regardless of when the deal was announced, both acquiring and target firm shareholders benefited from the acquisition announcement.
8	Neelam Rani <i>et al.</i> (2011) [8]	Event study methodology	The study found that acquisitions of foreign companies create significant short-term wealth for the acquiring company's shareholders on the day of the announcement. The Cumulative Abnormal Return (CAR) for acquisition activity of Indian companies targeting foreign-based targets is positive across the event window.
9	Marc Goergen and Luc Renneboog (2003) [7]	Market model and CAPM model	The study found large announcement effects of 9% and a cumulative abnormal return of 23% that includes the price run-up over the two months preceding the announcement date. The share price of the bidding firms, on the other hand, reacts positively, with a statistically significant announcement effect of only 0.7%.

### Research gap

The few existing studies on the consequence of M&A Announcement on shareholders' wealth have absorbed largely on the merger and acquisition of banks, with limited studies examining the impact on Indian manufacturing companies in different window periods. This present study attempts to close the gap by examining the stock return reactions of Indian manufacturing companies to M&A announcements and how they are affected by different window periods. The current study will provide a more comprehensive understanding of how stock prices function during mergers and acquisitions events in the Indian manufacturing industry.

### Objective of the study

- To find out how shareholder wealth in Indian manufacturing firms is impacted by merger and acquisition announcements.

### Hypothesis of The Study

**H<sub>01</sub>:** M&A do not generate significant positive AAR for the shareholders of acquirer companies

### Research methodology

The study relies on 69 M&A announcements in the Indian manufacturing industry from 2015 - 2025. The present study determines the impact of companies' stock returns involved in the selected M&A announcements in an event window of 81 days consisting of a before-window period of -40 days and an after-window period of +40 days. The window estimation period is 100 days. The event study of the market model and market adjusted model model is used to calculate the abnormal returns of the companies. The study basically relies on secondary data which is collected from companies' official websites, sebi.gov.in, bseindia.com, investing.com, and rbi.org.in. Apart from this various research papers and books are referred to this research.

### Event study methodology

The primary goal of event research is to measure the excess return of stock in the after-effects of an

announcement. Dividing anticipated normal returns from actual returns produces abnormal returns. There are several approaches to determining expected returns, viz Market model, Market Adjusted Model, CAPM model, Constant average return Model, Three-factor model, and Five-factor model.

The present study uses the Market model and Market Adjusted Model where normal returns on each vent window are intended.

$$AR_{it} = R_{it} - E(R_{it}) \dots\dots\dots (1)$$

#### 1. Market Model

$$E(R_{it}) = \alpha_1 + \beta_1 R_{mt} + e_{it} = \text{for } 1 \dots\dots\dots (2)$$

#### 2. Market Adjusted Model

$$AR_{it} = R_{it} - R_{mt}$$

The observed return of the reference market on day t  $R_{mt}$  is subtracted from the return  $R_{it}$  of the observation I on day t. We get for the abnormal return:

#### Computation of AAR

The AAR are generated for every day of the window period to assess the effect of the M&A announcement on the total study in general.

$$AAR_t = \frac{1}{Nt} \sum_{i=1}^{Nt} AR_{it} \dots\dots\dots (3)$$

#### Calculation of CAAR

CAAR is determined by adding excess stock returns over normal returns for various periods involving the M&A announcement.

$$CAAR_i = \sum_{t=1}^T (AR_{it}) \dots\dots\dots (4)$$

### Empirical Results

The outcomes of the defined objects are provided and described in the fact table in this section.

**Table 1:** Analysis of Average Abnormal Returns Before and After The M&A Announcement

Pre-Window Period	Market Model		Market Adjusted Model		Post-Window Period	Market Model		Market -Adjusted Model	
	AAR	P- Value	AAR	P-Value		AAR	P-Value	AAR	P-Value
-40	0.576	0.174	-0.002	0.624	1	0.033	0.937	0.016	0.001*
-39	0.568	0.181	0.001	0.790	2	0.052	0.903	0.020	0.000*
-38	0.547	0.197	-0.002	0.656	3	0.053	0.901	0.009	0.068

-37	0.538	0.205	0.002	0.650	4	0.064	0.880	0.006	0.201
-36	0.527	0.213	0.007	0.150	5	0.074	0.860	0.006	0.205
-35	0.509	0.230	0.003	0.519	6	0.092	0.828	0.006	0.247
-34	0.492	0.244	0.001	0.834	7	0.103	0.807	0.002	0.627
-33	0.477	0.260	-0.003	0.527	8	0.114	0.787	-0.001	0.910
-32	0.462	0.275	-0.003	0.488	9	0.132	0.755	0.002	0.686
-31	0.452	0.285	0.003	0.558	10	0.151	0.721	0.005	0.268
-30	0.429	0.310	-0.004	0.368	11	0.159	0.706	-0.004	0.454
-29	0.416	0.325	-0.003	0.504	12	0.176	0.677	0.002	0.712
-28	0.406	0.337	0.003	0.506	13	0.188	0.656	0.001	0.776
-27	0.383	0.365	-0.007	0.164	14	0.206	0.625	0.003	0.572
-26	0.378	0.370	-0.001	0.815	15	0.220	0.601	0.002	0.626
-25	0.366	0.386	0.002	0.639	16	0.235	0.578	0.003	0.487
-24	0.352	0.405	0.004	0.441	17	0.251	0.551	0.005	0.349
-23	0.339	0.422	0.008	0.107	18	0.265	0.530	0.004	0.374
-22	0.320	0.448	0.000	0.954	19	0.279	0.508	0.004	0.366
-21	0.310	0.463	0.005	0.304	20	0.296	0.484	0.007	0.167
-20	0.289	0.493	-0.002	0.636	21	0.307	0.467	0.000	0.993
-19	0.278	0.510	0.005	0.288	22	0.324	0.443	0.005	0.281
-18	0.261	0.536	-0.001	0.804	23	0.332	0.431	-0.002	0.719
-17	0.246	0.561	-0.001	0.772	24	0.348	0.411	0.002	0.657
-16	0.232	0.583	-0.001	0.856	25	0.362	0.391	0.000	1.000
-15	0.246	0.559	0.026	0.000*	26	0.379	0.370	0.001	0.775
-14	0.183	0.664	-0.019	0.000*	27	0.392	0.353	0.003	0.597
-13	0.187	0.658	-0.001	0.850	28	0.408	0.335	0.002	0.741
-12	0.173	0.681	0.001	0.855	29	0.425	0.315	0.004	0.374
-11	0.166	0.695	0.002	0.612	30	0.441	0.297	0.005	0.284
-10	0.146	0.728	0.002	0.697	31	0.451	0.286	0.002	0.622
-9	0.125	0.766	-0.003	0.528	32	0.462	0.275	0.000	0.936
-8	0.111	0.793	-0.006	0.203	33	0.477	0.259	-0.002	0.619
-7	0.105	0.803	0.007	0.176	34	0.495	0.243	0.003	0.486
-6	0.084	0.842	-0.004	0.441	35	0.508	0.230	-0.003	0.536
-5	0.071	0.866	0.002	0.650	36	0.519	0.220	-0.004	0.388
-4	0.064	0.880	0.006	0.242	37	0.535	0.207	-0.001	0.761
-3	0.012	0.977	-0.030	0.000*	38	0.551	0.194	0.002	0.750
-2	0.041	0.923	0.011	0.022*	39	0.564	0.184	-0.002	0.645
-1	0.028	0.948	0.012	0.011*	40	0.570	0.179	-0.008	0.088
0	0.026	0.951	0.022	0.000*					

Source: Author's Compilation  
 \*Denotes 5% level of significance

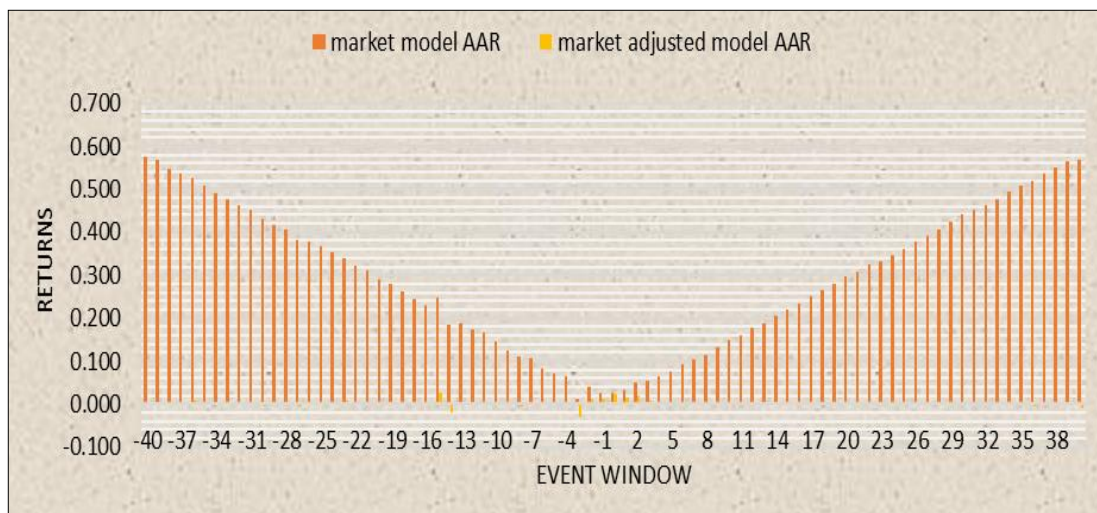


Fig 1: Graphical Representation Average Abnormal Returns Before and After The M&A Announcement

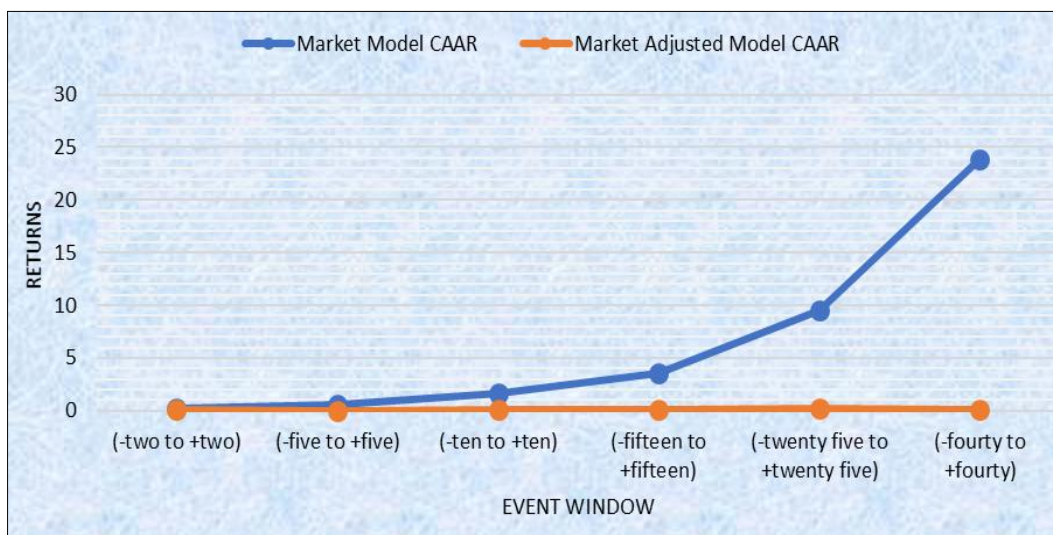
In the market model, there is a positive and insignificant average abnormal return. Before M&A announcements, there is a decreasing average abnormal return with a decreasing event window of -40 days to the date of the announcement, followed by an increasing abnormal return with an increasing event window of 1 to +40. According to

the market adjustment model, the window period of -14 and -3 have a negative abnormal return that is significant at the 5% level of significance. The announcements made both before (-2 to -1) and after (+2 to +1) two days and on the day of the M&A announcement have a positive abnormal return and are significant at the 5% level of significance.

**Table 2:** Cumulative AAR of Acquirer Shareholders during different window periods

Window Period	No of days	Market Model		Market Adjusted Model	
		CAAR	P-value	CAAR	P-value
(-one day) to (+one day)	3	0.087	0.905637	0.050	0.00001*
(-two day) to (+two day)	5	0.179	0.849892	0.082	0.00001*
(-five day) to (+five day)	11	0.516	0.711826	0.002	0.891212
(-ten day) to (+ten day)	21	1.679	0.385828	0.091	0.000097*
(-fifteen day) to (+fifteen day)	31	3.584	0.12981	0.105	0.000196*
(-twenty-five day) to (+twenty-five day)	51	9.576	0.002145*	0.153	0.000033*
(-fourty day to +fourty day)	81	23.916	0.00001*	0.147	0.001108*

Source: Author's Compilation



**Fig 2:** Graphical Representation of the CAAR during different window periods

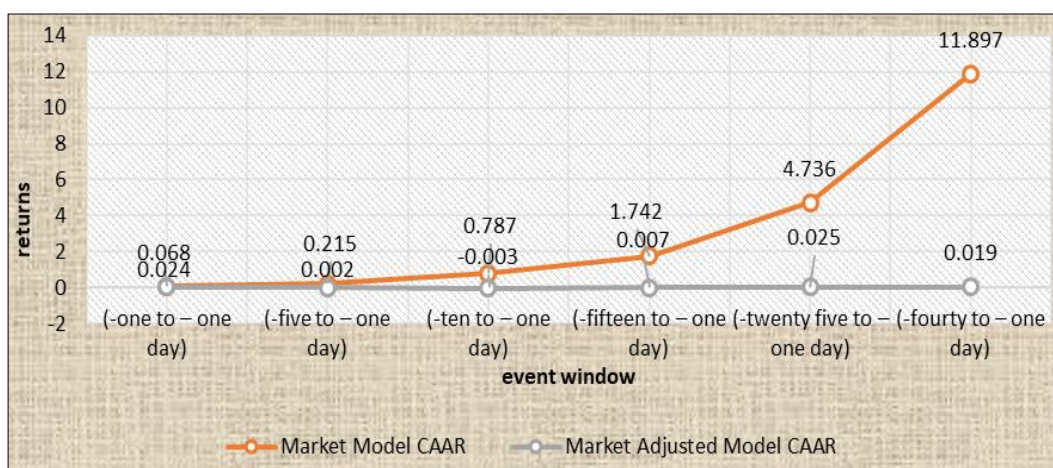
In the market model, the before and after-M&A announcement window periods of (-25 to +25) and (-40 to +40) have positive CAAR and are significant. Except for (-5

to +5), all remaining categories of different window periods have positive significant CAAR in the market adjustment model.

**Table 3:** CAAR of Acquirer Shareholders before the Announcement of M&A

CAAR to the Acquirer Shareholders before M&A Announcement					
Window Period	No of days	Market Model		Market Adjusted Model	
		CAAR	P-Value	CAAR	P-Value
(-one to - one day)	2	0.068	0.909	0.024	0.001*
(-five to - one day)	5	0.215	0.820	0.002	0.880
(-ten to - one day)	10	0.787	0.555	-0.003	0.851
(-fifteen to - one day)	15	1.742	0.288	0.007	0.723
(-twenty-five to - one day)	25	4.736	0.027*	0.025	0.300
(-fourty to - one day)	40	11.897	0.000*	0.019	0.527

Source: Author's Compilation



**Fig 3:** Graphical Representation of the CAAR of Acquirer Shareholders before the Announcement of M&A

During pre-M&A announcement window periods in the market model have positive CAAR but only (-25 to - 1 day) and (40 to - 1 day) window periods are statistically

significant at. Only (-2 to - 1 day) window periods in the market adjustment model have positive CAAR and are statistically significant.

**Table 4:** CAAR of Acquirer Shareholders after the Announcement of M&A

CAAR to the Acquirer Shareholders After M&A Announcement					
Window Period	No of Days	Market Model		Market Adjusted Model	
		CAAR	P-Value	CAAR	P-Value
(+two to + one day)	2	0.085	0.927	0.036	0.000*
(+five to +one day)	5	0.275	0.850	0.058	0.000*
(+ten to + one day)	10	0.867	0.674	0.072	0.000*
(+fifteen to +one day)	15	1.816	0.472	0.077	0.000*
(+twenty-five to +one day)	25	4.815	0.142	0.106	0.000*
(+fourty to + one day)	40	11.993	0.005*	0.106	0.001*

Source: Author’s Compilation  
 \*Denotes a 5% level of significance



**Fig 4:** Graphical Representation of the CAAR of Acquirer Shareholders after the Announcement of M&A

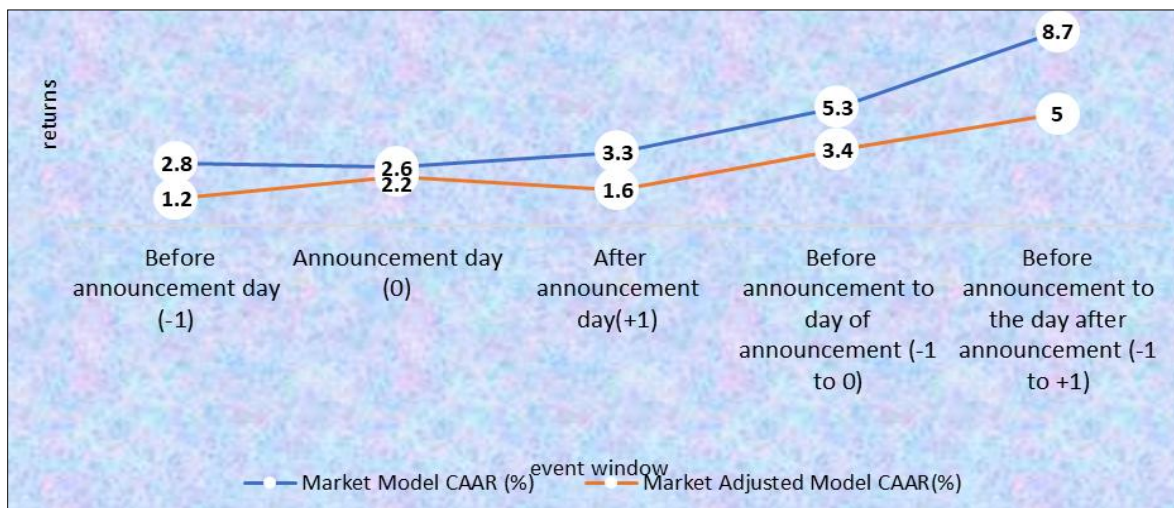
During the post-M&A announcement of the market model having positive cumulative average abnormal returns increasing sharply with increasing in the window period ranging from 0.08 to 11.99 and a window period of (+40 to

+ 1 DAY) is statistically significant. CAAR of the market-adjusted model are also gradually increasing under the study window period ranging from 0.04 to 0.11 and are statistically significant.

**Table 5:** Statistical significance of CAAR

Window Period	Market Model		Market Adjusted Model	
	CAAR (%)	P-value	CAAR (%)	P-value
Before announcement day (-1)	2.8	0.948	1.2	0.011*
Announcement day (0)	2.6	0.951	2.2	0.000*
After announcement day (+1)	3.3	0.937	1.6	0.001*
Before announcement to day of announcement (-1 to 0)	5.3	0.929	3.4	0.000*
Before announcement to the day after announcement (-1 to +1)	8.7	0.906	5	0.000*

Source: Author’s Compilation



**Fig 5:** Graphical Representation of the Statistical Significance of CAAR

The market model and market-adjusted model have positive CAAR. Only the market-adjusted model is statistically significant on the day of the announcement, before announcement day, after announcement day, before announcement day to announcement day, and before announcement day to after announcement day

**Table 6:** Paired Comparison of t-test between Pre and Post M&A Announcement of CAAR

	Market model	Market Adjusted model
df	38	38
t Stat	-29.710483	-40.12738967
P(T<=) two-tail	6.53742E-28	1.01546E-32
T Critical two-tail	2.024394164	2.024394164

The table illustrates that the AR returns before the event are significantly different from those during the after-event in both the Market Model and Market Adjusted Model. The t-statistics values are all larger than the critical value of 1.96, indicating that the results are significant. The p-values are all below 0.05, further supporting the significance of the study.

### Conclusions, Implications, and Future Research

Not less than 60% of Indian manufacturing companies have positive AR under both the market model and market-adjusted model during the study period. The research examines the outcome of M&A announcements on the prices of securities for acquiring firms. The research focuses on 69 announcements in the Indian manufacturing sector during the period from 2015 to 2025. We find that the market model has positive but insignificant AR returns during the before and after-announcement of M&A, and event windows of (-25 to +25 day), (-40 to +40 day), (-25 to -1 day), (-40 to -1 day), and (+40 to +1 day) have positive significant CAAR. It is observed that there is no substantial difference in CAAR between before and after-announcement of M&A in the event window of (-40 to -1 day) and (+40 to +1 day). In the market-adjusted model, on event day, +1 to +2 days post the announcement have positive AAR and significance. The days of -15, -14, -3, -2, and -1 are significant with a combination of positive and negative excess returns. After the announcement of mergers & acquisitions, the CAAR of all different event windows is statistically significant. In the event window of (-40 to -1 day) and (+40 to +1 day), it is observed that CAAR is more in post-announcement of M&A (10.6%) than that pre-announcement of M&A (1.9%).

In before and after-announcement of mergers & acquisitions, the CAAR of the market model is substantially greater than that of the market-adjusted model due to the difference in expected returns between the two models. There is a significant difference in CAAR of both pre and post-announcement of M&A in both the Market Model and Market Adjusted Model. By and large, it is concluded that the announcement of mergers & acquisitions has a significant impact on shareholders' wealth of acquiring companies. It is more visible in post-merger. The findings are consistent in some event windows with studies on acquiring firms conducted by Suman Monga and Amanpreet, 2021; Timcy Sachdeva *et al.*, 2015; Shah & Arora, 2014; Arti Trivedi *et al.*, 2013; Neelam Rani *et al.*, 2011; [4, 8, 12, 14, 15]

### Implications & Further Study

The study's results have a number of implications for businesses, shareholders, and decision-makers. The study provides valuable insights for companies considering M&A activities as a growth strategy. The outcomes indicate that announcements have a positive effect on shareholder wealth, which suggests that companies involved in M&A activities are producing higher-than-actual returns based on their risk level and the market's overall performance. This information can help companies evaluate the potential benefits of M&A activities and make informed decisions about whether to pursue such activities.

It should be noted that the analysis only considers the effect of m&a on shareholders returns and does not take into account other factors such as operating performance or management changes. Future studies could explore these areas further. It would also give a much more detailed knowledge of how M&A activities affect businesses and the economy.

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