A STUDY ON THE IMPACT OF MERGERS AND ACQUISITIONS ON FINANCIAL PERFORMANCE AND SHAREHOLDERS WEALTH WITH RESPECT TO PHARMACEUTICAL INDUSTRY IN INDIA

Thesis submitted to Alliance University

for award of the degree of

DOCTOR OF PHILOSOPHY

In

Alliance School of Business

By

ZOHRA BI

Reg. No: P180101018005

Guide

PROF. (Dr.) ABDUL HAMEED

ALLIANCE UNIVERSITY

Private University established in Karnataka State by Act No.34 of year 2010
Recognized by the University Grants Commission (UGC), New Delhi

Alliance School of Business

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DECLARATION

I declare that the thesis entitled **A Study on the impact of Mergers and Acquisitions on Financial Performance and Shareholders Wealth with respect to Pharmaceutical Industry in India** has been prepared by me under the guidance of Dr. Abdul Hameed, Professor and Associate Dean Alliance School of Business, Alliance University. No part of this thesis has formed the basis for the award of any degree in any University or fellowship previously.

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Date:

CERTIFICATE

I certify that Zohra Bi has prepared her thesis entitled **A Study on the impact of Mergers and Acquisitions on Financial Performance and Shareholders Wealth with respect to Pharmaceutical Industry in India**, for the award of Doctor of Philosophy degree of Alliance University, under my guidance. She has carried out the work at Alliance School of Business, Alliance University.

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Signature

Date:

DEDICATION

This thesis is dedicated to my Father Mr. Shafi Ahmed Khan and Mother Mrs. Zaibunissa, My Husband Abdullah Yousuf, My Beautiful Son Yahya Abdullah Daga, Brothers and Sisters for their endless Love, support and encouragement.

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I thank Almighty for giving me strength in completing this thesis.

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I would like to take this opportunity to express my gratitude and sincere thanks to all those who were instrumental in the preparation of this thesis.

Zohra Bi

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	LIST OF ABBREVIATIONS USED IN STUDY
M&A	Mergers and Acquisition
R&D	Research and Development
AR	Abnormal Returns
CAR	Cumulative Abnormal Returns
CAAR	Cumulative Average Abnormal Returns
PM	Profit Margin
ROA	Return on Asset
ROCE	Return on Capital Employed
EMH	Efficient Market Hypothesis (EMH)
OLS	Ordinary Least Squares (OLS)
AAR	Average abnormal returns
$\bar{x}$	Mean
β	Beta
RORC	Return on Research Capital Ratio
PRR	Price to Research Ratio

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ABSTRACT

Mergers and Acquisition is one of the important subjects from the perspective of finance and strategy and are the results of inorganic growth process, used as an instrument for business growth and are accepted by business entities as a critical tool of strategy. India has witnessed M&A deals worth $138 billion in 2022. Strategic M&A deal volume and value reached all-time highs in India in 2022, while dealmaking dropped off in much of the rest of the world. Several factors have converged to create a robust environment for M&A. Mergers and acquisition are the solutions for major strategic challenges like economies of scale, economies of scope, vertical and horizontal integration, development of complementary resources, effective application of surplus funds and enhancing managerial effectiveness. M&A improves the performance of the company because of synergy effect, it increases market power, operational performance, financial performance, and economy of scales.

In the recent years, the importance and value of Mergers and Acquisitions has reached enormous proportions. Some studies reported beneficial influence of M&A on companies' success, the others are found to be neutral or even negative. Further, not many studies have been found for Indian context. Therefore, the lack of studies conducted in the Indian context regarding the impact of Mergers and Acquisitions on the financial performance and shareholders wealth in Indian pharmaceutical companies serves as a motivation for the current study.

The study applies the financial and operating performance model to examine the impact of mergers and acquisitions on financial performance in Indian Pharmaceutical Sector through 32 financial indicators for 30 renowned Pharmaceutical Companies. The study uses paired sample t-test, paired sample correlation for the purpose of

analysis and examines the pre-merger (-3 years) and post-merger (+3 years) impact in Indian pharmaceutical company.

The study also examines the impact of mergers and acquisitions on stock prices to find whether there are significant abnormal returns to shareholders using t-test by examining Abnormal returns, t-statistics of Abnormal returns, CAR, t-statistics of CAR, Average Abnormal Return and CAAR, t-statistics of CAAR for Pre-Event Period and Post Event Period (-30, + 30), showing the significant impact for -2days, -5days, -11 days and +2days, +5 days +11days and for Combined number of days 5 days (-2 +2), 11 days (-5+5) and 23 days (- 11+ 11 days) and concludes whether there is a significant change in the financial performance and shareholders wealth of the acquiring Pharmaceutical companies in India.

CHAPTER – 1

1.1. INTRODUCTION

A business has the potential to expand over time as the value of its products and services becomes evident through inorganic processes like business combination.

Mergers and acquisitions are outcomes of an inorganic growth process and are utilized as mechanisms for business expansion. They are recognized by business entities as crucial strategic tools. M&A involve the integration of companies, representing operations where ownership or operational units of companies and other business entities are transferred or combined with other entities. Basically, Mergers and Acquisition is described by the coming together or combination of companies.

In 2022[1], the mergers and acquisitions market in India surpassed the significant milestone of $160 billion. The country witnessed record-breaking volumes and values in strategic M&A deals, surpassing global trends where dealmaking saw a decline. The conducive environment for M&A in India can be attributed to several converging factors. Several elements have come together to establish a favourable environment for M&A. Corporate balance sheets exhibit strength, show record levels of cash. Private equity holds substantial funds ready for deployment, while India has emerged as a global hotspot for Foreign Direct Investment, positioned as an attractive non-U.S. destination for capital. Sellers are responding to high multiples, introducing higher-quality assets to the market. Acquirers take an active approach, seeking to reduce tax liabilities, acquire expertise, and leverage accumulated losses from one entity to balance out the profits of another.

[1] https://www2.deloitte.com/in/en/pages/finance/articles/India-MnA-Trends-2023.html

Mergers and acquisitions (M&A) provide enterprises with the opportunity to expand or contract and alter the essence of their business or competitive standing.

1.2. Rationales of Mergers and Acquisitions (M&A)

M&A represent strategic initiatives aimed at optimizing a company's expansion by enhancing its manufacturing and marketing functions. Firms pursue mergers and acquisitions for diverse motives, viewing them as essential components of strategic corporate finance management. Multiple motives drive the occurrence of mergers and acquisitions, contributing to increased firm value and enhanced shareholder wealth.

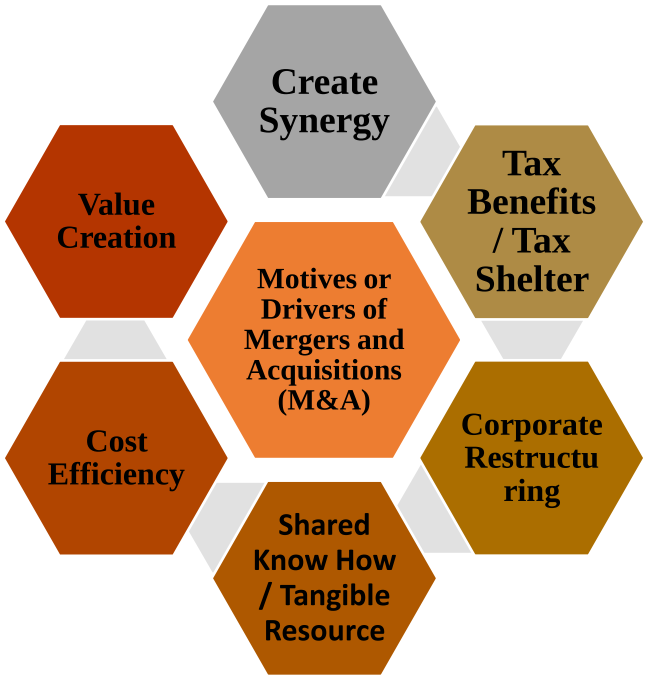

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Figure 1: Rationales of Corporate Mergers and Acquisitions

1.3. Types of Corporate Mergers and Acquisition (M&A)

Mergers can be classified into five distinct categories:

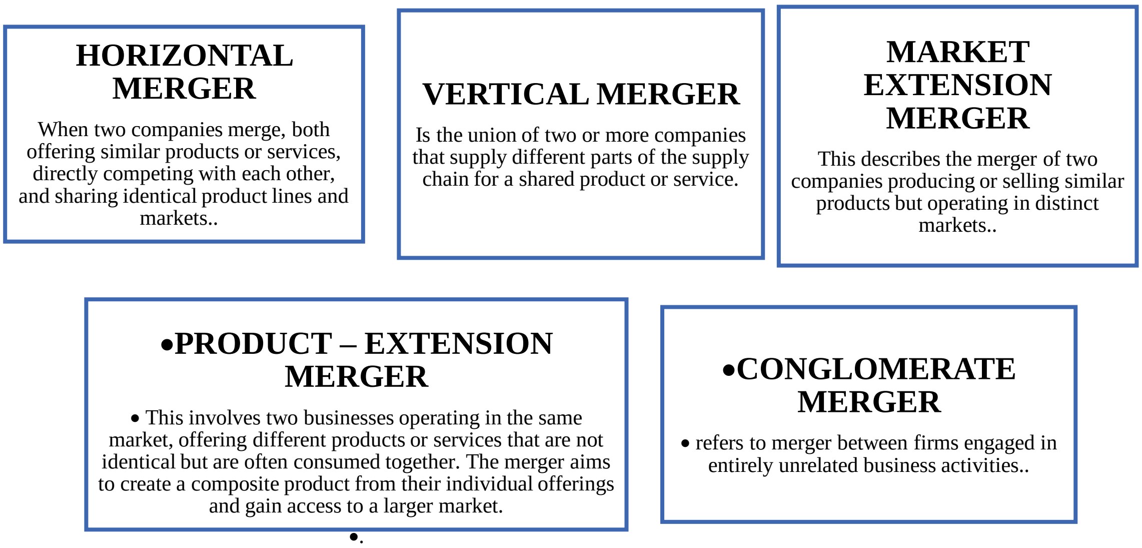


Figure 2: Types of Mergers and Acquisitions

1.4. Stages involved in Mergers and Acquisitions (M&A)

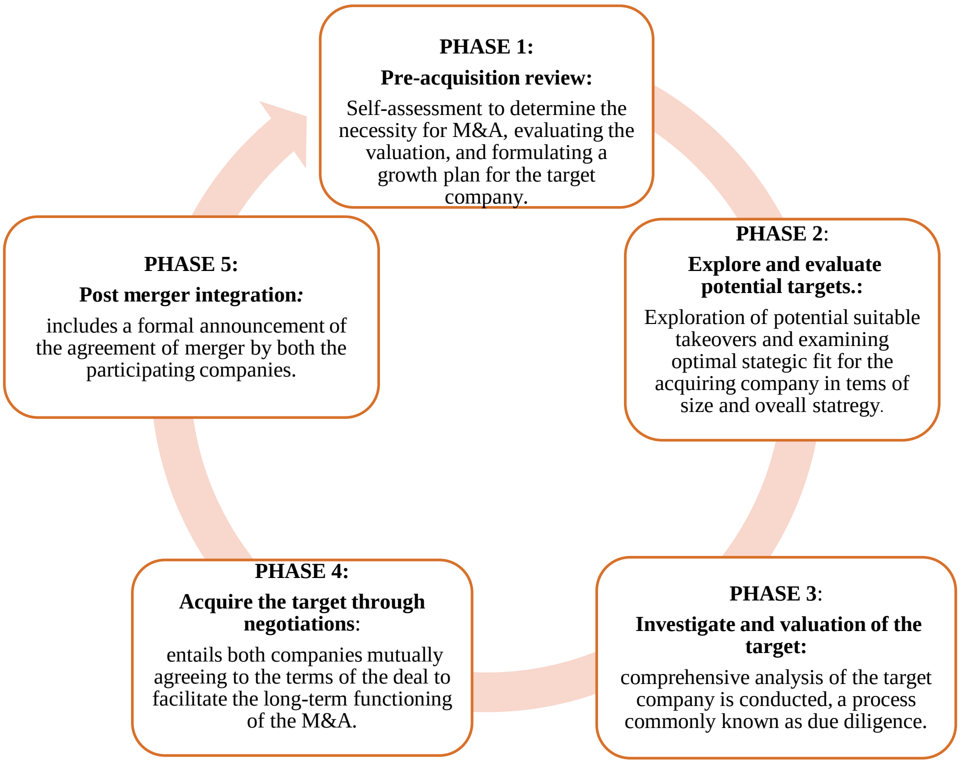


Figure 3: Stages involved in Mergers and Acquisitions

1.5. Mergers and Acquisitions (M&A) Trends in India

India stands out as a prominent nation, primarily due to the widespread preference for Mergers and Acquisitions among Indian companies and the increase in Mergers and Acquisition deals commenced in 1999 following liberalization. However, this momentum was obstructed by the global credit crisis of 2007 and 2008 and hence the trend of corporate mergers and acquisitions in India experienced a decline from 2000 to 2008. Nonetheless, from 2010 onward, there was a significant resurgence. Since then, Indian companies have embraced M&A as a core strategy for transformation. Notably, multinational corporations have also made their way into the Indian market by forming joint ventures or acquisitions. After 2010, there has been a notable increase in M&A transactions in India. Since 2019, another emerging trend has been the rise in popularity of M&A within the startup sector. Furthermore, the adoption of several reforms in 2019[2] paved the way for increased growth in mergers and acquisitions (M&As) within India.

These reforms encompassed various measures, including:

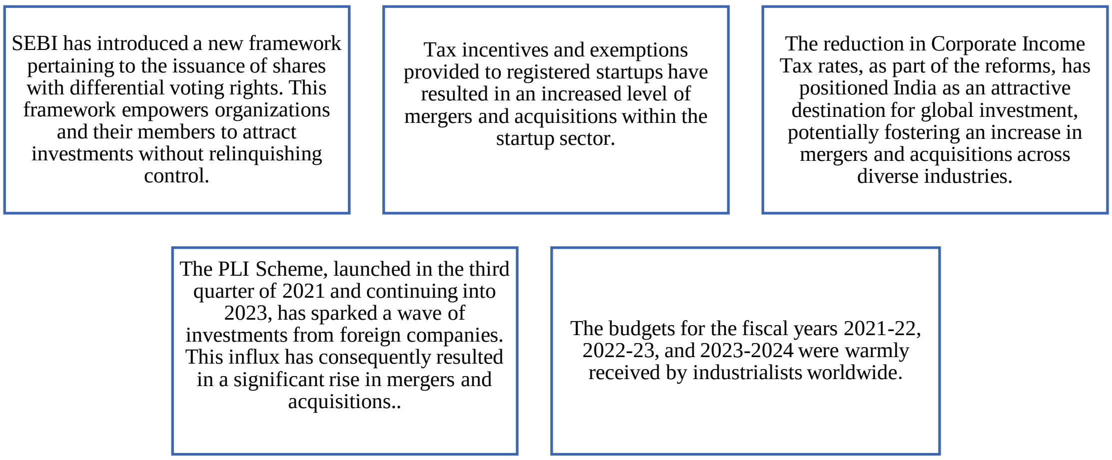


Figure 4: Reforms of Mergers and Acquisitions

[2] https://www.winsavvy.com/mergers-acquisitions-india/

The measures taken by the government to enhance the Indian economy have resulted in an increase in M&A transactions within the country. Concurrently, there has been an increased interest among global investors to invest in Indian companies and the Indian market and has position India as a central hub for foreign cross-border mergers.

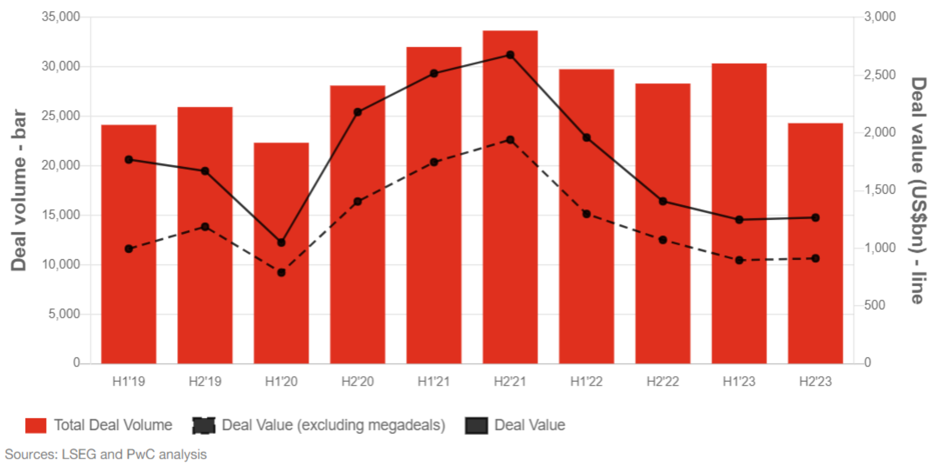


Figure 5: Global M&A Deal Volumes and Values - 2019-2023

In 2023, both the number and significance of Mergers and Acquisitions experienced a decline, with a 6% decrease in volume and a 25% decrease in value compared to the previous year. This downturn can be attributed to factors such as rising interest rates and challenges in securing financing. Notably, there was a significant 20% decrease in the number of deals between the first and second halves of the year. However, despite this decline in deal volume, there was a slight improvement in deal values in the second half of 2023 compared to the first half. This improvement was primarily driven by two large energy deals that strengthened overall deal values during that period. In 2023, the two largest deals were both in the energy sector and were announced in October. The first deal involved Exxon's proposed acquisition of Pioneer for US$59.5 billion, while the second deal saw Chevron proposing to acquire Hess for US$53 billion. These significant transactions emphasized the continued importance of the energy sector in driving large-scale mergers and acquisitions activity.

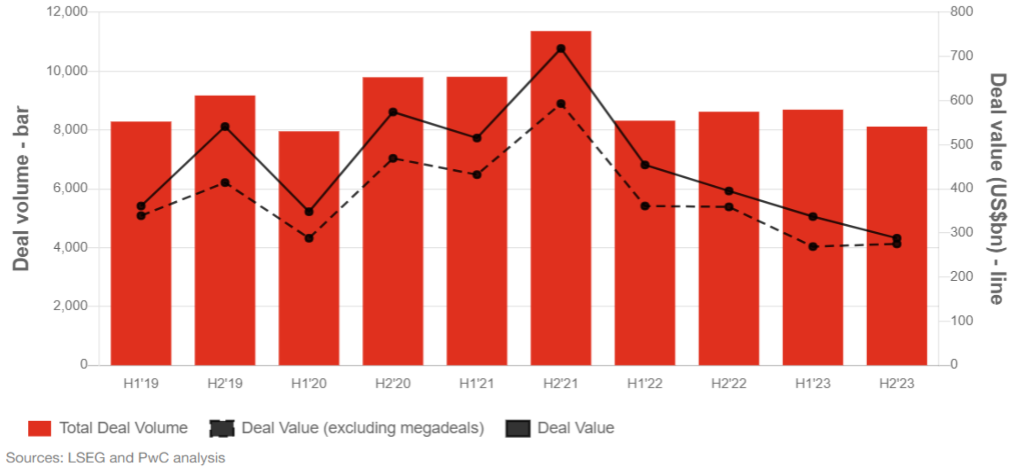


Figure 6: M&A deal volumes and values in Asia from 2019 to 2023

In 2023, the Asia Pacific region witnessed a 1% decrease in deal volumes and a significant 26% decrease in deal values compared to the previous year. In China, the M&A market persisted in facing challenges, whereas in Japan, despite a stable investment environment marked by low interest rates and inflation, deal activity decreased by 4%.

Meanwhile, India, which had experienced high levels of investment and M&A activity in 2021 and 2022, saw a slowdown in 2023. Deal volumes decreased by 4%, and deal values fallen by an incredible 70%. Notably, the merger between HDFC Bank and Housing Development Finance Corporation in 2022 marked the largest merger in corporate history, resulting in a combined asset base of ₹18 trillion.

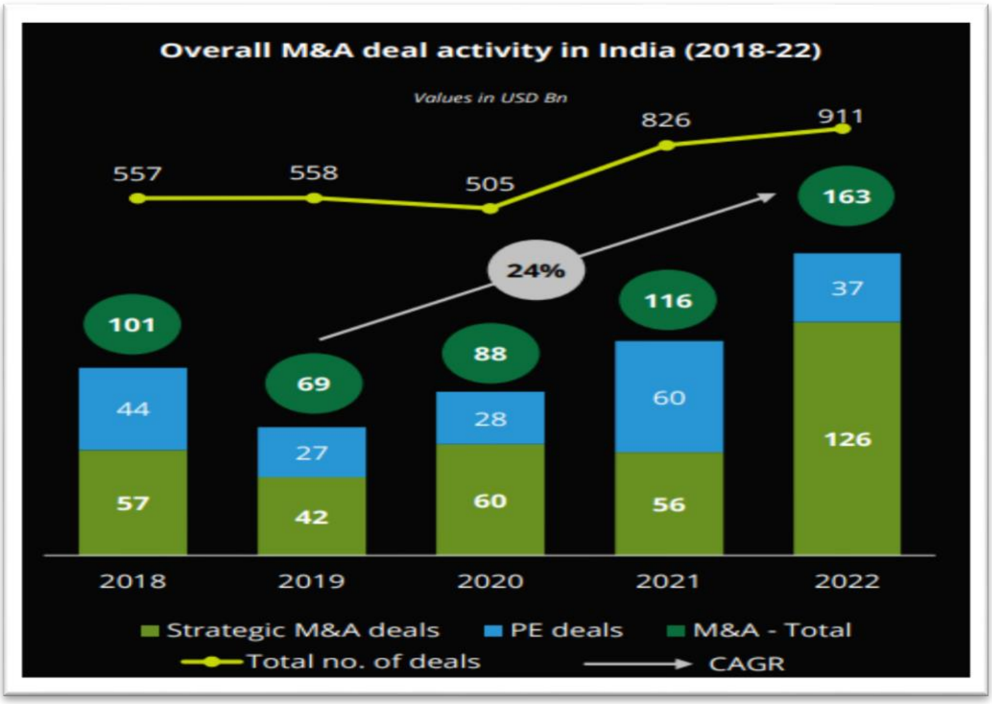


Figure 7: Mergers and Acquisitions activity in India

Source: https://www2.deloitte.com/ -MnA-Trends-2023

There has been a substantial rise in M&A activity within India. Despite global challenges like higher interest rates and heightened inflation, which have enhanced margin pressures for companies worldwide, India's M&A landscape is expected to remain robust throughout 2023. During 2022, strategic M&A experienced a remarkable 126% growth in value compared to the preceding year, creating a favourable environment for companies examining to study inorganic growth opportunities. Moreover, mega deals, exceeding USD 1 billion, witnessed a substantial increase of 123%. This growth was particularly prominent in the financial services, medical and pharmaceutical, and construction sectors, which witnessed some of the largest M&A transactions during that period.

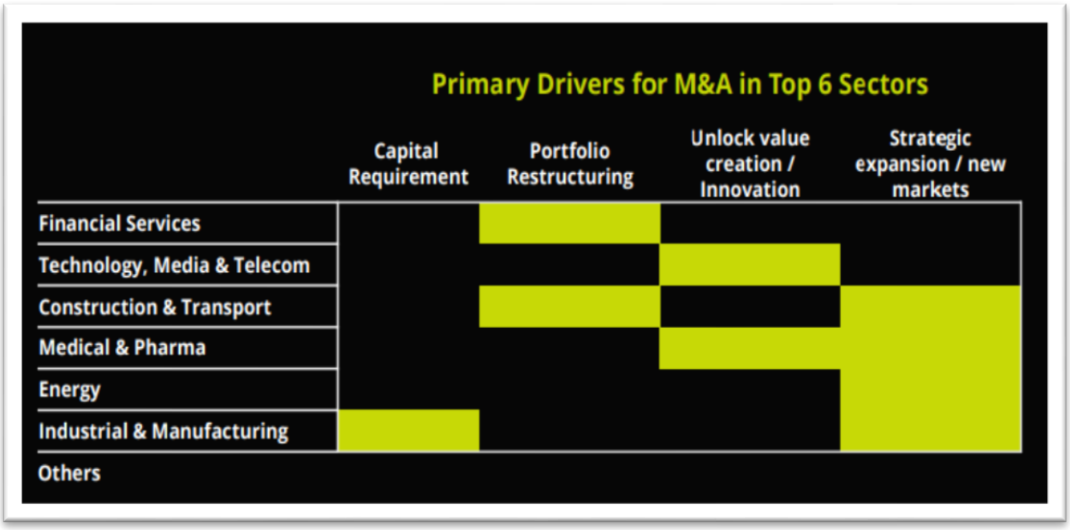


Figure 8: Primary Drivers for Mergers and Acquisitions

Source: https://www2.deloitte.com/ -MnA-Trends-2023

The leading motivators for M&A across the top six sectors, financial services, technology, media and telecommunications, construction and transport, pharmaceuticals, energy and industry, and manufacturing were identified as portfolio restructuring, value creation, innovation, strategic expansion into new markets. According to the report, the predominant driver across most sectors was strategic expansion and entry into new markets.

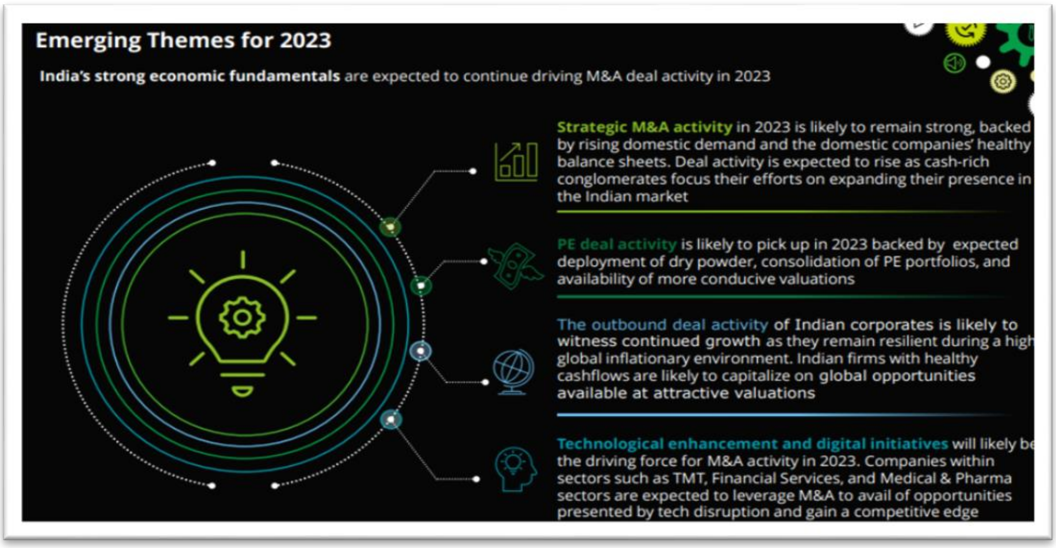


Figure 9: Emerging Themes for 2023

Source: https://www2.deloitte.com/ -MnA-Trends-2023

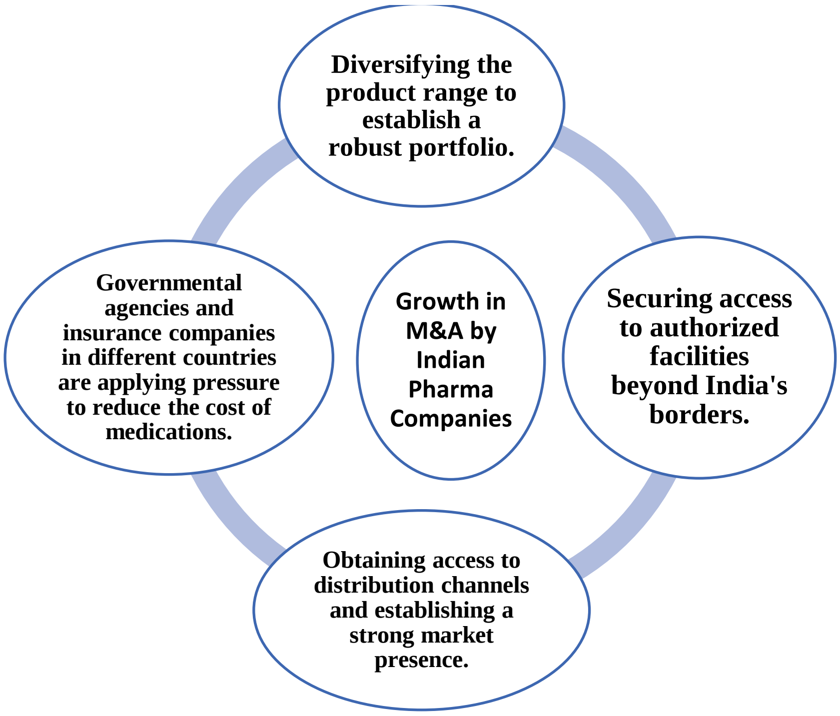
1.6. Mergers and Acquisitions in Indian Pharmaceutical industry

Pharmaceutical Industry probable experiences more merger and acquisition (M&A) activity than any other sector, both in terms of the quantity of deals and the financial investment involved. M&A has become an integral element of the pharmaceutical business model, with companies frequently turning to this strategy to enact strategic changes, optimize capital allocation for research and development and manufacturing, and drive overall growth strategies. The Indian pharmaceutical sector has established a unique position on the global stage, becoming a major producer of generic medications and evolving into a hub for innovating new formulations.

Giving priority to research and development, it plays a pivotal role in the discovery of new drugs.

To achieve broader goals, Indian pharmaceutical companies are extending their reach beyond national boundaries, seeking to broaden their customer base, strengthen distribution networks, and penetrate new markets and product segments. Furthermore, as major pharmaceutical players in India have achieved a critical mass in the domestic market, they are now redirecting their focus towards overseas markets as a key avenue for sustained growth.

Numerous factors contribute to the growth in merger and acquisition activity among Indian pharmaceutical companies. Here are some of these reasons: -



Source: Prepared by researcher

Figure 10: Factors attributed to the increase in Merger and Acquisition activity

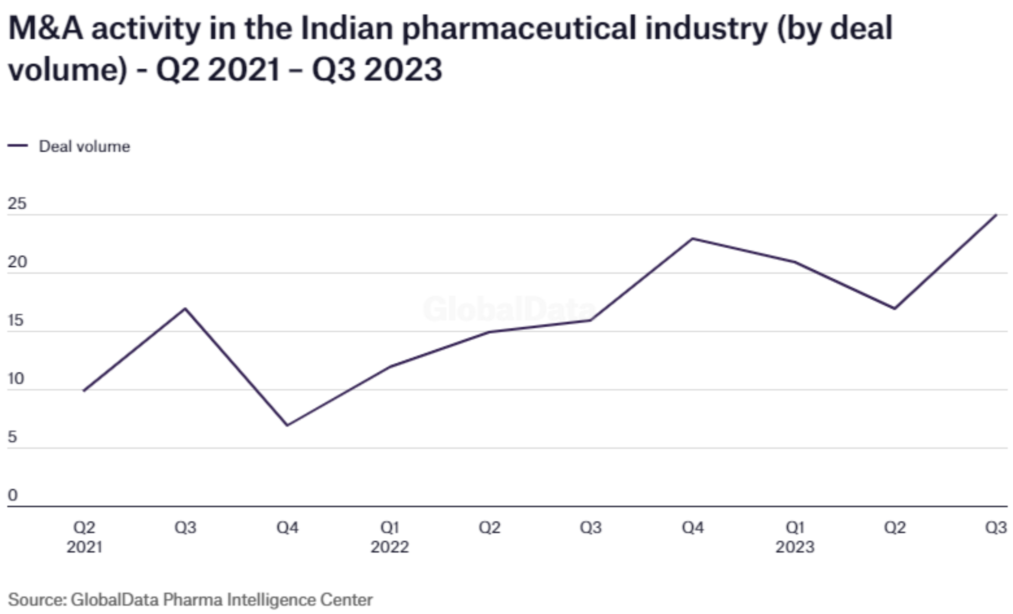


Figure 11: M&A Activity within the Indian Pharmaceutical Industry by Volume of Deals

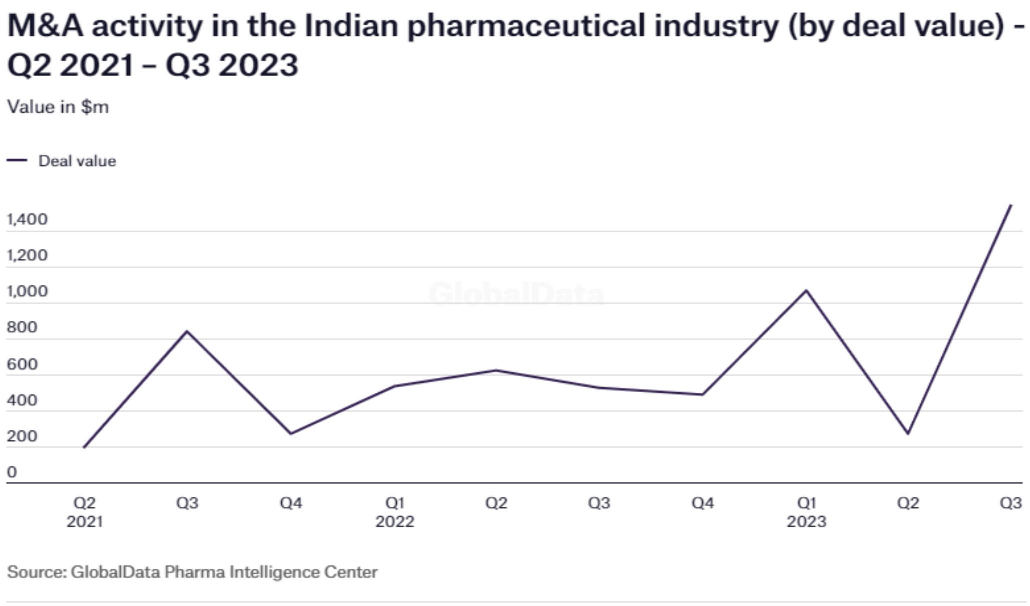


Figure 12: Consolidation Trends in the Indian Pharmaceutical Industry by Deal Value

Top 5 M&A deals by value in the Indian pharmaceutical industry since 2022

Target	Acquirer	Deal value	Date announced	Deal type
Glenmark Life Sciences	Nirma	$680m	Sep, 2023	Acquisition
Aurobindo Pharma Ltd - API Non-Antibiotic Business and API Antibiotic Business	Auro Pharma India	$400m	Feb, 2023	Asset Transaction
Royalties of GAVRETO	Royalty Pharma Plc	$340m	Jun, 2022	Asset Transaction
Famy Life Sciences	Viatris	$280m	Nov, 2022	Acquisition
AMRI Hospitals	Manipal Health Enterprises	$276m	Sep, 2023	Acquisition

Source: GlobalData Pharma Intelligence Center

Figure 13: Top Valued M&A Transactions in the Indian Pharmaceutical Market

In the third quarter of 2023, the Indian healthcare industry observed the announcement of 25 M&A deals, with a combined value of $1.5 billion, as reported by Global Data’s Deals Database. Notably, the largest disclosed deal in the industry during this period was Nirma’s majority acquisition of Glenmark Life Sciences, valued at $679.9 million.

The increase in investments reflects the growing demand for high-quality healthcare services, fuelled by factors like an aging population, higher disposable income, and increased health awareness. The industry's resilience and supportive government policies continue to attract investors, reinforcing India’s status as a promising destination for healthcare and life sciences investments.

CHAPTER – 2

2. LITERTAURE REVIEW

The theme of corporate growth, particularly through mergers and acquisitions (M&A), acquires significant interest among stakeholders, as highlighted by Kreitl et al. (2002).

In recent years, mergers and acquisitions have garnered significant interest from researchers worldwide. Investigations into the effects of these transactions evaluate their efficacy or shortcomings through diverse financial indicators. Researchers and practitioners alike have sought to comprehend the significance of adopting mergers and acquisitions strategies by organizations and have explored this area using diverse methodologies and metrics to understand the outcomes and motivations driving such strategic actions. Their objective has been to ascertain whether the anticipated benefits of such strategies have been realized and whether these acquisitions ultimately lead to value creation or destruction for the acquiring entities.

Bruner (2004) extensively examines four primary research methodologies used to evaluate M&A activity, including event studies, accounting studies, surveys of managers, and clinical evaluations. Each approach provides unique perspectives on comprehending the drivers and consequences of M&A transactions.

Hopkins and Chaganti (1999) contribute insights by delineating four interrelated motives guiding the utilization of mergers: strategic, market, economic, and personal.

These motives shed light on the various factors and goals influencing organizations decisions to engage in M&A activities.

While assessing the financial consequences of mergers and acquisitions (M&A), scholars frequently turn to two primary sources of statistical data: stock market performance and accounting profitability metrics, as highlighted by Chatterjee and Meeks (1996). Accounting based studies analyse changes in financial performance indicators over time, while event studies quantify the impact of M&A events by examining changes in firm value, typically measured through stock price movements. Studies by Papadatos (2011), Manasakis (2009), Fama, Fisher, Jensen & Roll (1969), Brown & Warner (1985), and Wooldridge & Snow (1990) contribute to the body of research on M&A effects through event studies, particularly by assessing the impact on firm's stock prices surrounding M&A announcements. These studies provide valuable insights into market reactions and investor perceptions regarding M&A transactions, offering a deeper understanding of their broader implications.

Mergers and acquisitions (M&A) are particularly prevalent in industries such as healthcare, technology, financial services, and retail. In industries such as healthcare and technology, many small and medium-sized enterprises often struggle to compete against a handful of dominant players that typically exert significant influence over the industry landscape.

In recent years, the global pharmaceutical market has showcased impressive expansion, with its total size reaching around 1.6 trillion U.S. dollars in 2023. This marks a substantial rise of over 100 billion dollars compared to the preceding year. Leading this growth is the United States, reigning as the foremost market for pharmaceuticals worldwide, closely trailed by other developed nations and growing markets. Emerging markets comprise countries with middle and low-income economies, such as Brazil, India, Russia, Colombia, Egypt, and many more.

India occupies a significant position in both the global pharmaceutical and vaccine sectors, standing as the largest provider of generic medications worldwide. Government statistics from February 2024 reveal that the Indian pharmaceutical industry commands a market valued at around US$ 50 billion, with over US$ 25 billion derived from exports. Notably, India contributes approximately 20% of the global exports in generic drugs, underscoring its substantial presence in the pharmaceutical market.

This strong performance has drawn considerable foreign investments into the Indian pharmaceutical sector, leading to several noteworthy merger and acquisition transactions. A notable example is the acquisition of a majority stake in Ranbaxy Laboratories, India's premier generic drug manufacturer, by Daiichi Sankyo, Japan's third-largest healthcare company, in June 2008. This cash deal, valued at around $4.6 billion, marked among the top most notable acquisitions by an Indian public company.

In 2015, Lupin made headlines with its acquisition of U.S.-based Gavis for a substantial $880 million (equivalent to over ₹5,610 crore), representing among the foremost significant consolidation by an Indian company that year. Simultaneously, the merger between Ranbaxy and Sun Pharma resulted in the rise of one of the foremost pharmaceutical giants in India, valued at US$4 billion, strengthening its status as one of the most notable mergers and acquisitions transactions in the nation's history.

On a global scale, 2015 witnessed record-setting mergers, exemplified by the $160 billion deal between Pfizer and Allergan. Across the pharmaceutical industry, companies have been actively pursuing acquisitions as part of their growth strategies, whether to expand internationally or to access new technologies for the Indian market.

The escalating costs of research and development (R&D) have been a driving factor behind these mega mergers. With R&D expenditure on the rise to develop new drugs, companies have sought merger partners to combine their R&D budgets, enabling them to pool resources and enhance innovation capabilities.

In India, the primary objectives of mergers and acquisitions often revolve around tax benefits and the creation of financial synergy, as highlighted in the Merger state Report of 2012. Moreover, various reforms introduced since 2019 have further stimulated the growth of M&A activity in the country, providing a conducive environment for strategic consolidation and expansion.

2.1. The literature review provides a summary of notable researchers and their findings.

Zollo and Degenhard (2007) carried out a comprehensive review of 87 academic papers on acquisition performance circulated in leading Management and Finance Journals from 1970 to 2006. Their analysis unveiled that 41% of these studies employed the short-term event study method in mergers and acquisitions, whereas 16% utilized the long-term event study method.

Contributions to the existing literature on merger activity have been made by Healy, Palepu, and Ruback (1990), Jeannette A. Switzer (1996), Stefano Rossi and Volpin (2004), Frank T. Delaney and S. Wamuziri (2004), Abdul Rahman and R.J. Limmack

(2004), S Beena (2006), Martynova, Oosting, and Renneboog (2006), Hassan, Patro, and Tuckman (2007), Liargovas and Repousis (2011), and Ong et al. (2011). These studies analyse the financial health of individual companies involved in corporate restructuring to determine whether such takeovers result in enhancements in corporate operational performance.

Furthermore, Powell and Stark (2004), Danzon, Epstein, and Nicholson (2004), Panagiotis Liargovas (2010), Rani et al. (2011), and Panagiotis Liargovas (2015) focus on analysing the immediate abnormal returns in the short term to evaluate how mergers and acquisitions impact shareholders' wealth within a brief timeframe.

Healy et al. (1997) evaluated the cash flow performance following the acquisitions of acquiring companies engaged in the 50 largest mergers among U.S. public industrial companies carried out from 1979 to 1984. The study utilized event study methodology and concentrated on the 50 largest targets where the purchasing entity was a U.S. – based company traded on the New York Stock Exchange, and neither the target nor the acquirer was financial or regulated companies. The research aimed to comprehend how the stock market evaluated profitability after acquisition at the time the takeover was announced. The results suggested that acquirers didn't generate any additional cash flows beyond what was required to recoup the premium paid, indicating that strategic takeovers led to significant gains for acquirers.

Jeannette A. Switzer (1996) examined the changes in operational efficiency among 324 companies from 1967 to 1987 and revealed noteworthy enhancements in performance following mergers. The findings demonstrated statistically substantial improvements in operating margin, cash flow, and asset utilization. Notably, the flow in post-merger operating cash flow return exhibited a robust positive correlation with unusual stock returns at the time of the merger announcement. Factors like offer size and industry relatedness did not appear to have an impact on the outcomes. In summary, the study found that mergers contributed to collective gains and long-term improvements in performance.

Stefano Rossi and Volpin (2004) delved into the global landscape of mergers and acquisitions, concentrating on the cross-country factors influencing such transactions, particularly variations in laws and regulations across nations. Their study, examining mergers and acquisitions announced during the 1990s and finalized by the conclusion of 2002, encompassed companies from 49 prominent nations. They discovered that differences in legal frameworks and enforcement were responsible for the diversity in the intensity and patterns of consolidations worldwide.

The research examined five dimensions of corporate takeovers: volume, frequency of hostile takeovers, pattern of cross-border deals, premium, and payment method. Importantly, it discovered that Mergers and acquisitions were more prominent in countries with high accounting standards and robust shareholder protection. The study underscored a significant increase in M&A activity in nations with strengthened accounting standards and strong shareholder protection measures.

Moreover, improved stakeholder protection correlated with a higher frequency of mergers and acquisitions, increased attempts at hostile takeovers, a decline in cross-border deals, and a greater reliance on stock as a payment method, alongside elevated takeover premiums. The research also investigated the factors influencing the takeover premium and the payment methods in individual transactions. The findings revealed that premiums were higher in countries with stronger shareholder protection, although this trend was mainly observed in transactions involving targets from the United States and the United Kingdom.

Delaney, F. T., & Wamuziri, S. C. (2004), the study delved into the financial outcomes of construction companies in the UK engaged in M&A. Specifically, it examined the impacts of merger announcements on the stock performance of acquiring and target firms within the UK construction sector. In particular, it analyzed the influence of merger announcements on the stock performance of acquiring and target firms operating in the UK construction sector. The study analysed the achievement of UK construction companies engaged in relevant takeover proposals from January 1996 to December 2001. The study aimed to address two fundamental issues: the performance of bidders and targets. These studies were grounded on the theory that integrated purchase provide enhanced prospects for the combined organization to realize productive efficiency and productivity. To evaluate the asserted benefits of corporate takeovers, an event study method was carried out on 46 purchasing companies and 33 targeted companies within the UK construction industry.

To evaluate the purported benefits of corporate takeovers, event study method was applied to analyze data from 46 acquiring firms and 33 target companies within the UK construction industry. The study applied a standard event study methodology to determine abnormal stock market returns over a 41 consequent working day, within a timeframe spanning from 20 days prior to 20 days following each initial announcement day.

The findings suggested that related takeovers in the construction industry resulted in significant benefits accruing to the investors holding shares in the target companies. The analysis extended to encompass abnormal share returns during a period covering both accomplished and unsuccessful acquisition and merger endeavours. The comprehensive findings suggested that mergers within the construction sector generated monetary gains for shareholders of the target organizations.

Pan, X. (2003) a study evaluated the influence of corporate purchases on the operational outcomes of firms in the UK, covering the period from 2005 to 2008. The research scrutinized a broad panel of British listed firms over a span of four years, encompassing both merged and separate entities. Utilizing three measures of profitability Return on Assets, Return on Capital Employed and Profit Margin alongside cash flow measurements as performance indicators, the study scrutinized a sample of 15,170 companies in the UK, with 224 of them engaged in mergers. The study employed a statistical tool, fixed-effects regression model to compare the operational performances of merged and separate firms, while controlling for firm-specific effects and time-specific factors. It concentrated on metrics like ROA, ROCE, PM and cash flow ratios as dependent variables in the models.

The study's results suggested that M&A activities did not yield a significant overall impact on companies, aligning with the findings of Sharma and Ho (2002). However, substantial enhancements in post-merger performance were noted in specific sectors. The variance in results could be attributed to discrepancies in accounting measurements utilized across different industries.

Powell and Stark (2004), the study indicate that takeovers conducted in the UK between 1985 and 1993 lead to modest enhancements in operating performance. The analysis expanded to include abnormal share returns over a period encompassing both accomplished and unproductive acquisition and merger endeavours. The comprehensive findings indicate that mergers within the construction sector resulted in wealth creation for investors holding shares in the target companies. The extent of this variation relies on how operating performance is defined and the selection of the deflator.

Danzon, Epstein, and Nicholson (2004) conducted research cantered on corporate restructuring within the pharmaceutical and biotechnology industries. The paper explored the variables influencing M&A activity in this sector and evaluated the impact of mergers, employing propensity scores to address merger endogeneity. The study analysed the causes of a firm's decision to engage in a transformative merger each year from 1988 to 2001. It underscored the importance of considering a company's historical propensity for mergers. Companies with increase probability scores exhibited gradual growth in sales, employees, and research and development (R&D), irrespective of whether they pursued a merger. This suggests that mergers might sometimes be a response to financial distress. Regarding a company's inclination toward mergers, the study discovered that larger firms undergoing mergers underwent comparable variations in organizational value, sales, employees, and R&D evaluated to similar firms that did not merger. However, small organizations involved in mergers experienced reduced R&D growth compared to similar non-merging firms. This implies that post-merger integration might redirect financial resources away from research and development initiatives.

Abdul Rahman and R.J. Limmack (2004) enhance the existing literature on takeover activity by evaluating the financial results of a specific set of Malaysian companies engaged in acquisitions between 1988 and 1992. The fundamental aim of the study was to determine regardless of whether takeovers contributed to an enhancement in corporate operating performance. The outcomes revealed that acquisitions carried out in Malaysia during the specified period led to sustained enhancement in operating cash flow performance. This enhancement was associated with increases in return on sales and asset turnover. Furthermore, the findings suggested that the potential for economic gains from takeover activity varied based on the structural and ownership characteristics of the target companies.

S Beena, (2006) the paper emphasizes that the Indian corporate sector witnessed an upswing in mergers and acquisitions, primarily propelled by restructuring strategies in the wake of liberalization. The trend was influenced by the presence of subsidiaries of major multinational corporations (MNCs), and the ensuing pressure exerted by such strategies on domestic firms. The paper concentrates on examining the characteristics and framework of M&A in the pharmaceutical industry in India. Furthermore, it explores alliances, asset sales, and outbound acquisitions by Indian firms, evaluating the influence of these M&A events on performance. The study indicates that M&A are expected to influence the performance of merging firms in two primary ways. Firstly, through an increase in the scale factor, which reduces the total cost of production, thereby enhancing overall performance. Secondly, mergers and acquisitions can grant monopoly power to the merged entities in the market, leading to an elevated 'mark-up', resulting in higher prices and increased profits. However, the paper acknowledges that mergers may also diminish the performance of merging firms if they acquire entities experiencing losses and fail to realize the anticipated synergies. The conclusion drawn from the study emphasizes that if the pharmaceutical industry can pass on a portion of the improved performance, resulting from consolidation to consumers in the form of reduced prices and enhanced drug quality, it would be deemed positive. On the contrary, if it leads to increased market power and subsequent price hikes, special attention would be warranted.

Martynova, Oosting, and Renneboog (2006) undertook an analysis to determine the impact of Mergers and Acquisitions on the profitability of European companies.

They analysed 155 M&A transactions completed in Europe between 1997 and 2001, aiming to determine in case and to what extent European companies improved their profitability following these transactions. The research employed four metrics of operating performance: EBIT, Depreciation, and Amortization (EBITDA) and EBITDA adjusted for variations in working capital, each measure was standardized by the book value of assets and sales. The findings uncovered a notable decline in the financial gain of the merged entity after the completion of the takeover. Additionally, the study investigated the impact of payment methods, environmental scope, and industry relatedness on profitability but found that these factors did not have significant explanatory power. Moreover, the research identified that companies with substantial cash holdings exhibited a negative relationship with performance, indicating poorer post-takeover profitability. Conversely, acquisitions of relatively larger targets were associated with improved profitability for the combined firm following the takeover.

Hassan, Patro, and Tuckman (2007) analysed mergers and acquisitions within the US Pharmaceutical Industry spanning from 1981 to 2004. Their comprehensive analysis investigated 405 instances of corporate integration occurring during this designated period. The research unveiled insights into abnormal returns in both the short and long term along with scrutinizing accounting and efficiency effects specifically for acquisitions, without extending the analysis to mergers. Nonetheless, the findings from the examination indicate that mergers involving US-based targets did not result in value destruction. Furthermore, the paper discerned disparities in the consequences of acquisitions based on whether the target company was foreign or US-based.

Mantravadi and Reddy (2008) the examination focussed on the influence of various modes of mergers on the operational output of acquiring companies in India. Covering the cycle from 1991 to 2003, which spans the post-economic reforms era, the research investigated financial ratios both before and after the merger in selected public limited and traded companies. The results revealed subtle disparities in the effects on operating performance after mergers of different types. In the study, it was observed that although the average OPM and GPM ratios remained unchanged, there was a notable decrease in the NPM, return on net worth, and ROCE throughout the post-merger phase.

The substantial decreases in earnings on net worth and capital employed show that the mergers were not primarily influenced by opportunities to improve productivity. Instead, it appears that the mergers were designed towards consolidating the asset portfolio by integrating assets from diverse corporate group, with the objective of becoming larger entities.

Kumar and Bansal (2008), the study investigates whether the assertions made by the corporate sector involved in Mergers and Acquisitions lead to synergy within the Indian context. The empirical research utilizes the analysis and interpretation of existing financial information, employing ratio metrics and correlation for analytical purposes. The paper explores the of late increase in M&A deals in India and assesses the influence of these transactions on the financial health of the entities involved. Additionally, it examines and highlights the similarities and differences in outcomes between merger deals and acquisition deals.

The findings indicate that in several situations of M&A, acquiring firms succeeded in generating synergy in the long run, demonstrated by improved cash flow, expanded business operations, diversification, and cost-cutting measures. The study aligns with the prevailing perception about Mergers and Acquisitions, indicating that synergy can be realized over the long term through judicious resource utilization.

Liargovas and Repousis (2011) investigated the consequences of corporate combinations on the performance of the Greek Banking industry over the period 1996-2008. The study applied dual methods: event study methodology and operating performance analysis to assess the impact of M&A. Using event study methodology, the paper investigated the "semi-strong form" of the Efficient Market Hypothesis (EMH) on the Athens Stock Exchange. The findings revealed that shareholders experienced notably positive CAAR in the ten days preceding the announcement of a merger and acquisition.

Moreover, notable positive CAAR were observed following the declaration of both horizontal and diversifying bank deals. However, the whole findings indicated that Business Combination in the banking sector did not create wealth and had no impact.

Additionally, the study analysed the operational effectiveness of the Greek Banking Industry by scrutinizing twenty financial metrics. The conclusions indicated that operating results did not enhance subsequent corporate consolidation. Despite this, the

Greek banking industry was found to be moderately concentrated, with many banks having low market shares. The comparison between merged banks and non-merging banks yielded controversial results, suggesting that further analysis is needed to draw conclusive insights.

Rani et al. (2011) utilized event study methodology to evaluate immediate abnormal returns in the short term within the Indian Pharmaceutical Industry.

Their aim was to explore how mergers and acquisitions impact shareholders wealth within a brief timeframe. The study focused on analysing short-term abnormal returns in India's pharmaceutical industry during the period 2001-2007, with a significant emphasis on M&A. They found that acquisitions of foreign companies on the announcement day. One of the most noteworthy discoveries of their research was the substantial positive abnormal returns observed for stakeholders in Indian pharmaceutical enterprises when they acquired foreign targets. The cumulative abnormal return for Indian companies purchases targeting overseas entities was found to be consistently positive during the event window, suggesting that the market perceives these deals as enhancing efficiency.

Arora & Kumar (2012) the research investigates into the significant challenges linked to both pre and post-merger scenarios, placing special emphasis on the human aspect. The study identifies key issues across three crucial phases of mergers. The study reveals that in the merger or acquisition planning process, growth, expansion, or synergies often take precedence, sidelining the crucial people factor. Employees and management are either not involved, or their involvement is limited. The research pinpoints major challenges in pre and post-merger situations, where cultural disparities emerge, leading to conflicts as employees and management pursue divergent objectives. The paper also assesses training methods designed to navigate this environment and proposes alternatives for ensuring positive result of any merger or acquisition event within the company.

Emon Kalyan Chowdhury (2012) the research explores the influence of mergers on the shareholders of diverse organizations. It highlights that mergers serve not only as a means of growth but also as a strategy to ward off competition, enhance market share, and elevate overall performance. The results of the research affirm that mergers contribute value to both companies and their shareholders, as evidenced by the subsequent increase in market capitalization post-merger, ultimately leading to shareholder gains. In conclusion, the research states that mergers can be exercised as an effective instrument to enhance overall company performance.

Singla et al. (2012) the research investigates the influence of cross national mergers and acquisitions on the financial health of Indian acquiring firms. Their research aimed to analyse how such cross-border deals affected the fiscal standing of Indian acquiring companies and the wealth of their shareholders. The study utilized a 29-day analysis period to review the impact of the announcement of global M&A on the shareholders wealth of the purchasing companies.

They evaluated a segment of 15 corporations in India that had engaged in global mergers and acquisitions from 2005 to 2008. Their findings indicate that there was no substantial variation in the monetary standing of the selected corporations during the period following the merger in comparison to the period preceding it.

Additionally, the outcomes revealed that the stockholders of acquiring firms observed only a slight positive CAAR throughout the period subsequent to the announcement of the merger.

Duppati, Geeta Rani (2012) conducted an extensive study on the consequences of corporate combination endeavours of Indian corporations regarding Foreign Direct expansion. The study delved into the performance of Indian companies involved in global investments, examining their short-term and long-term outlooks across diverse sectors. Importantly, the study aimed to address the gap in existing research by analyzing both overall performance and individual firm-level performance.

To evaluate short-term performance, the study utilized an event based approach with a three day study interval surrounding the acquisition announcement period. Different metrics, such as AR, CAR, and standardized cumulative abnormal returns were examined.

To assess long-term performance, the study utilized Cumulative excess returns and Buy and hold excess returns (BHAR), in addition to other indicators such as Wealth Relative and Tobin's Q, over a period of up to 36 months after the month of the acquisition event.

The empirical results demonstrated favourable wealth effects for investors in both short- and long-term periods, thereby rejecting null hypotheses. Conversely, the firm-level empirical findings presented a mixture of outcomes in the short term, highlighting the significance of unique contexts and market assessments of evolving return and risk factors. The research offered interpretations for the variability in results, drawing understanding from previous research and the OLI theory.

Additionally, it considered how commentaries from financial analysts, company media releases, and other contextual factors influenced investors' assessments.

In summary, this research contributes to the existing body of research by integrating empirical research with explanations of firm-level performance, thereby providing avenues for further research in this field.

Loloah Mohammad Alselem (2021), the outcomes of acquisitions on the financial outcomes of companies in the Gulf States was analysed using data spanning from 2005 to 2018. The analysis focused on 23 acquired firms over an 8-year period, examining the consequences of acquisitions on liquidity, profitability, and leverage. Ordinary Least Squares (OLS) regression and Bayesian linear regression methods were utilized to examine these effects. The study concluded that acquisitions typically do not significantly affect the profitability of firms, supporting the results reported by Mogla and Singh (2010). Regarding gearing, the Interest Coverage ratio was positively influenced by acquisitions, while the Debt-to-Equity ratio remained unaffected. Nonetheless, the overall influence of acquisitions on firm leverage was negative. Although there were some differences between the findings obtained through OLS and Bayesian regression, the study concluded that the results were largely consistent. Therefore, the Bayesian method was deemed moderately consistent with the OLS results. In summary, the research suggests that acquisitions do not substantially change the fiscal health of companies in the Gulf States.

Sudip Chaudhuri (2012) research examines that product monopolies and elevated prices have resurged in India. It observes an escalating dominance of Multinational Corporations (MNCs), a surge in imports of finished formulations, and notable developments in the market structure and pricing of patented products. The study highlights the rapid expansion of MNCs in India, marked by the introduction of new patented drugs. Additionally, it notes the vigorous expansion of MNCs into generic segments, not only through organic growth but also via M&A and argues that the pharmaceutical sector in India is witnessing a resurgence of product monopolies and elevated prices.

Fatima, T., & Shehzad, A. (2014) explored the influence of M&A on banks and offered insights into their subsequent contribution to the profitability of these institutions. The study utilized six financial ratios for analysis, including PAT, ROA, ROE, debt to equity ratio, deposit to equity ratio, and EPS. A sample of ten banks that underwent mergers from 2007 to 2010 was selected for analysis. The data for the three years preceding the merger and the three years following the merger were collected for all ten cases, and their averages were compared. Paired sample T-tests were conducted using SPSS for analysis, revealing that only return on equity (ROE) was significantly affected by the merger and acquisition at a 5% level of significance, while other ratios showed no impact from this strategy.

Azhagaiah and Sathishkumar (2014) examined how integration influenced the operational metrics characteristics and evaluated enhancements in organizational structure during the post-merger period. The results indicate that corporate restructuring have a noteworthy and advantageous influence on the operational performance of manufacturing companies in India that participate in acquisitions. This leads to a noticeable improvement in their operational dynamics.

Fernandez and Kumar (2014) conducted a study centred on the biggest banking consolidation in the Middle East, which involved the amalgamation of Emirates Bank International and National Bank of Dubai to create Emirates NBD. The findings showcased a favourable outcome from the merger, with stock prices experiencing a surge, consequently boosting shareholders' wealth. Moreover, the study highlighted an enhancement in the operational performance of Emirates NBD post-merger. Notably, the declaration of the merger yielded additional positive returns for shareholders of both banks across different shorter time frames.

Godfred Yaw Koi-Akrofi (2014) the research delved into the various driving factors or motivations that compel telecommunication companies to participate in M&A and the research aimed to inspire and provide support for researchers seeking to understand the global dynamics of such business activities. The recognized motivations included achieving synergy, fostering growth, strengthening market position, creating value for shareholders, and the managerial pursuit of empire building.

Malik, Anuar, Khan and Khanv (2014) the paper undertakes an assessment to ascertain whether Mergers and Acquisitions contribute to value enhancement or result in the deterioration of organizations. By reviewing the literature, the study explores the historical context, various phases, underlying motives, and diverse methods employed for performance measurement. The evaluation encompasses an examination of the benefits and shortcomings of M&A, as well as an exploration of any new developments in measurement techniques observed in recent years. In conclusion, the study highlights the existence of multiple methods for measuring acquisition performance, each with its distinct advantages and disadvantages. It emphasizes the critical importance of carefully selecting the measurement method, as this choice significantly influences the results drawn from the evaluation.

NABA Boukari Moctar and CHEN Xiaofang (2014) investigate the influence of mergers and acquisitions (M&A) on the performance of West African banks operating within the Economic Community of West African States, the largest regional economic community in Africa.

The research identified banks within the ECOWAS region that had undergone mergers and acquisitions (M&A) and gathered data from their annual reports. Three categories of variables were employed: liquidity ratios, performance ratios (such as ROA and ROE), and investment valuation variables (including earnings per share). Two sets of banks were chosen for the case study: the first set included Access Bank Plc Nigeria and SG-SSB Ghana, both of which had undergone mergers and acquisitions (M&A), while the second set consisted of Zenith Bank Plc Nigeria and BOA Niger, which had not been involved in M&A activities. At first, the investigation contrasted the condition of the initial group pre and post mergers, the proceeded to assess both groups regarding liquidity, performance and investment valuation utilizing financial indicators. The results indicated that mergers and acquisitions (M&A) led to improved liquidity for banks. Additionally, the research revealed that performance and investment metrics experienced a decline during the M&A period but recovered within two or three years thereafter. This implies that within West Africa, mergers and acquisitions exerted considerable short and long-term improvements on bank liquidity, despite initially showing negative impacts on performance and investment valuation variables, which eventually turned positive in the long term.

Khurana and Warne (2014) the study noted a positive influence of influence of business integration on the profitability and liquidity of Tata Teleservices and the power sector. However, for Tata Motors, Steel, and Chemicals, the research indicates a decrease in earnings following the acquisitions compared to the pre-acquisition period.

Ahmed et.al., (2014) the results suggested that, overall, the financial performance of acquiring manufacturing companies exhibited negligible improvement in the post-merger period. Although liquidity, profitability, and capital position showed insignificant enhancement, efficiency witnessed a decline in the aftermath of mergers. The study concluded that the influence of mergers varies across different industries within the manufacturing sector.

Rahman, Mahabubur, and Mary Lambkin (2015) The paper provides a comprehensive analysis of 45 M&A deals aimed at gaining insights into how mergers and acquisitions impact marketing performance. The study particularly focuses on two dimensions of marketing performance: marketing effectiveness and marketing efficiency. Results indicate an enhancement in marketing performance across two key dimensions: growth in sales revenue and a decrease in selling, marketing, and administrative costs as a percentage of sales revenue. These findings suggest the attainment of synergies, specifically economies of scale and scope, in these areas. However, despite these improvements, better returns on sales were not observed, indicating that the cost economies achieved in marketing are not adequate to offset cost inefficiencies in other aspects of the business.

Wadhwa and Syamala (2015) delved into mergers that occurred in the Indian manufacturing economy during the post-liberalization era, encompassing all mergers within the manufacturing operations spanning from April 1, 2000, to March 31, 2010. The analysis utilized a paired t-test to compare five industry-adjusted performance parameters before and after the mergers. The findings revealed that there was no significant improvement in post-merger metrics, including ROA, ROE, and cash flow from operations to total assets. Nonetheless, the study emphasized a strong correlation between post-merger efficiency and pre-merger ratios of interest to sales and tax to sales.

Tianqi Li (2016) the conclusions of the research reveal that mergers and acquisitions in the banking sector indeed generate shareholder wealth for the acquired target bank. However, an apparent trend suggests that shareholders of the acquiring firm often incur losses because of the reduction in their ownership stake in the newly established bank. The study highlights the importance of practiced senior management capable of executing effective corporate restructuring within the merged bank for its post-merger survival. This strategic restructuring is critical for cost recovery through synergies and the implementation of cost-reducing techniques, ultimately fostering future efficiency and enhancing shareholder wealth.

Pervan, Visic and Barnjak (2015) suggest that there are statistically insignificant differences in the performances of target companies before and after M&A activities. The study reveals that the costs of the acquired companies did not decrease following their engagement in M&A. Additionally, no statistically substantial differences were observed between the profitability of businesses prior to and following the merger. The study also compared the profitability measures of the sample companies with those of their peers.

Dr. C. Dhanalakshmi and Dr. V. Rajeswari (2015) concluded that mergers resulted in a favourable influence on the financial of acquiring corporations during the immediate post-merger period (t+1 year window). However, this positive impact does not continue in the post-merger periods of (t+3, t+5 years) regarding selected profitability variables. The findings also emphasize a positive consequence of the merger announcement on operating performance in the short run (+1 year).

Gwaya Ondieki Joash and Kenya Mungai John Njangiru (2015) investigated banks that experienced mergers or acquisitions in Kenya from 2000 to 2014. The research intended to examine the influence of mergers on banks performance. It was directed by the stated objectives: to assess the effect of integration on shareholder value and to examine the implications of mergers and acquisitions on profitability. The research included a census of all 14 banks that underwent M&A from 2000 to the present. Data collection included distributing surveys containing both open and closed-ended questions.

The research discovered that M&A enhanced the investor value of the acquiring banks in Kenya. Additionally, it uncovered that the primary motivation behind most banks decisions to merge or acquire was to strengthen their profitability. The researchers recommended conducting comprehensive feasibility studies prior to initiating the acquisition process. They also suggested exploring the consequences of M&A in other sectors of the economy to draw comparisons with their impacts in the banking sector, indicating avenues for further research.

Bhutta, Saad, and Tariq (2015) found that financial position and profitability ratios had a statistically significant positive impact on the company's bankruptcy score. Additionally, the study suggests an adverse effect on the bankruptcy score after an acquisition when examining financial ratios, even though the long-term financial standing of the firm remains unaffected.

Arlinda, Imam, and Saptono (2015) studied the impact of M&A activity on assessing fiscal health, utilizing financial ratios (MVA, EVA, PER, PBV), DSC, and Altman Z-Score as proxies, along with considering market share for the five largest telecommunication operators in Indonesia. The findings indicate that DSC, used as a proxy, is more suitable for describing financial distress in comparison to Altman Z-Score for the five Indonesian companies. Moreover, the study reveals that there is no alteration in market share for these five companies following the mergers and acquisitions.

Pahuja and Aggarwal (2016) the paper analysed the performance of banks that underwent structural changes in the post-financial sector reform period in India. Using an event study, the examine focused on examining the announcement effects of mergers. Both public and private sector banks that had experienced mergers were considered for the study. The results reveal that there is no significant consequence of mergers and acquisitions on the financial profitability of the firms in the banking sector. Additionally, the average return of securities did not demonstrate any evidence of improvement post-merger.

Abdulazeez, Suleiman, and Yahaya (2016) the research concluded that the restructuring activities in the financial sector had notably improved the financial performance of a majority of banks in Nigeria. Additionally, the findings recommended that financially weaker banks should examine merging or being acquired by stronger, larger banks. Moreover, the study advised banks to intensify their efforts in marketing financial products to strengthen their financial performance and capitalize on the advantages of post-mergers and acquisitions.

Dargenidou, Gregory and Hua (2016) the study investigates two different perspectives, share price returns indicate value destruction in acquisitions, while accounting measures of performance imply the emergence of synergies, suggesting the potential creation of value in acquisitions. The study concludes that, when utilizing accounting measures of performance, it identifies the existence of synergies developed during acquisitions. Furthermore, it demonstrates that abnormal returns post-acquisition is linked to information about synergistic benefits communicated in the financial statements.

Shah and Butt (2016) the study investigated the merger between Centurion Bank and Bank of Punjab, recognized as a crucial merger deal in the Indian corporate sector. It evaluated the operational, financial performance, and shareholders' wealth resulting from the merger. The results revealed a statistically insignificant positive effect on shareholders' wealth, as well as on the operating and financial results of the merged entity.

Shams and Gunasekarage (2016) determined that during the announcement period of acquisitions, private target acquirers experienced substantially greater abnormal returns in relation to publicly targeted acquiring companies. However, in the post-acquisition period, no notable difference in their operating performance was observed.

Cilhoroz et.al., (2016) the study states that the pharmaceutical industry is the primary sector where mergers and acquisitions predominantly take place. According to the research, the driving factors behind pharmaceutical mergers and acquisitions include the substantial costs associated with research and development (R&D). The paper explores diverse motivations driving mergers and acquisitions, encompassing the pursuit of economies of scale, the desire to enter new markets, efforts to improve existing marketing opportunities, and the quest for enhanced competitiveness. Furthermore, the study explores the broader objectives associated with M&A.

Jallow, M. S., Masazing, M., & Basit, A. (2017) studied the consequences of takeovers on the financial performance of United Kingdom firms. The study focused on 40 companies listed on the London Stock Exchange (LSE) that underwent consolidation in 2011. A comparison was made between the financial ratios of these companies in the 5 years period preceding and following the M&A.

In the study, the independent variable was M&A, while the dependent variables comprised ROA, ROE, EPS and NPM. Descriptive statistics and paired sample t-tests were employed, revealing a positive correlation between the variables and mergers and acquisitions. Moreover, mergers and acquisitions were observed to significantly impact ROA, ROE and EPS. Convenience sampling was utilized as the sampling technique.

Ultimately, the research aimed to educate the community, shareholders, and directors about the potential benefits of merging with or acquiring other firms to improve profitability. The findings suggested that while mergers had no effect on the net profit margin, they did impact ROA, ROE and EPS.

Gupta and Banerjee (2017) found that there was no noticeable enhancement in the financial performance of the acquiring companies following the merger. The analysis of the selected sample reveals a varied impact of mergers on the profitability and solvency positions across different industries in India.

Mondal, Pal and Ray (2017) the results indicate that, subsequent to the merger, the efficiency and comprehensive performance of the banks improved across different financial metrics. The success of the merger is attributed to the synergy gains created afterward, highlighting the importance of overall bank performance in the success of the merger.

Rasid and Naeem (2017) perceived that merger agreements do not exert a significant impact on the profitability, liquidity, and leverage position of the firm. Furthermore, the research revealed that the outcomes of the empirical Bayesian method closely mirrored those of the Ordinary Least Squares (OLS) results.

Akenga and Olang (2017) specifically explored the impacts of asset growth, shareholders value, and synergy on the financial performance of merged banks in Kenya. The research concluded that mergers and acquisitions positively affected both the value attributed to shareholders and the assets of the merged or acquiring banks in Kenya.

Bijendra and Singhvi (2017) the findings suggest that, initially, profitability was not very encouraging, but later, the companies exhibited positive trends in profitability. The study concludes that, on an average basis, Cipla demonstrated the highest GM, OPM and net profit margin among the pharmaceutical companies studied.

Magar and Fackler (2017) found that the study's findings indicate no significant negative abnormal buy-and-hold returns for the entire sample. However, mergers generally showed lower performance, with only a handful of overtly hostile transactions displaying a minor positive abnormal return in comparison to similar industries in Germany.

Lakwani, Tiwari and Jauhari (2017) the analysis is based on three key ratios within the Du Pont framework: Return on Assets, Net Profit Margin, and Asset Turnover Ratio. By utilizing Du Pont ROA Analysis, the study concludes that M&A can be a successful long-term strategy, yielding positive results for companies that carefully select their targets and execute well-thought out plans. The findings suggest that, when approached wisely, M&A has the potential to be a fruitful long-term payoff strategy for firms.

Dugga and Mehta (2018) the overall findings indicate a slight decrease in the performance of Indian companies following the merger.The research concluded that the financial performance of acquiring firms generally experienced a slight decline in the post-merger period. After the merger period, the capital performance, profitability, liquidity, and market value of firms experienced insignificant deterioration, while the operating efficiency of firms insignificantly improved. In conclusion, the research proposed that the influence of mergers and acquisitions on the firm has a negligible effect on the company's performance.

Shah (2018) concludes whether there is a considerable or substantial change in the financial health of a merged company attributable to the merger. The ultimate finding suggests that there are no massive or significant differences in the financial performance of the merged entities as a result of the mergers.

Pandya (2018) the research findings indicate that mergers and acquisitions (M&A) play a dual role, serving as a tool for corporate restructuring and an effective strategy for expanding into new markets. The study underscores a substantial increase in M&A deals in India, especially in the post-1990s era, revealing the changing dynamics and strategic considerations within the M&A sector.

Zuhri et al. (2020) examined Merger and Acquisition as two types of business combinations, wherein acquiring companies or bidders assume control over assets, liabilities, or governance, while target companies are the entities being acquired.

The interpretations of the statistical examination, particularly the Wilcoxon signed rank test, indicated that there was no notable difference in ROE and Debt to Equity Ratio financial ratios before and after Merger and Acquisition. Interestingly, the analysis showed that the median and average of ROE before Merger and Acquisition were higher than those after the event. Similarly, the median and mean ratios prior to the initiation of Mergers and Acquisitions were lower, suggesting better performance based on this analysis.

2.2. Research Gap

It is evident from various studies that there is no consensus regarding the effect of mergers and acquisitions (M&A) on firm's financial performances. Research by Jeannette A. Switzer (1996), Abdul Rahman and R.J. Limmack (2004), Emon Kalyan Chowdhury (2012) and others suggests that M&A events significantly affect a firm's profitability, leverage, liquidity and contribute value to both companies and their shareholders, as evidenced by the subsequent increase in market capitalization post-merger, ultimately leading to shareholder gains.

Conversely, studies conducted by Healy, Palepu, and Ruback (1997), Pan, X. (2003), S Beena (2006), Martynova, Oosting, and Renneboog (2006), Mantravadi and Reddy (2008), Liargovas and Repousis (2011), Singla et al. (2012), Loloah Mohammad Alselem (2021) and others find that mergers may also diminish the performance of merging firms, if they fail to realize the anticipated synergies.

However, it is important to note that these findings vary across countries and industries, and conclusions drawn from one context may not apply universally. The impact on shareholder wealth, particularly for acquiring company shareholders, remains an ongoing area of investigation.

The literature highlights the dominance of event studies in international acquisition performance research, whereas studies on Indian acquisitions have mainly relied on accounting returns. However, there is a need for exploring alternative methods like data envelopment analysis and balanced scorecard methods in M&A literature.

Methodological selections also play a crucial role in shaping research conclusions on M&A success or failure. Therefore, the present study aims to address conflicting findings by employing both the accounting return method and event study method. It uses various financial metrics such as liquidity, profitability, turnover, solvency position, research-intensive indicators, and investment evaluation to assess firm value.

The study also investigates the influence of M&A on stock prices, aiming to ascertain whether shareholders experience significant abnormal returns.

Furthermore, the lack of studies in the Indian pharmaceutical industry motivates this research. This industry is selected because of its global importance and extensive participation in mergers and acquisitions, as indicated by the substantial number of documented M&A transactions.

Additionally, the industry’s potential for significant abnormal returns, especially with blockbuster drugs, makes it a compelling focus for analysis.

2.3. Rationale of the Study

Examining the significant of mergers and acquisitions on the financial performance and shareholders wealth within Indian pharmaceutical firms holds significant importance for various reasons:

Industry Dynamics

Value Creation

Research and Development and Innovation

Industry Dynamics

The pharmaceutical industry experiences frequent shifts in regulations, technology, and market demands, rendering it highly dynamic. From the study, we can gain insights into the ways in which M&A activities shape the structure, competition, and innovation landscape within the Indian pharmaceutical sector.

Value Creation

Mergers and acquisitions (M&A) transactions are frequently undertaken with the goal of generating value for both shareholders and stakeholders. The study plays a crucial role in assessing the effectiveness of M&A deals within the Indian pharmaceutical industry, determining whether they succeed in meeting their objectives and delivering value to the companies involved.

Research and Development and Innovation

Examination on mergers and acquisitions within the Indian pharmaceutical sector facilitates an evaluation of their impact on research and development capabilities and innovation. It is crucial to comprehend how M&A activities influence investments in R&D, drug discovery, and product development to ensure the sustained growth and competitiveness of the industry over the long term.

Regulatory Compliance

Globalisation

Investors’ Confidence

Regulatory Compliance

The study is instrumental in understanding the regulatory framework surrounding mergers and acquisitions (M&A) within the pharmaceutical sector. It provides insights into the complex regulatory hurdles and complications associated with M&A deals.

Globalization

The study facilitates an examination of how international M&A endeavours shape the growth trajectory, competitive stance, and enduring viability of Indian pharmaceutical enterprises in the global arena.

<u>Investors' Confidence</u>

The study on the impact of M&A in Indian pharmaceutical companies provides valuable insights for investors and financial analysts. Understanding the performance outcomes and strategic implications of M&A deals helps in assessing the investment potential and risk profiles of pharmaceutical companies operating in India.

CHAPTER – 3

3.1. STATEMENT OF THE PROBLEM

Mergers and acquisitions are integral topics within the areas of finance and strategy, garnering substantial attention and research interest worldwide. Mergers and Acquisitions are the outcomes of inorganic growth process which serves as an instrumental tool for business growth and expansion and are widely used by business entities as a critical tool of strategy.

Several factors have converged to create a robust environment for M&A. Mergers and acquisition serve as solutions to significant strategic challenges, including realizing economies of scale and scope, facilitating vertical and horizontal integration, developing complementary resources, effectively utilising surplus funds and enhancing managerial effectiveness. M&A enhance the performance of the company through the synergy effect, increases market power, operational efficiency, financial performance, and economy of scales.

The literature indicates that numerous studies on M&A have been performed but there are limited research studies have been found for Indian context. The study applies the financial and operating performance model to assess the influence of financial performance resulting from mergers and acquisitions on Indian Pharmaceutical Sector, examining 32 financial indicators for 30 well – established Pharmaceutical Companies. The study employs a paired sample t-test for analysis, comparing three years before the merger (-3 years) and three years after the merger (+3 years) periods within Indian pharmaceutical companies. The research also investigates the underlying reasons for the changes in financial indicators following mergers, with the aim of understanding the factors that drive the observed effects after the mergers.

The research also explores the influence of mergers and acquisitions on stock prices, aiming to ascertain whether there are notable abnormal returns to shareholders through the utilization of a t-test. The analyses involve assessing Abnormal returns, t-statistics of Abnormal returns, CAR, t-statistics of CAR, Average Abnormal Return and CAAR, t-statistics of CAAR for Pre-Event Period and Post Event Period (-30, + 30).

To evaluate the cumulative impact of stock prices on mergers and acquisitions, the study conducts t-tests over various time frames: -2 days, -5 days, and -11 days in the pre-event period, and +2 days, +5 days, and +11 days in the post-event period. Additionally, t-tests are performed for 5 days (-2 to +2 days), 11 days (-5 to +5 days), and 23 days (-11 to +11 days) to determine the collective influence of stock prices on the M&A process during these specified durations.

3.2. SELECTION OF THE PHARMACEUTICAL INDUSTRY

Pharmaceutical companies are a defensive sector as it is a necessity and involves high cost of research and development. Pharmaceutical companies face with stiff competition and strict regulations so mergers and acquisitions which is inorganic business activity takes place in pharmaceutical industry.

The study is on the pharmaceutical industry for many reasons: -

1. Pharmaceutical sector is universal in nature, engages M&A widely either to supplement or substitute research and the have a high cost of drug, so the result of the study will have broad applicability.

2. Important reason for Pharma market for M&A is the stringent inspections by FDA which has led many Indian export facilities being debarred from exporting to the US, patent expiration, patent dispute and changes in Drug Price Control Orders by the government.

3.3. SIGNIFICANCE OF THE STUDY

- **To Acquirer Company:**

  - Acquiring companies can observe the notable significant consequence of merger and acquisitions on both their financial health and operating performance and it can serve as a valuable tool for analysing the success of their expansion strategy implementation.

  - The company can analyse if the firm was able to build synergies and whether it had an immediate impact or took substantial time to reflect the same in the financial statement.

  - The results of the study will benefit the acquirer company to analyse the three years performance and can study the trend in the movement of financial ratios and evaluate their financial performance.

- **To Shareholders of the acquirer company:**

  Shareholders can evaluate the financial and operating performance by analysing the significant impact on the financial ratios and stock price and determine whether mergers and acquisition generate revenue for the pharma sector.

- **To Economy:**

  Regulatory authority can assess the impact of Merges and acquisitions and its impact on economy, customers and consumers can also get the information about the trend of mergers and acquisition.

- **To Consultancy/Advisory firms**:

  Consultancy or advisory firms can assess the effects of merges and acquisitions on Indian Pharmaceutical companies and provide valuable insights to aid in decision making.

3.4. RESEARCH MOTIVATION

Pharmaceutical industry is characterized by dynamic shifts in regulations, technology, and market demands. Through the study, we can gain insights into how M&A activities influence the structure, competition, and innovation landscape within the Indian pharmaceutical sector.

Mergers and acquisitions (M&A) transactions are often pursued with the aim of creating value for shareholders and stakeholders. The study shows a fundamental role in assessing the effectiveness of M&A deals within the Indian pharmaceutical industry, determining whether they meet their objectives and deliver value to the companies involved. An examination of M&A within the Indian pharmaceutical sector allows for an evaluation of their impact on research and development (R&D) capabilities and innovation. Understanding how M&A activities affect investments in R&D, drug discovery, and product development is crucial for ensuring sustained growth and competitiveness in the industry.

The study is instrumental in understanding the regulatory framework surrounding M&A within the pharmaceutical sector, shedding light on the complex regulatory hurdles and complications associated with such deals. Furthermore, the study facilitates an examination of how international M&A endeavours shape the growth trajectory, competitive stance, and enduring viability of Indian pharmaceutical enterprises in the global arena.

Overall, research on the impact of India. M&A in Indian pharmaceutical companies provide valuable insights for investors and financial analysts, helping them assess investment potential and risk profiles of pharmaceutical companies operating in India.

3.5. OBJECTIVES OF THE STUDY

1. To examine the impact of mergers and acquisitions on the financial performance of selected pharmaceutical companies in India.

2. To study the impact of mergers and acquisitions on the operational performance of selected pharmaceutical companies in India.

3. To study the impact of Mergers and acquisition on shareholders' value.

3.6. SCOPE OF THE STUDY

The research is extended to all companies operating within the Indian pharmaceutical sector. The broad classification of companies engaged in the pharmaceutical sector includes three different types of industries i.e., Bulk Drugs, Formulations, Bulk Drugs and Formulations. To understand the pharmaceutical industries working in India, it is important to consider the major/main players of the industry. Hence the selection of the companies has been done from all the three types of industries considering their market share and in terms of volume.

The research primarily adopts the viewpoint of the acquiring company, centering on the effects before and after a merger on financial performance, operational effectiveness, and shareholder's wealth.

3.7. HYPOTHESIS

To assess the research objectives, the following hypothesis have been formulated:

H_{01}: There is no significant variance in the Financial Performance among the selected pharmaceutical firms in the comparison between the Pre-Post Merger period.

H_{02}: There is no significant variance in the Operating Performance among the selected pharmaceutical firms in the comparison between the Pre-Post Merger period.

H_{03}: There is no significant variance in the Shareholders value among the selected pharmaceutical firms in the comparison between the Pre-Post Merger period.

3.8. RESEARCH METHODOLOGY

3.8.1. RESEARCH DESIGN

The study provides an in-depth analysis of M&A endeavors within the Indian Pharmaceutical Industry, with the goal of evaluating how they influence the financial performance, operational effectiveness, and shareholders wealth of acquiring firms within diverse pharmaceutical companies in India. It employs a descriptive approach to thoroughly explore these aspects.

- **ACCOUNTING RETURN METHODOLOGY**: The study employs the financial and operating performance model to evaluate the effects of M&A, about a total sample of 30 distinguish pharmaceutical mergers. This examination involves the analysis of 32 financial Indicators. Financial Performance and Operating Performance is examined on six parameters, using Paired sample t-test examining the pre-merger impact (-3 years) and post-merger impact (+3 years) in Indian pharmaceutical company.

TABLE 3.1: FINANCIAL INDICATORS USED IN THE STUDY	
I	**Liquidity Indicators:** Liquidity analysis is examined to determine whether Pharmaceutical Companies maintain sufficient funds to pay current liabilities by converting their current assets into cash. Maintaining Liquidity is essential for organizations to pay off short term debts as and when they arise and to have sufficient working capital in the organization.
II	**Operating Performance Indicators / Turnover Ratios**: Turnover ratios are analyzed to indicate how productivity the assets and resources of the acquirer's firm are being utilized and the amount of revenue generated by utilizing the assets.
III	**Profitability Indicators:** is examined to evaluate the acquirer's companies' profits post merger, ascertain the influence of mergers and acquisitions on the profitability ratios and provide financial information to investors, shareholders, debenture holders, financial institutions, creditors, government and others for better understanding and decision making.

IV	**Research Intensive Indicators:** Research Intensive Indicators reflects the effectiveness of a company in utilizing its R&D efforts to generate returns and the research and development process holds significance in the pharmaceutical industry for drug development.
V	**Solvency ratios:** Effectively managing debt is a crucial determinant for sustaining viability and profitability of pharmaceutical firms in long run and hence Pharmaceutical companies need to manage their debts.
VI	**Investment Valuation Indicators:** Investment valuation ratios help in evaluating companies' investment potential and improve efficiency and creates value for shareholders.

- **EVENT STUDY METHODOLOGY**

The study examines the effect of M&A on stock prices of selected pharmaceutical companies in India. The event is the Merger and Acquisition announcement date. The study examines whether stock prices indicate abnormal returns, basically how the market responds in the announcement of Mergers and Acquisition. The study is focussed on the acquirer's share price. The target share prices always increase due to takeover premium but the acquirer share price may increase or decrease as the market moves, Event Study help the shareholders of acquirer companies to assess the benefit from the event by examining the changes in stock prices as the value of the shares would either increase or decrease in relation to change in market price of shares.

The study scrutinizes thirty instances of M&A occurring within the Indian Pharmaceutical Sector. It employs a t-test methodology, which assumes that abnormal returns for individual firms are independent of one another when examined across different sections and exhibit identical distribution characteristics. The t-statistic for abnormal returns is examined to determine whether the event had a statistically significant impact on abnormal returns on the event day and for the window period i.e., period before the event (0 to -30 days) and period after the event (0 to + 30 days) and examines the stocks reaction on the announcement of mergers and acquisitions. Cumulative Abnormal return and t-statistics of CAR is examined for each M&A. CAR is calculated for (Pre Merger Period) -2 day, -5 day, -11 day and for (Post Merger Period) +2 day, +5 day, +11 day in window period and indicate whether the results show a significant impact on stock prices towards the Merger and Acquisition announcement date. The company's t-statistics of Cumulative Abnormal Return (CAR) for the combined number of days for the Pre-Event Period and Post-Event Period for 5 days (-2, +2), 11 days (-5, +5), and 23 days (-11, +11) are also tested to examine the significant impact of M&A.

Average abnormal returns are calculated for each day within event window and the cumulative sum of these average abnormal returns in the event window over the t days is computed to derive CAAR which serves as an indicator of the overall average total effect of the event on all companies over a given time.

CAAR is computed for the window period of 61 Days and shows the significant impact for calculated for Pre-Merger Period -2 day, -5 day, -11 day and for Post Merger Period +2 day, +5 day, +11 day in window period and indicate whether the results show a significant impact of stock prices towards the Merger and Acquisition announcement date. Company’s t-statistics of Cumulative Average Abnormal return for combined number of days for 5 days (-2 +2), 11 days (-5+5) and 23 days (- 11+ 11 days) is calculated to test whether merger announcements are significant or not.

TERMINOLOGY RELATED TO EVENT STUDY

- **Event Day:** is denoted as “0”

- **Event Window:** This term refers to the specific period during which abnormal returns are computed, encompassing the trading days both before and after a merger or acquisition event. Existing literature offers various event window durations such as (-10 to +10), (-20 to +20), (-30 to +30), and (-40 to +40). For this study, the event window is defined as (-30 to +30) based on relevant literature and research practices.

- **Event / Window Estimation:** Estimation refers to the period over which estimated returns are calculated. In this study, the Event Window is set at 200 trading days.

- **Market Model or Risk Adjusted Returns Model:** also known as the Risk-Adjusted Returns Model, is widely recognized as the predominant and robust framework for conducting event studies to measure Abnormal Returns (ARs) within the event window. This model explicitly incorporates market risk and mean returns. Then, residuals obtained from the Market Model are examined to determine whether the event being considered has a notable effect on stock prices.

- **STEPS IN EVENT STUDY:**

1. The daily returns for each company are calculated separately for both the estimation window and the event window using the following formula:

$$R_{it} = \log (P_{it} - P_{i(t-1)})$$

Where:

R_{it} signifies the actual return for company i at day t.

P_{it} indicates the daily closing share price for company i on day t.

$P_{i\,(t-1)}$ means the daily closing share price for company i on the previous day, t-1.

2. The daily market returns are calculated using the daily values of Nifty 50 for the corresponding period, employing the following formula:

$$R_{mt} = \log(I_{it} - I_{i(t-1)})$$

Where:

R_{mt} represents the return of the market portfolio for the period.

I_{it} and $I_{i\,(t-1)}$) denote the respective daily index values for the market at time t and t_{-1} respectively.

2. The Normal Return is calculated using the Market Model by:

$$NR_{it} = \alpha_i + \beta_i R_{mt}$$

Where:

R_{mt} represents the return on the market index for day t.

α_i measures the mean returns not explained by the market for company i

β_i measures the sensitivity of the return of company i to the market return

Where, $\hat{\alpha}$ and $\hat{\beta}$ are OLS (Ordinary Least Square) estimators of the regression coefficient estimated over the estimation window.

3. Abnormal returns are actual return (R_{it}) minus normal return (NR_{it}).

$$\boxed{AR_{it} = R_{it} - NR_{it}}$$

5. Calculation of t- statistics of Abnormal returns

6. Testing the significance of an event on an individual company's Cumulative Abnormal Return (CAR)

7. Combine the Abnormal Returns (AR) of all the companies and calculate the average.

8. Test the Overall Significance of an event using the Cumulative Average Abnormal returns (CAAR).

3.9. DATA COLLECTION

3.9.1. SOURCES OF DATA

The study is based on secondary data, the data relating to financial statements are taken from annual reports of acquirer’s firms, the data relating to stock prices are taken from nifty 50 stock exchange and from published papers, articles, reports and newspapers and databases.

- Capitaline Databases
- Annual reports (Financial Statements)
- Securities Exchange Board of India reports
- Newspapers
- Other research Databases

3.9.2. POPULATION AREA

35 Merger deals in Indian Pharmaceutical Sector has been identified for the period.

3.9.3. SAMPLE SIZE

The data was collected from all the companies with respect to Mergers and Acquisition deals listed on NSE, Nifty 50. Further the sample is based on mergers for the period 2010 – 2020 and the data on mergers for the entire period have been collected from Capitaline databases, annual reports, financial statements, articles and newspapers. 35 M& A deals in India were identified but only 30 companies are selected based on the required available financial data. 30 companies met the criteria and thus constitute the final sample for the study.

TABLE 3.2: PHARMACEUTICALS COMPANIES FINALIZED FOR THE STUDY

Sl. No	Acquirer Company	Target Company
1	Pfizer Ltd	Wyeth Ltd
2	Torrent Pharmaceuticals Ltd	Elder Pharmaceuticals Ltd
3	Cadila Healthcare Ltd	Liva Healthcare Ltd, Zydus Animal Health Ltd, Zydus Pharmaceuticals Ltd.
4	Shukra Pharma Ltd (Relish Pharmaceuticals Ltd)	Proper Dealcomm Pvt Ltd
5	TTK Healthcare Ltd	TTK Protective Devices Ltd, Techno Services Ltd
6	J B Chemicals & Pharmaceuticals Ltd	J B Chemicals & Pharmaceuticals Ltd has acquired Bharati S. Mody Investments Pvt Ltd, Shirish B. Mody Investments Pvt Ltd, Dinesh Mody Securities Pvt Ltd, Ansuya Mody Securities Pvt Ltd, Kumud Mody Securities Pvt Ltd, Jyotindra Mody Holdings Pvt Ltd, Shirish B. Mody Investments Pvt Ltd.
7	Cipla Limited	Cipla merged with InvaGen Pharmaceuticals Inc and Exelan Pharmaceuticals Inc for US $ 500 Million.
8	Glenmark Pharmaceuticals Ltd	Glenmark Generics Ltd, Glenmark Access Ltd.

9	Sun Pharmaceuticals Industries Ltd	Ranbaxy Laboratories Ltd
10	Ind- Swift Ltd	Essix Bioscience Ltd
11	Piramal Enterprises Ltd	Piramal Pharmaceutical Development Services P Ltd, Oxygen Bio-Research Pvt Ltd
12	Aurobindo Pharma Ltd	Curepro Parenterals Ltd, Agile Malta Holdings Limited
13	Vivimed Labs Limited	Merged with ceative Health care private limited, Octtantis Nobel Labs Private limited and Klar Sehen Private Limited
14	Wockhardt Ltd	Vinton Healthcare Ltd, Wockhardt Biopharm Ltd
15	Strides Arcolab Ltd	Shasun Pharmaceuticals Ltd and South African drug maker ASPEN Pharmacare’s generic Pharmaceuticals business
16	Dr. Reddy’s Laboratories	Belgium-based pharma company UCB in India
17	Granules India Ltd	Auctus Pharma Ltd
18	Hester Biosciences Ltd	Innoves Animal Health Private Limited, Hester Biosciences Mauritius Limited, Diavetra Lifesciences Private Limited, Gujarat Agrofarm Limited
19	Natco Pharma Ltd	Natco Organics Ltd
20	FDC Ltd	FDC Ltd has acquired Anand Synlhochem Ltd, Soven Trading & Investment Company Pvt Ltd, Transgene Trading & Investment Company Pvt Ltd, Sudipta Trading & Investment Pvt Ltd
21	Lupin Limited (Inbound Merger)	Lupin Limited merged with US based Gavis Pharmaceuticals LLC and its affiliate NOVEL Laboratories .
22	Nutraplus India Ltd	Vetpharma Limited
23	Lyka Labs Ltd	Lyka Healthcare Ltd, Lyka Exports Ltd
24	Suven Life Science	Suven Nistaa Pharma Pvt Ltd
25	Ipca Laboratories Ltd	Tonira Pharma Ltd
26	Aarti Drugs Ltd	Suyash Laboratories Ltd,

27	Amrutanjan Health Care Ltd	Suven Nistaa Pharma Pvt Ltd
28	Shilpa Medicare Ltd	Navya Biologicals Pvt Ltd
29	Neuland Laboratories Ltd	Neuland Health Sciences Pvt Ltd, Neuland Pharma Research Pvt Ltd
30	Gufic BioSciences Ltd	Gufic Stridden Bio-Pharma Private Ltd

3.9.4. DATA ANALYSIS TOOLS

The data is analysed and interpreted in a manner that ensures ease of comprehension and meaningful insights. The study employs Descriptive statistics methods, facilitated by SPSS software, to elucidate key findings. The study uses Paired sample t-test for the purpose of analysis and examines the (-3 years) period before the event and (+3 years) period after the event effect in Indian pharmaceutical company.

The study also apply Event Study Methodology and examines the impact of mergers and acquisitions on stock prices to find whether shareholders have seen notable abnormal returns using t-test by examining Abnormal returns, t-statistics of Abnormal returns, CAR, t-statistics of CAR, Average Abnormal Return and CAAR, t-statistics of CAAR for period before the event and period after the event (-30, + 30), showing the significant impact for -2days, -5days, -11 days and +2days, +5 days +11days and for Combined number of days 5 days (-2 +2), 11 days (-5+5) and 23 days (- 11+ 11 days) testing the overall significant impact of stock prices on M&A.

CHAPTER – 4

4.1. Analysis of Data and Results

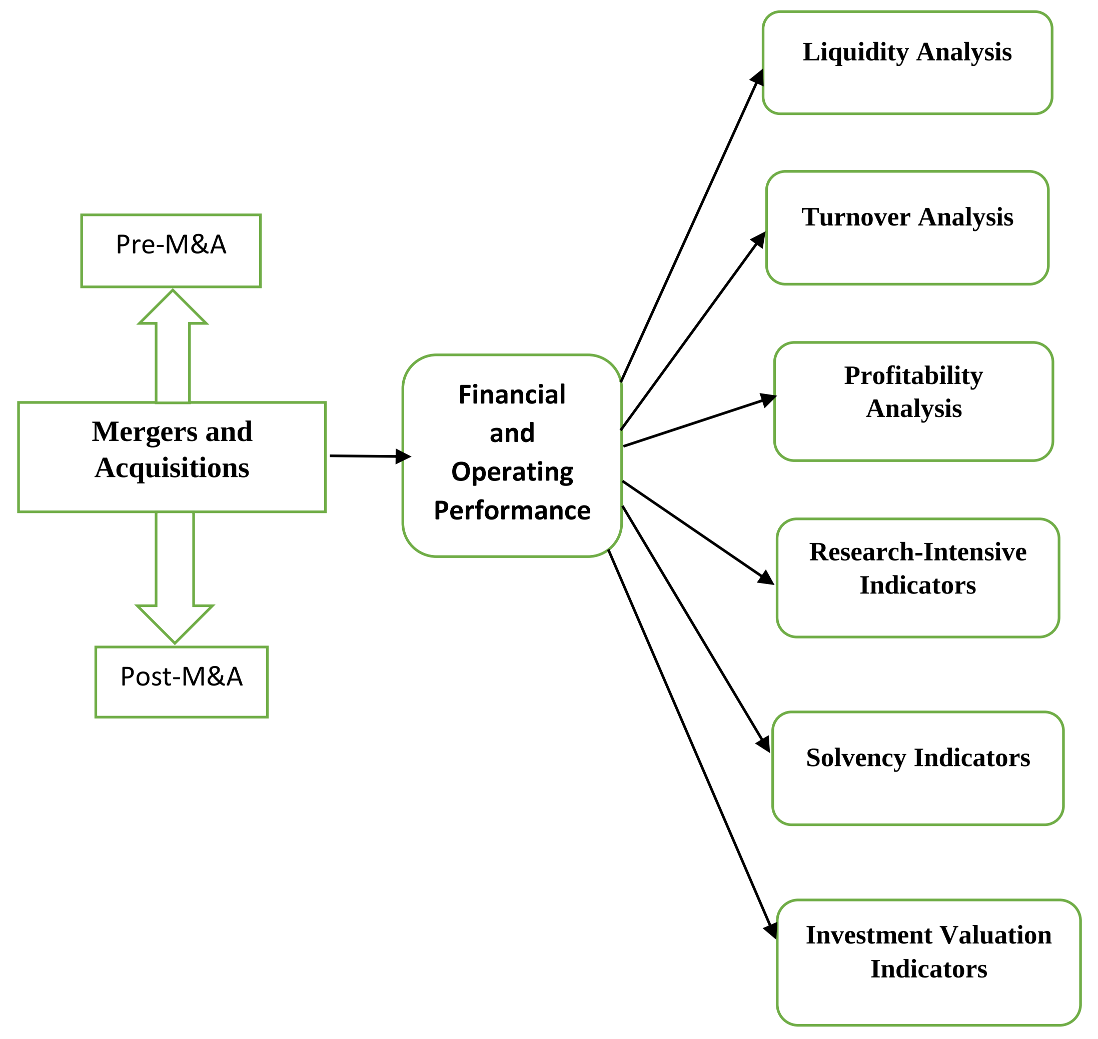
Financial and operational performance of selected pharmaceutical companies in India are examined to study whether mergers and acquisitions have statistically significant impact on the acquirers' companies and increase their financial results post merger. The study applies performance evaluation metrics, a structured approach examining both financial and operating aspects to deliver a holistic view of performance.

The financial performance of target companies certainly increases as the target company receives takeover premium, but the acquirer's companies' performance may increase or decrease post merger. The study analyses the financial statements of 30 prominent pharmaceutical companies examining 32 financial indicators three years before the merger (pre-merger period) and three years after the merger (post-merger period) using a paired sample t-test and examines the effect in Indian pharmaceutical company.

Moreover, the study investigates the underlying reasons for the changes in financial indicators following mergers, with the aim of understanding the factors that drive the observed effects after the mergers.

Figure 14: FRAMEWORK –

MERGERS AND ACQUISITION



Source: Prepared by researcher

4.1.1. Analysis of Liquidity Ratios of Selected Indian Pharmaceutical Companies

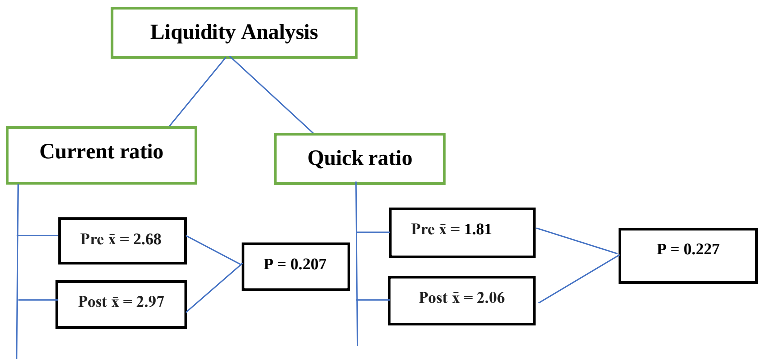
Liquidity analysis is examined to determine whether Pharmaceutical Companies maintain sufficient funds to pay their short term obligations i.e. current liabilities by converting their current assets into cash. Maintaining Liquidity is essential for organizations to pay off short term debts as and when they arise and to have sufficient working capital in the organization.

Table 4.1.1.1: Liquidity Analysis of Selected Indian Pharmaceutical Companies

Ratios	Type	Mean	Standard Deviation	t-value	P-Value	Hypotheses
Current Ratio	Pre	2.6844	0.9769	1.289	0.207	Accept Ho
	Post	2.9653	1.1939			
Quick Ratio	Pre	1.8119	0.8777	-1.236	0.227	Accept Ho
	Post	2.0637	1.0303			

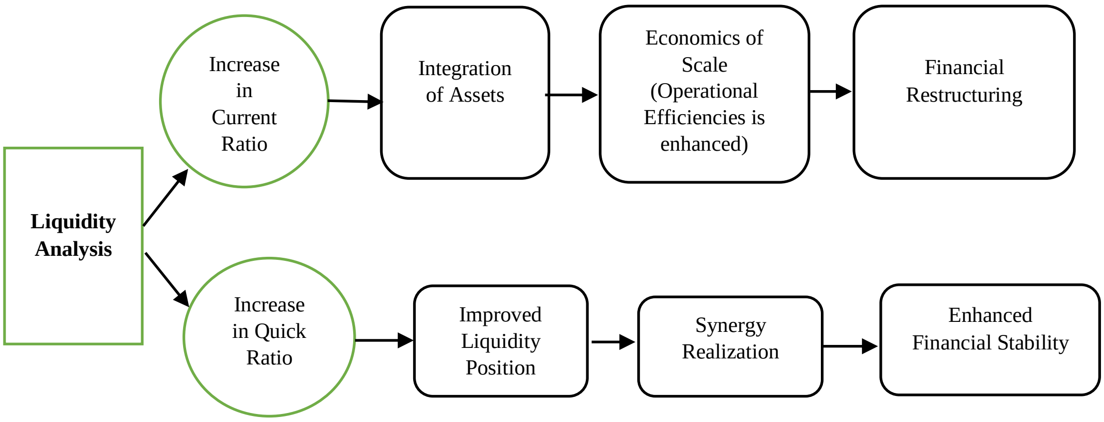
*Reject Ho– Denotes there is Statistically Significant Relationship.

Flow Chart 4.1.1.1: Liquidity Analysis of Selected Indian Pharmaceutical Companies



Source: Prepared by researcher

Flow Chart 4.1.1.2: Factors Contributing to Increase in Liquidity Ratios Post Merger and Acquisitions in Indian Pharmaceutical Companies



Source: Prepared by researcher

Results and Discussion:

The analysis of liquidity position is examined through current ratio and quick ratio. Table 4.1.1.1. has been generated using the computations provided in Annexure A. From the analysis, it shows that mean of current ratio in the pre- merger period is 2.6844 times and in the post merger period is 2.9653 times and the mean difference is 0.2809 which indicates there is increase in the current ratio post merger and the p – value ($p = 0.207 > 0.05$) with t-value (-1.289). The data suggests that there is no statistically significant impact on the current ratio of selected Pharmaceutical Companies in India. The null hypothesis is accepted, as indicated by the p-value.

The mean of quick ratio during the pre- merger period is 1.8119 times and mean during the post merger period is 2.0637 times. The mean difference is 0.25171, there has been an observed increase in the quick ratio following the merger, supported by and the p-value ($p = 0.227>0.05$) with t-value (-1.289) infers that there is not statistically significance impact on the quick ratio and null hypothesis is accepted based on the p-value.

The comparison in liquidity ratios measured by current ratio and quick ratio before and after M&A in Indian Pharmaceutical Sector shows that the liquidity position of selected Indian pharmaceutical companies is satisfactory, and the acquiring firms have managed to maintain liquidity during both the phases.

The increase in the liquidity ratios of the acquiring pharmaceutical company can be due to the integration of assets, which increases current assets and enhances operational efficiencies. This enhancement facilitates more effective management of inventories and receivables. Moreover, financial restructuring during the acquisition process significantly contributes to the strengthening the liquidity position.

But the results after using paired sample t-test indicate that there is no statistically significant impact on the liquidity position of acquiring firms post M&A. This outcome may be attributed to several factors specific to the pharmaceutical industry.

Firstly, pharmaceutical companies often allocate substantial capital expenditures to research and development (R&D) activities. These investments are essential for innovation and product development but can temporarily strain short-term liquidity due to the upfront costs involved. Additionally, the nature of the pharmaceutical sector as a defensive industry necessitates the maintenance of sufficient levels of inventory. This strategic approach ensures that pharmaceutical companies can meet demand for their products, particularly during times of market volatility or disruption.

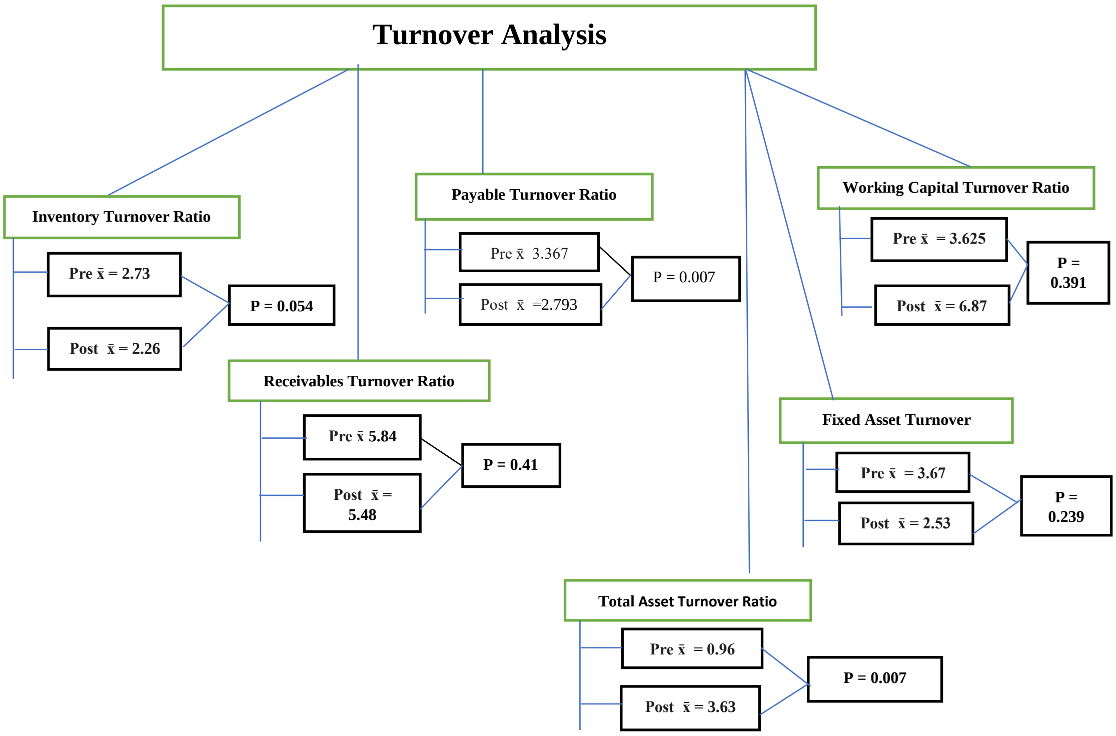
4.1.2. Analysis of Turnover ratios of Selected Indian Pharmaceutical Companies during Pre-Merger Period and Post -Merger Period

Pharmaceutical companies have more mergers and acquisitions than any other industries in terms of deals and the amount spend on mergers and acquisitions, turnover ratios are analyzed to indicate how productivity the assets and resources of the acquirer's firm are being utilized and the amount of revenue generated by utilizing the assets.

Table 4.1.2.1: Turnover Analysis of Selected Indian Pharmaceutical Companies

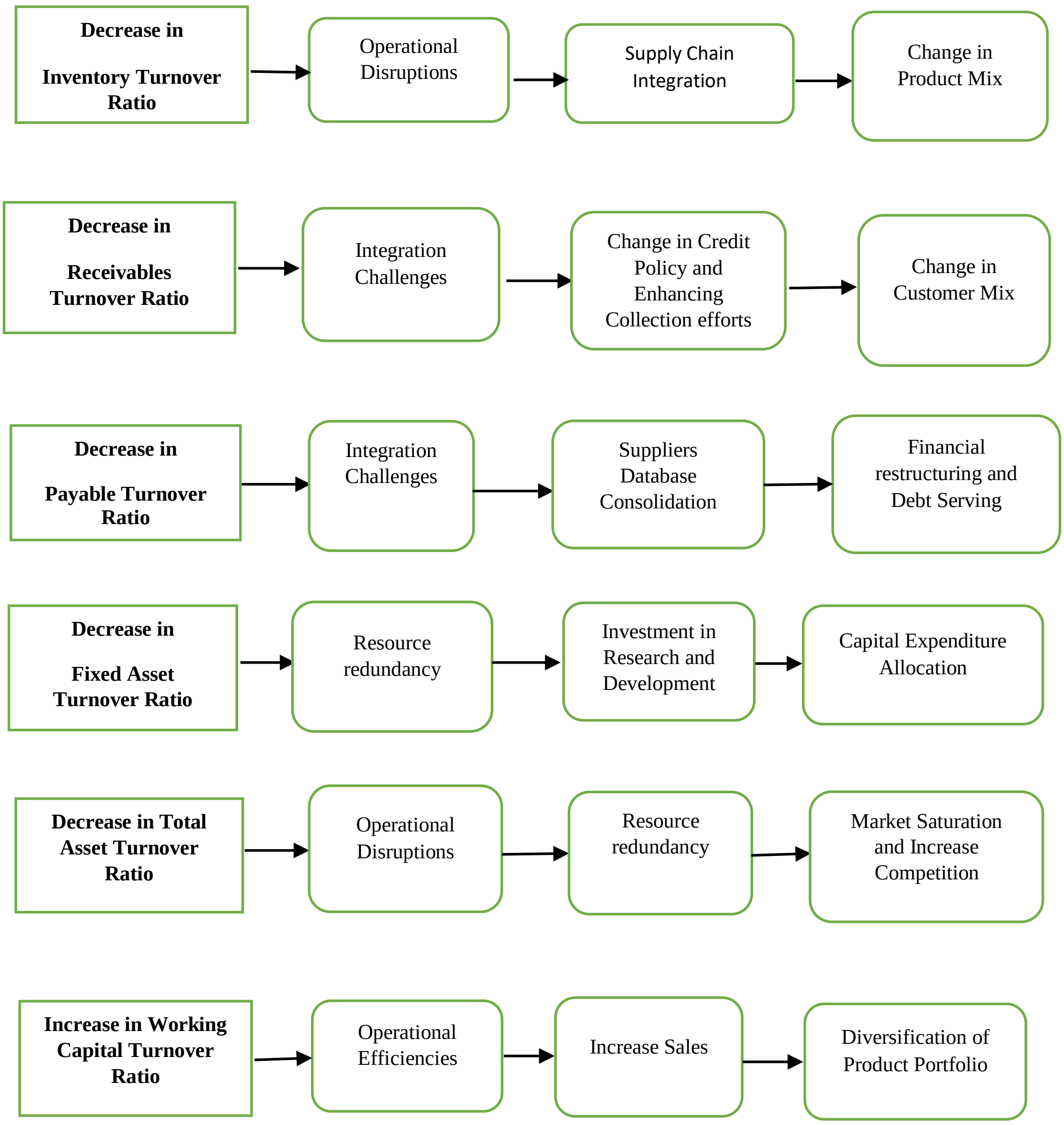
Ratios	Type	Mean	Standard Deviation	t-value	P-Value	Hypotheses
Inventory Turnover Ratio	Pre	2.7278	1.6514	2.008	0.054	Accept Ho
	Post	2.2625	1.3046			
Receivables Turnover Ratio	Pre	5.8424	3.0254	0.827	0.415	Accept Ho
	Post	5.4868	3.0763			
Payable Turnover Ratio	Pre	3.3679	1.5461	2.886	**0.007**	**Reject Ho**
	Post	2.7935	1.2229			
Fixed Asset Turnover Ratio	Pre	3.6678	5.2276	1.202	0.239	Accept Ho
	Post	2.5289	2.3541			
Total Asset Turnover Ratio	Pre	1.14	0.6007	2.915	**0.007**	**Reject Ho**
	Post	0.9565	0.5476			
Working Capital Turnover Ratio	Pre	3.6254	2.7890	-0.872	0.391	Accept Ho
	Post	6.8716	20.9891			

Flow Chart 4.1.2.1: Turnover Analysis of Selected Indian Pharmaceutical Companies



Source: Prepared by researcher

Flow Chart 4.1.2.2: Factors Contributing to Increase and Decrease in Turnover Ratios Post Merger and Acquisitions in Indian Pharmaceutical Companies



Source: Prepared by researcher

Results and Discussion:

Table 4.1.2.1. has been generated using the computations provided in Annexure B.

The analysis indicates that there is a decrease in mean in the inventory turnover ratio post merger and the results show that the p-value ($p = 0.054 > 0.05$) with t – value 2.008 is marginally high at 0.05 level of significance whereas it proves to be significant at 0.10 indicates that there is no statistically significant impact on the inventory turnover ratio and thus, null hypothesis is accepted.

With the increase in the inventory holding period increasing from 132 days to 159 days, it is important for the acquirer companies to reassess their inventory management practices, polices and stock levels by identifying slow moving, obsolete and surplus items, they can streamline inventory management processes, enhance efficiency, and potentially increase sales and liquidity position.

The results of analysis depict that mean of receivable turnover ratio has decrease post merger and the receivable collection period had increased from 61.61 days to 65.61days and the p-value ($p = 0.415 > 0.05$) with t-value (0.0827) infers that there is no statistical significance impact in the receivables turnover ratio post mergers and acquisition on the acquirer's companies and null hypothesis is accepted. The increase in the firm's collection of accounts receivable indicates the time lag in credit policy, debt collection and payment period. The acquirer companies can improve their receivable management turnover rate by building strong customer relationship management, implementing effective credit policies and through regular follow up with customers and thereby utilizing its assets and resources in the best possible way.

The results depict that there is a decrease in the mean payable turnover ratio post-merger and the mean difference is 0.5744 times and the payable payment period has increased from 107 days to 129 days. The ($p = 0.007 < 0.05$) with t-value (2.886) concludes that there is statistically significant impact post merger and accordingly the null hypothesis is rejected. The results indicates that the acquirer companies are taking more time to pay off to its suppliers and has an improved supplier relationship.

The results reveals that the mean of fixed asset turnover ratio has decreased post merger and the mean difference is 1.1389 times, signifying a decrease in the fixed asset turnover ratio following the merger. The $p = 0.239 > 0.05$ with t-value 1.202 infers that there is no substantial impact on the fixed asset turnover ratio post merger. The decrease in fixed asset turnover ratio may be due to merged entity inherits redundant or underutilized assets, thereby reducing overall asset efficiency. Moreover, increased investment in research and development (R&D) could contribute to a decrease in fixed asset turnover ratio if the revenue generated from new products has not yet matched the increased investment. Additionally, the merged entity might allocate significant resources to capital expenditures for expansion or modernization, leading to a decrease in fixed asset turnover ratio until the new assets start contributing to revenue.

The results also reflect that there is a decrease in the mean of total asset turnover post merger and the p value $= 0.007 < 0.05$ with t-value 2.915 implies that there is statistically significant impact on the total assets post merger and null hypothesis is rejected based on the p-value. The decrease in the total asset turnover ratio could be due to operational disruptions, impacting the efficiency of asset utilization. Furthermost, resource redundancy and slowdown in market growth following the merger could result in reduced revenue generation despite consistent or increased investment in total asset.

The analysis also shows that the mean of working capital turnover ratio has increased post merger but the p value ($p = 0.391 > 0.05$) with t-value -0.872 infers that there is no significant statistical impact on the acquirer company and the null hypothesis is accepted. The increase in working capital turnover ratio post merger may be due to expansion into new markets or an increased market share post-merger may result in higher sales volumes thereby improving the turnover of working capital. Additionally, the integration of operations post-merger could result in streamlined processes, reducing inefficiencies and optimizing the utilization of working capital.

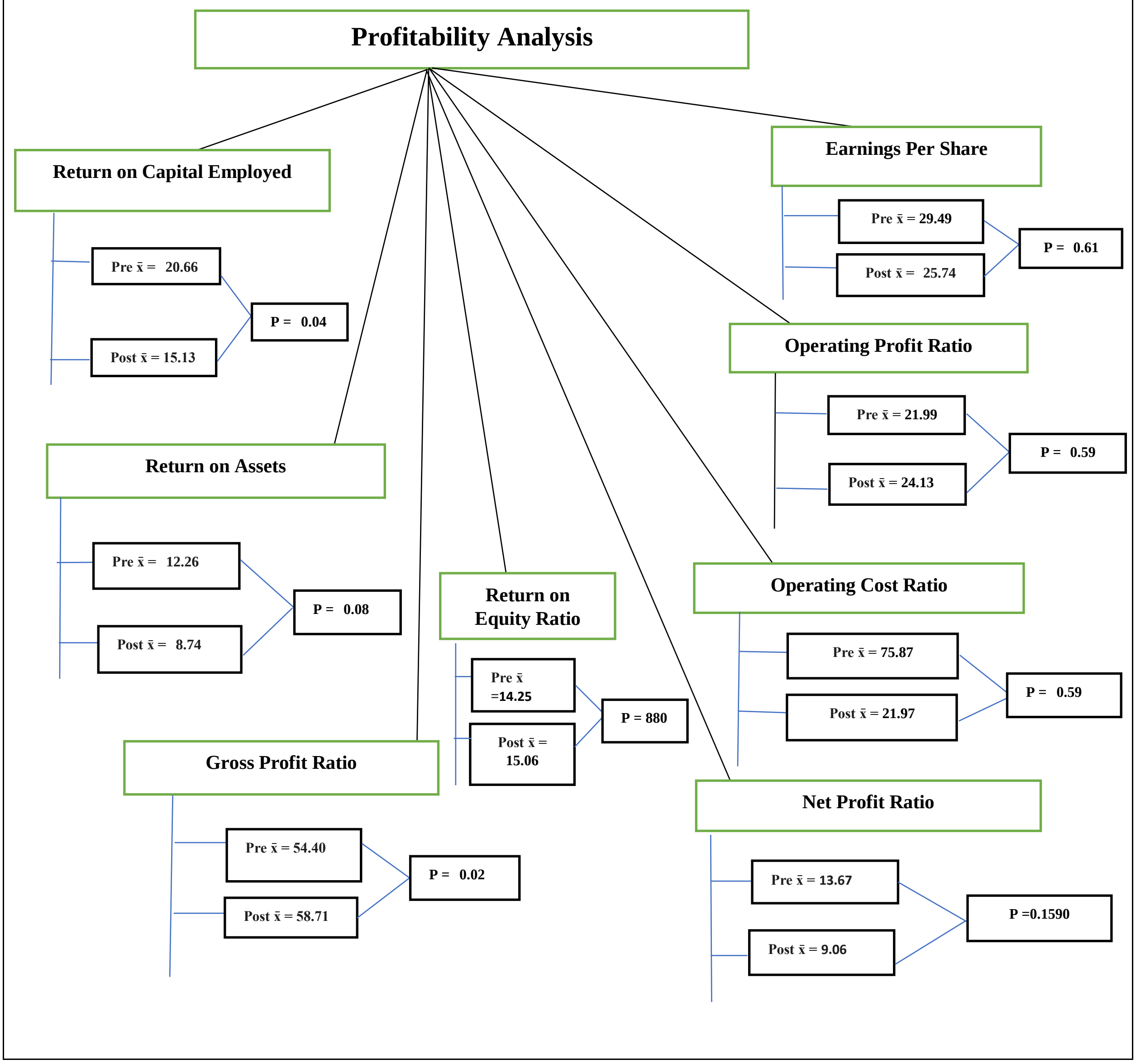
Thus, the examination using paired sample t-test represents there is statistically significant impact in terms of payable turnover ratio and total asset turnover ratio and the null hypothesis is rejected whereby fixed asset turnover ratio, inventory turnover ratio, receivable turnover ratio, working capital turnover ratio has no statistically significant impact on the financial performance and null hypothesis is accepted.

A decrease in the Turnover ratio post-merger within Indian pharmaceutical companies needs a thorough analysis to identify specific causes and implement strategies to enhance efficiency. Understanding these factors and the implications of such a decrease is vital for the management to guide the company towards efficient cash flow management and stronger financial health. Conversely an increase in the Working Capital Turnover Ratio post-merger in Indian pharmaceutical companies reflects improved operational efficiency, supply chain optimization, and market expansion.

4.1.3. Analysis of the Profitability Ratios of Selected Indian Pharmaceutical Companies

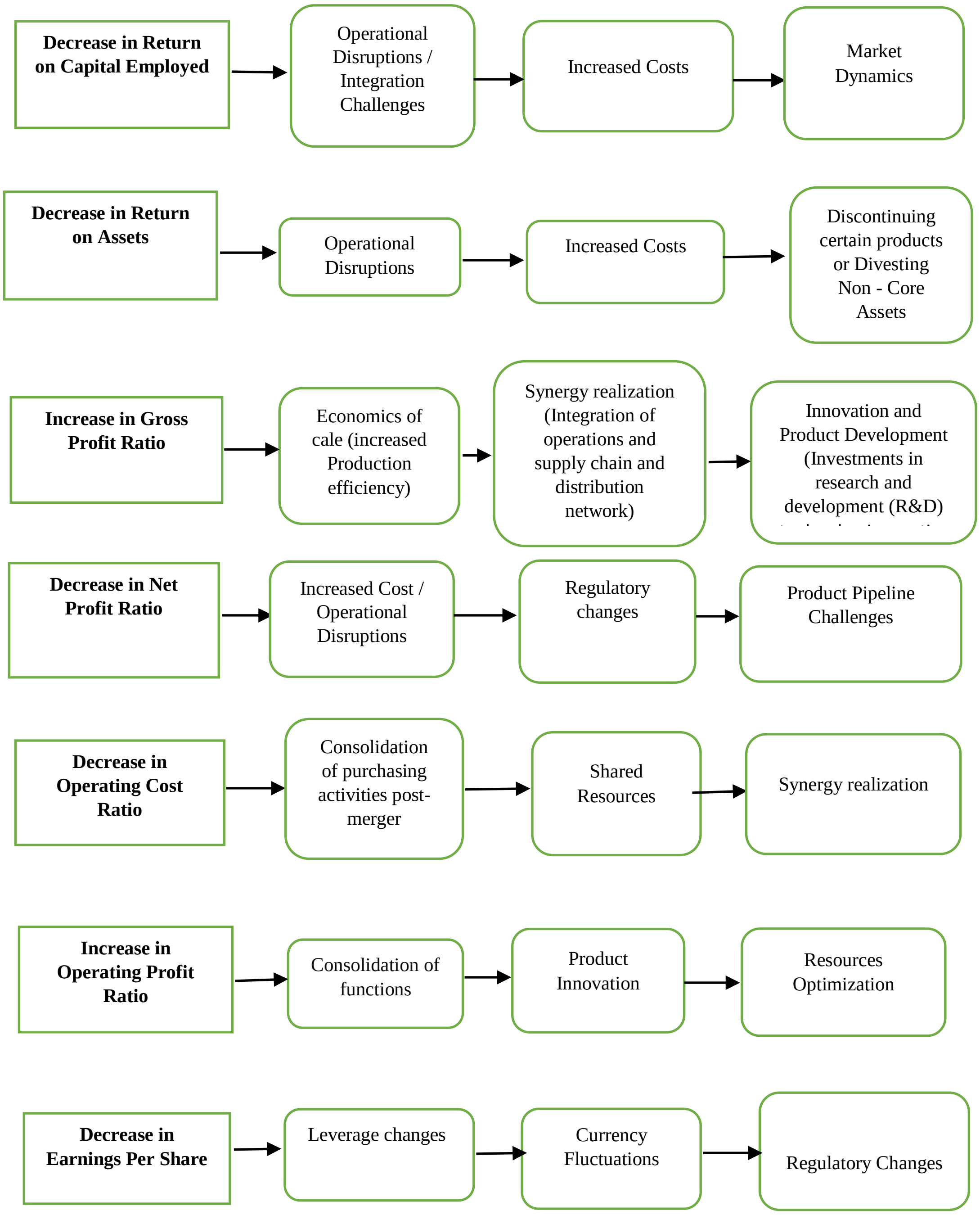
Table 4.1.3.1. Profitability Analysis of Selected Indian Pharmaceutical Companies						
Ratios	**Type**	**Mean**	**Standard Deviation**	**t-value**	**P-Value**	**Hypotheses**
Return on Capital Employed	Pre	20.6605	11.4778	2.0886	**0.0456**	**Reject Ho**
	Post	15.1254	10.3208			
Return on Assets	Pre	12.2565	9.7397	1.7842	0.0848	Accept Ho
	Post	8.7449	8.4748			
Gross Profit Ratio	Pre	54.4033	15.2424	-2.5040	**0.0181**	**Reject Ho**
	Post	58.7099	14.5807			
Net Profit Ratio	Pre	13.6732	16.2951	1.4454	0.1590	Accept Ho
	Post	9.0574	11.1840			
Operating Cost Ratio	Pre	78.0138	16.8772	0.5505	0.5861	Accept Ho
	Post	75.8718	17.7463			
Operating Profit Ratio	Pre	21.9862	16.8772	-0.5505	0.5861	Accept Ho
	Post	24.1282	17.7463			
Earnings Per Share	Pre	29.4936	37.5989	0.5090	0.6146	Accept Ho
	Post	25.7352	27.4250			

Flow Chart 4.1.3.1: Profitability Analysis of Selected Indian Pharmaceutical Companies



Source: Prepared by researcher

Flow Chart 4.1.3.2: Factors Contributing to Increase and Decrease in Profitability Ratios Post Merger and Acquisitions in Indian Pharmaceutical Companies



Source: Prepared by researcher

Results and Discussion:

Table 4.1.3.1. has been generated using the computations provided in Annexure C.

Profitability analysis is examined to evaluate the acquirer's companies' profits before and after Mergers and Acquisitions to ascertain the impact of mergers and acquisitions on the profitability ratios and provide financial information to investors, shareholders, debenture holders, financial institutions, creditors, government and others for better understanding and decision making.

The results reflect that there is a decrease in the mean of return on capital employed post merger but the p- value ($p = 0.046 < 0.05$) with t-value (2.086) infers that there is statistically significant impact in the return on capital employed and null hypothesis is rejected based on the p-value. The decrease in return on capital employed following mergers in Indian pharmaceutical companies may be attributed to various factors. Firstly, operational disruptions can affect productivity and efficiency, thus impacting profitability. Additionally, integration challenges stemming from different organizational cultures and processes may hinder post-merger performance. Moreover, increased costs associated with merging operations, systems, and personnel can be substantial and may have a negative impact on profitability in the short term. Furthermore, increased competition or pricing pressure in the pharmaceutical industry post-merger may decrease profit margins and reduce overall profitability.

The results show that the mean of return of assets has decrease post merger but the p-value ($p = 0.085 > 0.05$) with t-value (1.784) infers that there is no significant impact in the return on asset and null hypothesis is accepted. The decrease in return on assets (ROA) following a merger may be due to discontinuing certain products or divesting non-core assets as part of the merger process which may lead to a short-term revenue loss and impact profitability negatively.

The results show that there is also an increase in the mean of gross profit ratio post merger and the p- value (p =0.018 < 0.05) with t-value (-2.504) infers that there is statistically significant impact in the gross profit ratio and based on this the null hypothesis is rejected. The merging companies derive benefits from economies of scale, resulting in reduced per-unit production costs and higher gross profit margins. Following the merger, consolidation of purchasing activities may yield cost savings on raw materials or production inputs, further enhancing gross profit margins. Moreover, integration of operations post-merger can streamline processes, minimize inefficiencies, and increase productivity while lowering production costs. Furthermore, the integration of supply chains and distribution networks can result in cost savings and improved efficiency, thereby positively impacting gross profit margins. Moreover, investments in research and development (R&D) aimed at creating innovative products with higher profit margins can also significantly contribute to the increase in gross profit ratios.

The results also indicate a decrease in the mean of net profit ratio post merger, with a p-value (p = 0.159 > 0.05) and a t-value of 1.445, suggesting that there is no statistically significant impact on the net profit ratio. The null hypothesis is accepted based on the p-value. Costs associated with merging operations, systems, and personnel can be substantial and may negatively impact profitability in the short term. Additionally, merging two companies can lead to operational disruptions, affecting productivity and efficiency, which may further impact profitability. Furthermore, the pharmaceutical industry is subject to regulatory changes, both domestically in India and internationally. Post-merger, companies may encounter regulatory hurdles or changes in compliance requirements. Merged pharmaceutical companies may also face challenges in their product pipelines, such as delays in new drug approvals or patent expirations of key products, which can affect revenue streams and consequently, the net profit ratio.

The results indicate a decrease in the operating cost ratio post-merger, with a p-value ($p = 0.5861 > 0.05$) and a t-value of 0.551, suggesting that there is no statistically significant impact on the operating cost ratio. Therefore, the null hypothesis is accepted based on the p-value. Similarly, the results also reveal an increase in the operating profit ratio post-merger for the acquirer company, with a p-value ($p = 0.586 > 0.05$) and a t-value of 0.551, indicating that there is no statistically significant impact on the operating profit ratio. Consequently, the null hypothesis is accepted. The decrease in the operating cost ratio and increase in operating profit ratio contributes to improved profitability and operational efficiency.

The results also indicate a decrease in earnings per share post-merger, with a p-value ($p = 0.615 > 0.05$) and a t-value of 0.551, suggesting that there is no statistically significant impact. Therefore, the null hypothesis is accepted based on the p-value. The decrease in earnings per share (EPS) post-merger may be attributed to several factors. Delays in obtaining regulatory approvals for merged entities or challenges in product integration can impact revenue and profitability, consequently leading to lower EPS. Additionally, exchange rate fluctuations, especially if the merged entity operates in multiple countries, can affect financial results and EPS. Moreover, changes in the capital structure post-merger, such as increased debt levels, can influence interest expenses and EPS.

A comprehensive examination of the reasons behind and probable solutions for the decline in Return on Capital Employed, Return on Assets, Net Profit Ratio, Operating Cost Ratio, and Earnings per Share (EPS) following mergers and acquisitions within the Indian pharmaceutical sector is essential to enhancing profitability.

4.1.3.2. DUPONT ANALYSIS

Table 4.1.3.2: DuPont Analysis (Return on Equity Ratio) of Selected Indian Pharmaceutical Companies

Ratio	Type	Mean	Standard Deviation	t-value	P-Value	Hypotheses
Return on Equity Ratio	Pre	14.2580	27.6797	-.152	.880	Accept Ho
	Post	15.0580	16.0856			

Flow Chart 4.1.3.3: Factors Contributing to Increase in Return on Equity Post Merger and Acquisitions in Indian Pharmaceutical Companies

Source: Prepared by researcher

Results and Discussion:

Table 4.1.3.2. has been generated using the computations provided in Annexure C.

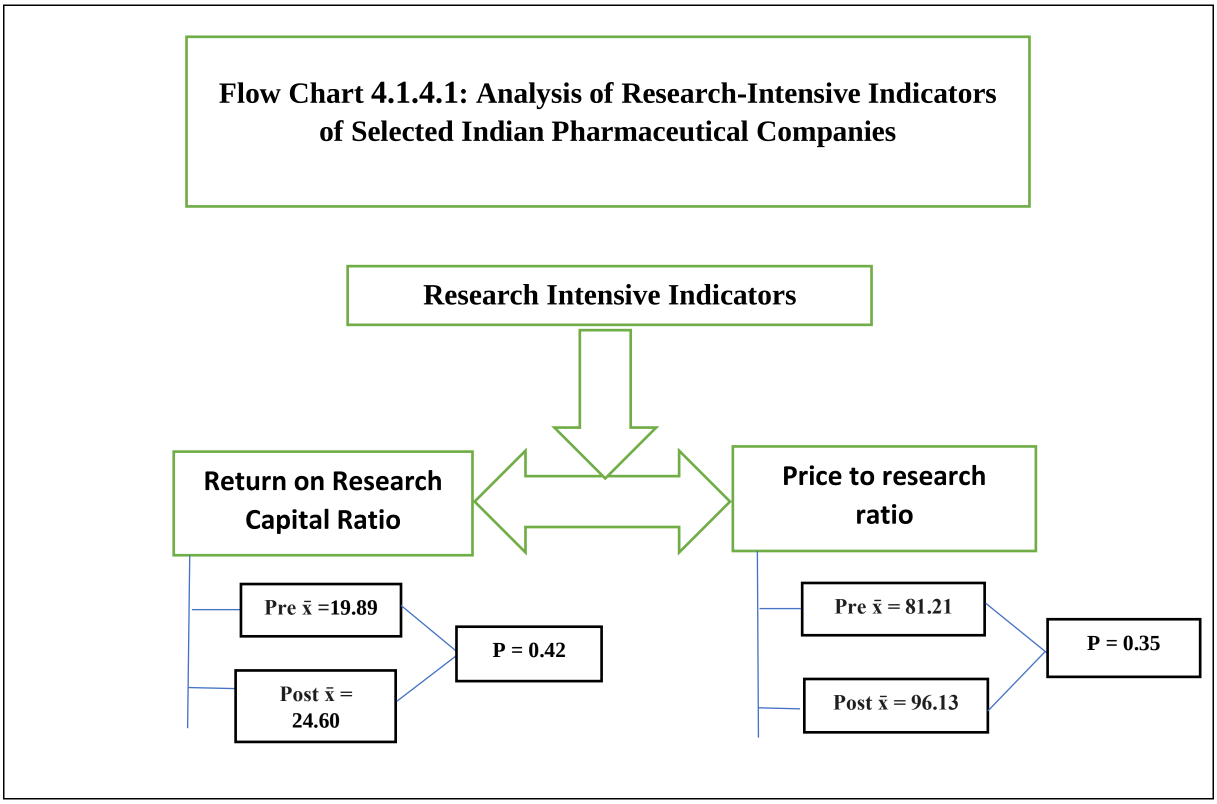
The above table indicates that the mean of return on equity has increased post-merger, but there is no statistically significant impact on the return on equity. An increase in Return on Equity (ROE) after mergers in Indian pharmaceutical companies suggests effective integration efforts, improved profitability, and the implementation of strategic growth initiatives. ROE serves as an indicator that the merger has successfully translated into enhanced profitability and shareholder value. A higher ROE post-merger signifies improved operational efficiency and profitability, indicating successful R&D investments and the ability to monetize innovation.

4.1.4. Analysis of Research-Intensive Indicators of Selected Indian Pharmaceutical Companies during Pre-Merger Period and Post -Merger Period

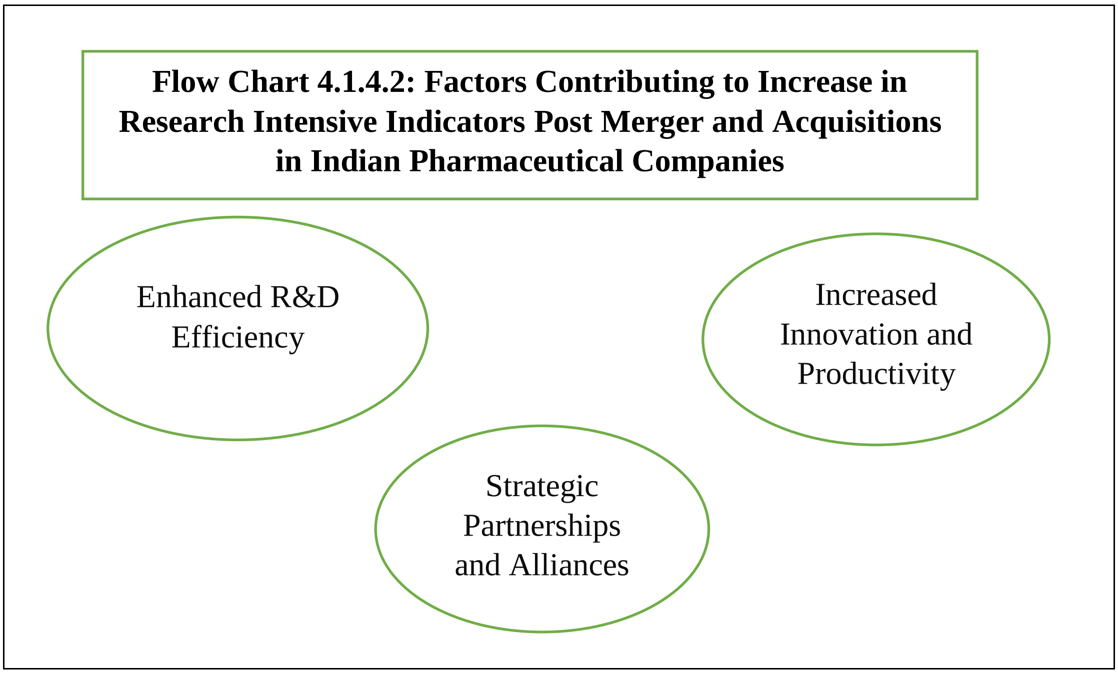
Investments made in research takes many years before tangible assets generates return to the organization and it varies between industries and even within the sectors of a specific industry.

Investment in research and development by Indian Pharmaceutical Industry has been low and it is due to low levels of profits and comparatively small size of companies. Research Intensive Indicators indicates how effectively the company is employing its R&D to generate returns and research and development process are important for drug development in the pharmaceutical industry.

Table 4.1.4.1: Research Intensive Indicators of Selected Indian Pharmaceutical Companies						
Ratio	**Type**	**Mean**	**Standard Deviation**	**t-value**	**P-Value**	**Hypotheses**
Return on Research Capital Ratio	Pre	19.8929	18.9105	-.824	0.416	Accept Ho
	Post	24.6067	29.1067			
Price to research ratio	Pre	81.2146	142.0688	-.944	0.353	Accept Ho
	Post	96.1327	145.7708			



Source: Prepared by researcher



Source: Prepared by researcher

Results and Discussion:

Table 4.1.4.1. has been generated using the computations provided in Annexure D.

The above table evident that there is an increase the mean of return on research capital ratio and Price to research ratio post merger but it has no statistically insignificant impact on acquirer's companies.

Return on Research Capital (RORC) ratio assesses a pharmaceutical company's efficiency in leveraging its research and development (R&D) investments by analysing the returns generated from these expenditures. On the other hand, Price to Research Ratio (PRR) evaluates the relationship between a pharmaceutical company's market capitalization and its investment in research and development (R&D).

The increase in the Return on Research Capital (RORC) ratio post-merger and acquisitions signifies enhanced efficiency and effectiveness in converting R&D investments into profitable outcomes. Conversely, the increase in the Price to

Research Ratio (PRR) post-merger in Indian pharmaceutical companies indicates that investors are assigning a higher valuation to the company's R&D efforts relative to its market capitalization.

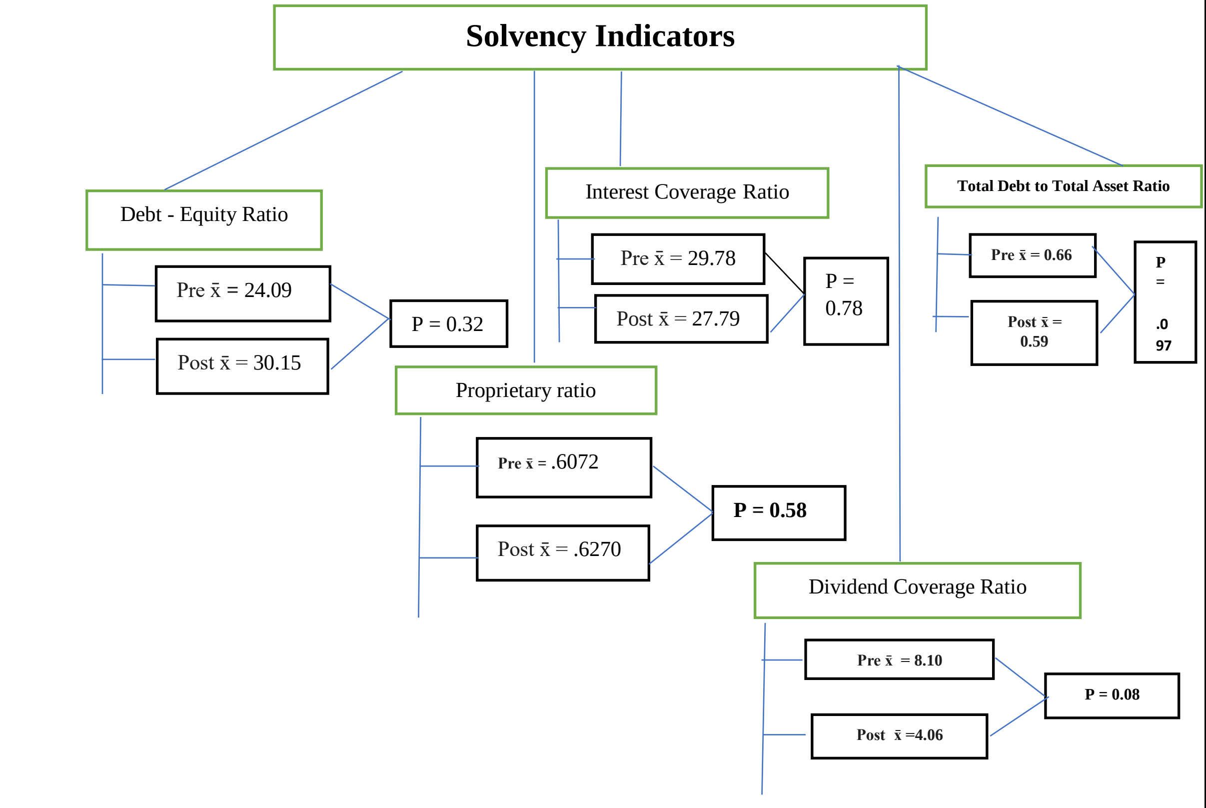
4.1.5. Analysis of Solvency Indicators of Selected Indian Pharmaceutical Companies

Solvency ratios are examined to analyse the long term solvency position of the acquirer company post merger and to evaluate the ability of the acquirer company to pay its long-term obligations.

Table 4.1.5.1: Solvency Analysis of Selected Indian Pharmaceutical Companies

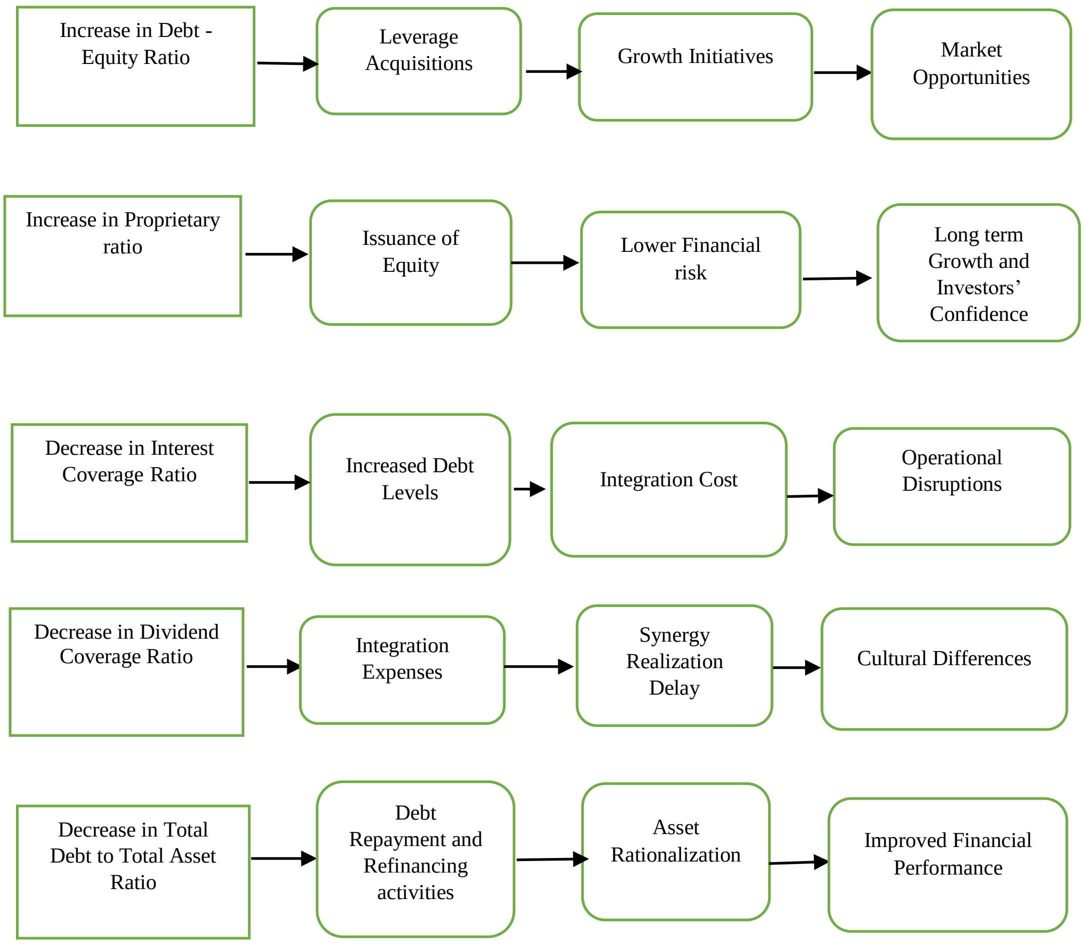
Ratios	Type	Mean	Standard Deviation	t-value	P-Value	Hypotheses
Debt - Equity Ratio	Pre	24.0962	128.8452	-0.9915	0.3297	Accept Ho
	Post	30.1541	162.2762			
Proprietary ratio	Pre	.6072	.2108	-0.5516	0.5854	Accept Ho
	Post	.6270	.2227			
Interest Coverage Ratio	Pre	29.7847	54.0877	0.2703	0.7889	Accept Ho
	Post	27.7957	52.3301			
Dividend Coverage Ratio	Pre	8.1031	8.0715	1.8074	0.0811	Accept Ho
	Post	4.0651	9.6461			
Total Debt to Total Asset Ratio	Pre	0.6648	.3356	1.714	0.097	Accept Ho
	Post	0.587069	.2871			

Flow Chart 4.1.5.1: Analysis of Solvency Indicators of Selected Indian Pharmaceutical Companies during Pre-Merger Period and Post -Merger Period



Source: Prepared by researcher

Flow Chart 4.1.5.2: Factors Contributing to Increase and Decrease in Solvency Ratios Post Merger and Acquisitions in Indian Pharmaceutical Companies



Source: Prepared by researcher

Results and Discussion:

Table 4.1.5.1. has been generated using the computations provided in Annexure E.

The above table indicates that there is an increase in the mean of the debt equity ratio and proprietary ratio post-merger, but there is no statistically significant impact, and the null hypothesis is accepted. The acquiring company may have utilized debt financing to facilitate the merger or acquisition, thereby leading to an increase in total debt. Additionally, strategic investments or expansion projects, such as research and development (R&D) initiatives, new product launches, or market expansion efforts, may necessitate additional financing through debt. Consequently, the rise in the debt-equity ratio may signify that the merged entity is investing in new assets or expanding existing operations.

The increase in the mean of the proprietary ratio post-merger indicates that the merged entity has raised additional equity capital to finance the merger or acquisition, resulting in an increase in equity financing. Elevating the proprietary ratio can improve financial stability and mitigate financial risk, as equity capital does not require the obligation of regular interest payments or fixed repayment schedules. Furthermore, higher equity financing can furnish the company with a more stable and sustainable source of capital for long-term growth endeavours, such as research and development, market expansion, or acquisitions.

The results depict a decrease in the mean of the interest coverage ratio, dividend coverage ratio, and total debt to total asset ratio post-merger, with no statistically significant impact observed. Consequently, the null hypothesis is accepted.

The decrease in the interest coverage ratio (ICR) and dividend coverage ratio (DCR) may be attributed to costs associated with integrating operations and systems post merger, which can increase overall expenses, impacting earnings before interest and taxes (EBIT) and subsequently reducing the ICR and earnings available for dividend payments. Delays in realizing anticipated synergies from the merger may also lead to lower-than-expected earnings, affecting the company's ability to cover dividends

Furthermore, the decrease in the total debt to total asset ratio may be due to the merged entity prioritizing the reduction of debt levels post-merger to strengthen its balance sheet and improve financial stability

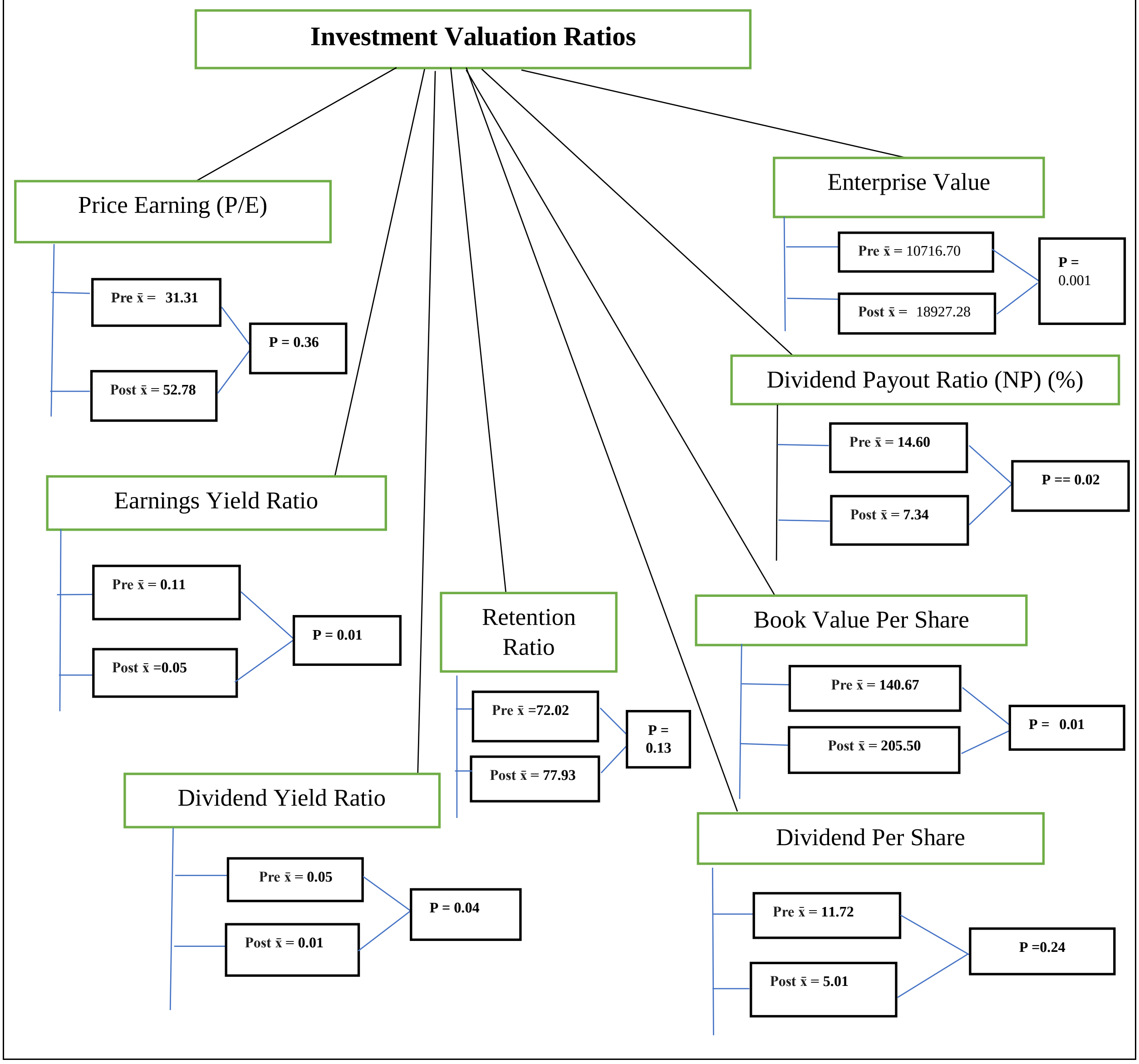
Overall, the solvency of all Indian pharmaceutical companies is satisfactory in selected Indian pharmaceutical companies.

4.1.6. Analysis of Investment Valuation Ratios of Selected Indian Pharmaceutical Companies

Investment valuation ratios help the investors to compare the acquirer companies' financial performance and evaluate the worth of the target companies in terms of assets, liabilities and its future potential earnings and guide decision making.

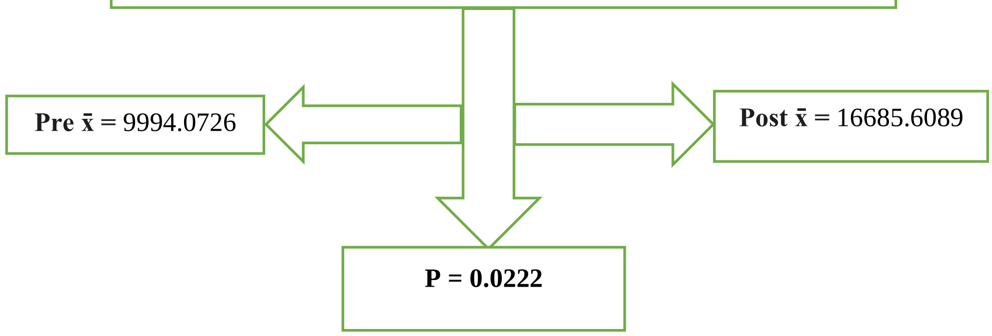
Table 4.1.6.1. Investment Valuation Indicators of Selected Indian Pharmaceutical Companies						
Ratios	**Type**	**Mean**	**Standard Deviation**	**t-value**	**P-Value**	**Hypotheses**
Price Earning (P/E)	Pre	31.3157	75.6847	-0.9308	0.3597	Accept Ho
	Post	52.7846	94.6495			
Earnings Yield Ratio	Pre	0.1094	0.123	2.8009	0.009	**Reject Ho**
	Post	0.0472	0.0389			
Dividend Yield Ratio	Pre	0.0455	0.095	2.1297	0.0418	**Reject Ho**
	Post	0.0087	0.01551			
Retention Ratio	Pre	72.0264	30.2172	-1.5237	0.1384	Accept Ho
	Post	77.9361	33.7334			
Dividend Per Share	Pre	11.7226	30.9338	1.1991	0.2402	Accept Ho
	Post	5.0128	6.3258			
Book Value Per Share	Pre	140.6686	146.0294	-2.9948	0.0056	**Reject Ho**
	Post	205.4974	219.6206			
Dividend Payout Ratio (NP) (%)	Pre	14.5964	15.4439	2.5269	0.0172	**Reject Ho**
	Post	7.3446	11.6717			
Enterprise Value	Pre	10716.6959	19841.7616	-2.7579	0.001	**Reject Ho**
	Post	18927.2847	32333.9809			
Market Value Added	Pre	9994.0726	20014.64330	-2.4163	0.0222	**Reject Ho**
	Post	16685.6089	31192.07080			

Flow Chart 4.1.6.1: Investment Valuation Ratios of Selected Indian Pharmaceutical Companies during Pre-Merger Period and Post-Merger Period



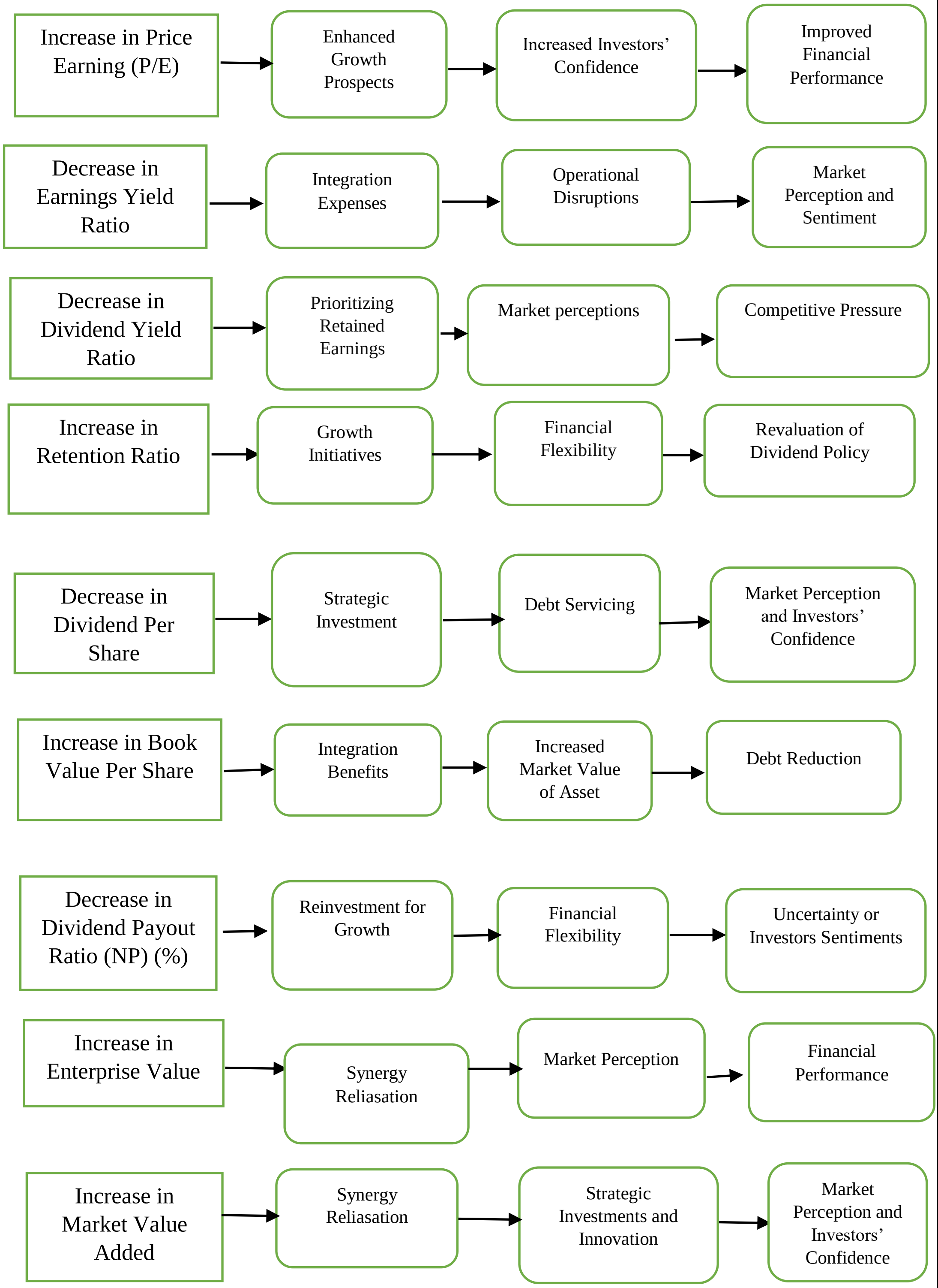
Source: Prepared by researcher

Flow Chart 4.1.6.2: Market Value Added of Selected Indian Pharmaceutical Companies during Pre-Merger Period and Post-Merger Period



Source: Prepared by researcher

Flow Chart 4.1.6.3: Factors Contributing to Increase and Decrease in Investment Valuation Ratios Post Merger and Acquisitions in Indian Pharmaceutical Companies



Source: Prepared by researcher

Results and Discussion:

Table 4.1.6.1. has been generated using the computations provided in Annexure F.

The results depict that there is increase in the price to earnings ratio post-merger. The p – value ($p = .360 > 0.05$) with t-value (-.931) infers that there is no statistically significant impact in the price to earnings ratio of Selected Pharmaceutical Companies in India and null hypothesis is accepted based on the p-value.

The rise in the Price Earnings ratio can be attributed to merging companies gaining access to new markets, distribution channels, or profitable areas, thereby driving revenue growth and strengthening investor confidence in the company's future earnings. Investors may view the merger as strategically profitable, leading to increased confidence in the company's capability to execute its growth strategy and deliver robust financial performance. Furthermore, operational improvements, cost synergies, or revenue expansion strategies post-merger may contribute to increased earnings, consequently increasing the P/E ratio as investors anticipate sustained profitability growth.

The results reflect that the mean of Earnings Yield Ratio has decrease post-merger. The p – value ($p = 0.009 < 0.05$) with t-value (2.801) infers that there statistically significant impact in the Earnings yield ratio of Selected Pharmaceutical Companies in India and null hypothesis is rejected based on the p-value.

The decrease in the Earnings Yield Ratio may be due to costs related to integrating operations and systems post merger can increase overall expenses, reducing earnings available for shareholders and consequently lowering the earnings yield ratio.

Additionally, merging companies may encounter operational disruptions, affecting productivity and profitability, thus reducing earnings and the earnings yield ratio.

The results indicate a decrease in the Dividend Yield Ratio post-merger. With a p-value of 0.042, which is less than 0.05 and a corresponding t-value of 2.130, obtained through calculations, it suggests a statistically significant impact on the Dividend Yield Ratio between the pre-merger and post-merger periods of selected pharmaceutical companies in India. Therefore, the null hypothesis is rejected. The decrease in the Dividend Yield Ratio post-merger may be due to, the company may prioritize reinvesting earnings into growth initiatives, debt reduction, or capital expenditures rather than distributing dividends to shareholders. Additionally, post-merger, the company may continue prioritizing reinvestment into growth initiatives, debt reduction, or capital expenditures over distributing dividends.

The results also indicate an increase in the mean of the retention ratio post-merger. However, with a p-value of 0.138, which is greater than 0.05 and a corresponding t-value of -1.524, suggests that there is no significant impact on the retention ratio of Selected Pharmaceutical Companies in India. Therefore, the null hypothesis is accepted based on the p-value. Maintaining a higher level of retained earnings provides the company with greater financial flexibility to meet uncertain economic conditions or industry challenges post-merger and also management may revise the dividend policy post-merger to align with the company's growth objectives, resulting in a higher retention ratio and lower dividend payouts.

The results indicate a decrease in the mean of Dividend Per share post-merger. However, with a p-value of 0.240, which is greater than 0.05 and a corresponding t-value of 1.199, it suggests that there is no statistically significant impact on the

Dividend Per share of Selected Pharmaceutical Companies in India. Therefore, the null hypothesis is accepted based on the p-value. The decrease in the mean of Dividend per share post-merger may be attributed to the company prioritizing reinvesting earnings into growth initiatives such as research and development, market expansion, or acquisitions rather than distributing dividends. Additionally, management may opt for a conservative approach to dividend distributions, leading to lower Dividend Per Share (DPS).

The results also show that there is increase in the mean of Book value per share post-merger. The p – value ($p = 0.0055 < 0.05$) with t-value (-2.995) obtained through calculations infers that there is statistically significant impact in the Book value per share of selected Pharmaceutical Companies in India and null hypothesis is rejected based on the p-value. Following a merger, the market may reassess the value of the company's assets, including intellectual property, research pipelines, and brand value. This reassessment may lead to an upward adjustment in the book value per share as investors recognize the enhanced value of these assets. Moreover, successful merger integration efforts can result in cost synergies, operational efficiencies, and asset optimization. These improvements contribute to an increase in the overall net asset value of the company, consequently increasing up the book value per share.

The results also reveal that the mean of dividend payout ratio has decreased post-merger. With a p-value of 0.017, which is less than 0.05 and a corresponding t-value of 2.527, it indicates a statistically significant impact on the Dividend Payout Ratio of Selected Pharmaceutical Companies in India. Therefore, the null hypothesis is rejected based on the p-value. This decrease may be attributed to the company prioritizing reinvesting a larger portion of its profits into growth initiatives such as research and development, market expansion, or acquisitions instead of distributing them as dividends.

The results show that the mean of Enterprise value has increased post-merger. With a p-value of 0.010, which is less than 0.05 and a corresponding t-value of -2.758, it suggests a statistically significant impact on the Enterprise value of Selected Pharmaceutical Companies in India. Therefore, the null hypothesis is rejected based on the p-value.

Similarly, the results also show that the mean of Market Value Added has increased post-merger. With a p-value of 0.010 which is less than 0.05 and a corresponding t-value of -2.758, it infers a statistically significant impact in the Market value of Selected Pharmaceutical Companies in India. Hence, the null hypothesis is rejected based on the p-value.

Merged companies often leverage their complementary strengths and expanded market presence, resulting in higher revenue generation and increased enterprise value. Additionally, improved financial performance, profitability, and earnings growth post-merger can positively impact investor valuation metrics, thereby driving up the enterprise value. Favourable industry trends, regulatory developments, or investor sentiment surrounding the pharmaceutical sector may also contribute to an increase in market valuation and Market Value Added (MVA) post-merger. Furthermore, investor’s confidence in the management team’s ability to execute the merger strategy, achieve synergies, and create long-term value positively influences market valuation and MVA.

4.2. Paired Sample Correlation

Table 4.2: Correlation Analysis

Paired Sample Correlation				
		N	**Correlation**	**Sig.**
	Liquidity Analysis			
Pair 1	Pre-Current Ratio & Post – Current Ratio	30	0.410	**0.025**
Pair 2	Pre-Quick Ratio & Post – Quick Ratio	30	0.324	0.080
	Turnover Analysis			
Pair 3	Pre-Inventory turnover Ratio & Post Inventory turnover	30	0.654	**0.000**
Pair 4	Pre-Receivables turnover Ratio & Post - Receivables turnover Ratio	30	0.702	**0.000**
Pair 5	Pre-Payables turnover Ratio & Post-Payables turnover Ratio	30	0.713	**0.000**
Pair 6	Pre-Fixed Asset turnover Ratio & Post-Fixed Asset turnover Ratio	30	0.242	0.198
Pair 7	Pre-Total Asset turnover Ratio & Post - Total Asset turnover Ratio	30	0.824	**0.000**
Pair 8	Pre-Working Capital turnover Ratio & Post -Working Capital turnover	30	0.275	0.142
	Profitability Analysis			
Pair 9	Pre- ROCE & Post- ROCE	30	0.116	0.540
Pair 10	Pre-ROA & Post-ROA Ratio	30	0.306	0.100
Pair 11	Pre-Gross Profit Ratio & Post - Gross Profit Ratio	30	0.801	**0.000**
Pair 12	Pre-Net Profit Ratio & Post -Net Profit Ratio	30	0.232	0.217
Pair 13	Pre-Operating Cost Ratio & Post - Operating Cost Ratio	30	0.243	0.196
Pair 14	Pre-Operating Profit Ratio & Post - Operating Profit Ratio	30	0.243	0.196
Pair 15	Pre-EPS & Post - EPS	30	0.257	0.170
Pair 16	Pre-ROE & Post - ROE	30	0.217	0.250
	Research Intensive Indicators			
Pair 17	Pre-RORC & Post – RORC Ratio	30	0.204	0.281
Pair 18	Pre-PRR & Post - PRR	30	0.819	**0.000**
	Solvency Indicators			
Pair 19	Pre-Debt Equity Ratio & Post - Debt Equity Ratio	30	1.000	**0.000**
Pair 20	Pre-Proprietary Ratio & Post - Proprietary Ratio	30	0.591	**0.001**
Pair 21	Pre-Interest Coverage Ratio & Post - Interest Coverage Ratio	30	0.714	**0.000**
Pair 22	Pre-Dividend Coverage Ratio & Post - Dividend Coverage Ratio	30	0.054	0.776
Pair 23	Pre-Total Debt to Total Asset Ratio & Post - Total Debt to Total Asset Ratio	30	0.692	**0.000**
	Investment Valuation Indicators			
Pair 24	Pre-Price Earnings Ratio & Post - Price Earnings Ratio	30	-.089	0.640
Pair 25	Pre-Book Value Per Share & Post - Book Value Per Share	30	0.865	**0.000**
Pair 26	Pre-DPS & Post - DPS	30	0.147	0.438
Pair 27	Pre-Dividend Payout Ratio & Post - Dividend Payout Ratio	30	0.354	**0.055**
Pair 28	Pre-Retention Ratio & Post - Retention	30	0.785	**0.000**

	Ratio			
Pair 29	Pre-Enterprise Value & Post - Enterprise Value	30	0.914	**0.000**
Pair 30	Pre-Dividend Yield Ratio & Post - Dividend Yield Ratio	30	0.102	0.592
Pair 31	Pre-Earnings Yield Ratio & Post - Earnings Yield Ratio	30	0.194	0.305
Pair 32	Pre-MVA & Post - MVA	30	.916	**0.000**

The table above shows the paired correlation values of 32 financial variables along with their significance levels. Notably, the correlation coefficient between the variables Current Ratio before and after the merger is 0.410, with a significant level of 0.025, indicating a highly significant positive correlation.

Similarly, the correlation coefficient between the variable Inventory Turnover Ratio before and after the merger is 0.654, with a significant level of 0.000, suggesting a highly significant positive correlation. Likewise, the correlation coefficient for the Receivables Turnover Ratio before and after the merger is 0.702, with a significant level of 0.000, indicating a highly significant positive correlation.

Additionally, the correlation coefficient for the Payables Turnover Ratio before and after the merger is 0.713, with a significant level of 0.000, demonstrating a highly significant positive correlation. The Total Asset Turnover Ratio before and after the merger exhibits a correlation coefficient of 0.824, with a significant level of 0.000, indicating a highly significant positive correlation.

Furthermore, the Gross Profit Ratio before and after the merger displays a correlation coefficient of 0.801, with a significant level of 0.000, suggesting a highly significant positive correlation. The correlation coefficient for the PRR before and after the merger is 0.819, with a significant level of 0.000, indicating a highly significant positive correlation.

Moreover, the Debt Equity Ratio before and after the merger exhibits a correlation coefficient of 1.000, with a significant level of 0.000, demonstrating a highly significant positive correlation. The Proprietary Ratio before and after the merger displays a correlation coefficient of 0.591, with a significant level of 0.001, indicating a highly significant positive correlation.

Similarly, the Interest Coverage Ratio before and after the merger shows a correlation coefficient of 0.714, with a significant level of 0.000, suggesting a highly significant positive correlation. The Total Debt to Total Asset Ratio before and after the merger exhibits a correlation coefficient of 0.692, with a significant level of 0.000, indicating a highly significant positive correlation.

Furthermore, the Book Value per Share before and after the merger displays a correlation coefficient of 0.865, with a significant level of 0.000, demonstrating a highly significant positive correlation. The Retention Ratio before and after the merger exhibits a correlation coefficient of 0.785, with a significant level of 0.000, suggesting a highly significant positive correlation.

Moreover, the Enterprise Value before and after the merger shows a correlation coefficient of 0.914, with a significant level of 0.000, indicating a highly significant positive correlation. Additionally, the Market Value Added before and after the merger displays a correlation coefficient of 0.916, with a significant level of 0.000, suggesting a highly significant positive correlation.

4.3. EVENT STUDY ANALYSIS

INTRODUCTION

In 1969, Fama introduced the event study, a pivotal method employed to analyse the financial consequence of mergers and acquisitions. This significant tool relies on market data and serves as a crucial instrument for evaluating the financial implications of changes in corporate policies.

As outlined by McWilliams and Siegel in 1997, the event study methodology aims to assess whether there is an abnormal stock price impact connected to an unforeseen event.

The study examines the influence of mergers and acquisition on the stock prices of chosen pharmaceutical companies in India. The event is the Merger and Acquisition announcement date. The study examines whether stock prices indicate abnormal returns, basically how the market responds in the announcement of Mergers and Acquisition. The focus of the study is on the acquirer's share price. While the target share prices typically arise due to the takeover premium, the acquirer's share price may fluctuate as the market reacts. The Event Study aids shareholders of acquirer companies in evaluating the event's benefits by scrutinizing changes in stock prices. This analysis helps to assess whether the value of the shares increase or decrease in response to change in market price of shares.

The study examines thirty cases of mergers and acquisitions within Indian Pharmaceutical Sector using t-test. The t-statistic for abnormal returns undergoes testing to determine whether the event showed a significant impact on abnormal returns on the event day and during the designated window period, namely the pre merger Period (from -30 days to 0) and post merger Period (from 0 to + 30 days). The analysis assesses how stocks react upon the announcement of mergers and acquisitions.

Event Study Analysis for Selected Indian Pharmaceutical Companies

4.3.1. Pfizer India Ltd

Table 4.3.1: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Pfizer India Ltd

Days	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0028	0.0124	0.0010	0.0018	0.1566				
-29	-0.0059	0.0027	-0.0002	-0.0057	-0.4949				
-28	-0.0008	-0.0039	-0.0009	0.0002	0.0137				
-27	-0.0056	-0.0071	-0.0014	-0.0043	-0.3711				
-26	0.0102	0.0235	0.0023	0.0078	0.6796				
-25	-0.0038	0.0025	-0.0002	-0.0036	-0.3164				
-24	-0.0045	-0.0003	-0.0005	-0.0039	-0.3458				
-23	0.0047	-0.0039	-0.0009	0.0057	0.4901				
-22	-0.0013	-0.0023	-0.0008	-0.0005	-0.0443				
-21	0.0009	-0.0032	-0.0009	0.0018	0.1591				
-20	0.0001	-0.0072	-0.0014	0.0015	0.1305				
-19	0.0098	0.0194	0.0018	0.0079	0.6873				
-18	-0.0056	0.0049	9.0778	-0.0057	-0.4916				
-17	0.0263	0.0076	0.0004	0.0259	**2.2489***				
-16	-0.0063	0.0013	-0.0003	-0.0059	-0.5119				
-15	0.0102	0.0016	-0.0003	0.0105	0.9127				
-14	-0.0112	-0.0102	-0.0017	-0.0100	-0.8690				
-13	0.0081	-0.0061	-0.0012	0.0093	0.8064				
-12	-0.0189	-0.0711	-0.0090	-0.0098	-0.8528				
-11	0.0369	0.0666	0.0075	0.0294	**2.5459***	-11	0.3027	11	**7.1430***
-10	0.0524	-0.0075	-0.0014	0.0538	**4.6678***				
-9	0.0144	-0.0101	-0.0017	0.0161	1.3974				
-8	0.0404	-0.0100	-0.0017	0.0422	**3.6580***				
-7	-0.0184	-0.0047	-0.0010	-0.0173	-1.5038				
-6	0.02462	0.0110	0.0008	0.0238	**2.0639***				
-5	0.02833	0.0217	0.0021	0.0262	**2.2744***	-5	0.1547	5	**5.4153***
-4	0.0575	0.0023	-0.0002	0.0577	**5.0013***				
-3	0.0482	-0.0131	-0.0021	0.0503	**4.3551***				
-2	0.0146	-0.02043	-0.0030	0.0176	1.5241	-2	0.0206	2	1.1378
-1	0.0024	-0.0006	-0.0006	0.0030	0.2583				
0	**0.1110**	**0.0198**	**0.0019**	**0.1091**	**9.4623***				
1	0.0016	-0.0092	-0.0016	0.0032	0.2801				
2	0.0192	-0.0003	-0.0005	0.0197	1.7082	+2	0.0229	2	1.2692
3	0.0221	0.0057	0.0002	0.0219	1.8991				
4	0.0169	0.0137	0.0011	0.0157	1.3630				
5	0.0070	0.0067	0.0003	0.0067	0.5768	+5	0.0672	5	**2.3526***
6	0.0086	-0.0026	-0.0008	0.0094	0.8176				
7	-0.0113	-0.0066	-0.0013	-0.0100	-0.8700				
8	-0.2878	0.0129	0.0011	-0.2888	**-25.0448***				
9	-0.0279	0.0030	-0.0001	-0.0278	**-2.4063***				
10	-0.1622	-0.0832	-0.0105	-0.1517	**-13.1531***				
11	0.1128	0.0997	0.0115	0.1013	**8.7855***	+11	-0.3004	11	**-7.0890***
12	-0.0231	-0.0049	-0.0011	-0.0220	-1.9103				
13	0.0259	-0.0039	-0.0010	0.0269	**2.3301***				
14	0.0078	-0.0113	-0.0019	0.0097	0.8392				
15	-0.0237	-0.0111	-0.0018	-0.0219	-1.8986				
16	-0.0117	-0.0022	-0.0008	-0.0109	-0.9450				
17	-0.0092	-0.0025	-0.0008	-0.0084	-0.7268				
18	-0.0002	0.0126	0.0010	-0.0012	-0.1070				
19	0.0254	-0.0082	-0.0015	0.0269	**2.3287***				
20	-0.0001	0.0173	0.0016	-0.0017	-0.1440				
21	0.0028	0.0016	-0.0003	0.0031	0.2656				
22	0.0023	-0.0026	-0.0008	0.0031	0.2720				
23	-0.0097	0.0017	-0.0003	-0.0094	-0.8133				
24	-0.0085	0.0055	0.0002	-0.0087	-0.7535				
25	-0.0072	-0.0036	-0.0009	-0.0062	-0.5405				
26	0.0004	0.0020	-0.0003	0.0007	0.0598				
27	0.0022	-0.0004	-0.0005	0.0028	0.2388				
28	0.0015	-0.0129	-0.0020	0.0035	0.3048				
29	-0.0037	-0.0016	-0.0007	-0.0030	-0.2621				
30	-0.0119	-0.0032	-0.0009	-0.0111	-0.9588				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.
*Significant at 5% level.

Note

Intercept	-0.000502465
Beta	0.120117982
Standard Error	0.011532911
Standard Deviation	0.012775115

Table 4.3.1.1: t- Statistics of Cumulative Abnormal return (CAR) for combined number of days for Pfizer India Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.1526	**5.3426***	Significant
Window 11 Days (-5, +5)	0.3310	**7.8127***	Significant
Window 23 Days (-11, +11)	0.1114	1.8185	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

It is evident from the above table that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of abnormal returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions has created significant impact on the Event Day '0' for Pfizer Ltd where the t-value is 9.4623 > 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30 days) for Pfizer Ltd has significant Impact on -3rd , -4th , -5th , -6th ,-8th, -10th , -11th , -17th days with (t-values 4.3551, 5.0013, 2.2723, 2.0639, 3.6580, 4.6677, 2.5458, 2.2489) and t-statistics of Abnormal return for Post- Event Period (0 to + 30 days) has significant impact on +8th, +9th, +10th +11th , +13th ,+19th days with (t-values -25.0448, -2.4063, -13.1531, 8.7855, 2.3300, 2.3287) greater than t-table values, and is found to be significant at 5% level

The table also provides the summary of Company's t-statistics of cumulative Abnormal return and shows the significant impact for -2, -5, -11 days for Pre Merger Period (0 to -30 days) and +2, +5, +11 days for Post Event Period (0 to + 30 days). The t-statistics of cumulative Abnormal return has significant impact on -5 days and -11 days with (t-values 5.4153, 7.1430) for Pre Merger Period and +5 days and +11 days with (t-values 2.3526, -7.0890) for Post Event Period which shows that the results show the announcement of merger decision has created a significant impact on stock prices for Pfizer Ltd. towards the Merger and Acquisition announcement date at 5% significant level. One market reaction is found to be negative on the +11 days.

Table 4.3.1.1. provides the summary of the significant impact for combined number of days for Pre Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5) and 23 days (-11, +11 days) for Pfizer Ltd. It is apparent that values before and after the merger announcement are found to be significant for 5 days (-2 +2) (t-value 5.3426) and 11 days (-5 + 5) (t-value 7.8127) for Pfizer Ltd.

Thus, it is inferred that the announcement of Mergers and Acquisition has generated a significant impact on Pfizer Ltd announcement date.

4.3.2. Torrent Pharmaceuticals Ltd

Table 4.3.2: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Torrent Pharmaceuticals Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0607	0.0076	-0.0029	0.0636	1.2455				
-29	0.0221	0.0013	-0.0028	0.0249	0.4885				
-28	0.0027	0.0016	-0.0028	0.0055	0.1081				
-27	0.0499	-0.0102	-0.0027	0.0527	1.0321				
-26	0.0000	-0.0061	-0.0028	0.0028	0.0543				
-25	-0.0082	-0.0045	-0.0028	-0.0054	-0.1053				
-24	-0.0009	-0.0075	-0.0028	0.0018	0.0358				
-23	-0.0075	-0.0101	-0.0027	-0.0047	-0.0930				
-22	-0.0233	-0.0100	-0.0027	-0.0205	-0.4018				
-21	0.0066	-0.0047	-0.0028	0.0094	0.1839				
-20	-0.0245	0.0110	-0.0029	-0.0216	-0.4241				
-19	0.0196	0.0217	-0.0029	0.0226	0.4419				
-18	-0.0085	0.0023	-0.0028	-0.0056	-0.1107				
-17	0.0083	-0.0131	-0.0027	0.0110	0.2152				
-16	-0.0081	-0.0204	-0.0027	-0.0055	-0.1071				
-15	-0.0058	-0.0006	-0.0028	-0.0030	-0.0593				
-14	0.0009	0.0198	-0.0029	0.0038	0.0743				
-13	0.0090	-0.0092	-0.0028	0.0118	0.2311				
-12	0.0066	-0.0003	-0.0028	0.0094	0.1847				
-11	-0.0083	0.0057	-0.0028	-0.0055	-0.1078	-11	0.0971	11	0.7920
-10	-0.0075	0.0137	-0.0029	-0.0047	-0.0912				
-9	0.0174	0.0067	-0.0028	0.0202	0.3962				
-8	0.0250	-0.0026	-0.0028	0.0278	0.5444				
-7	0.0029	-0.0066	-0.0028	0.0057	0.1110				
-6	0.0000	0.0129	-0.0029	0.0029	0.0565				
-5	0.0217	0.0030	-0.0028	0.0245	0.4802	-5	0.0507	5	0.6133
-4	-0.0107	0.0165	-0.0029	-0.0078	-0.1524				
-3	0.0053	-0.0049	-0.0028	0.0081	0.1583				
-2	0.0226	-0.0039	-0.0028	0.0254	0.4980	-2	0.0259	2	0.4949
-1	-0.0023	-0.0113	-0.0027	0.0004	0.0088				
0	**-0.0445**	**-0.0111**	**-0.0027**	**-0.0418**	**-0.8191***				
1	-0.0164	-0.0022	-0.0028	-0.0136	-0.2665				
2	-0.0138	-0.0025	-0.0028	-0.0110	-0.2150	+2	-0.0246	2	-0.4702
3	0.0240	0.0126	-0.0029	0.0269	0.5265				
4	-0.0040	-0.0082	-0.0028	-0.0012	-0.0242				
5	0.0114	0.0173	-0.0029	0.0143	0.2806	+5	0.0154	5	0.1862
6	0.0007	0.0016	-0.0028	0.0035	0.0694				
7	-0.0014	-0.0026	-0.0028	0.0014	0.0282				

8	-0.0050	0.0017	-0.0028	-0.0022	-0.0430				
9	-0.0056	0.0055	-0.0028	-0.0027	-0.0534				
10	0.0001	-0.0036	-0.0028	0.0029	0.0566				
11	-0.0057	0.0020	-0.0028	-0.0029	-0.0565	+11	0.0155	11	0.1261
12	-0.0049	-0.0004	-0.0028	-0.0021	-0.0407				
13	0.0000	-0.0129	-0.0027	0.0027	0.0535				
14	-0.0014	-0.0016	-0.0028	0.0014	0.0277				
15	-0.0005	-0.0032	-0.0028	0.0023	0.0442				
16	0.0054	-0.0047	-0.0028	0.0082	0.1606				
17	0.0016	0.0020	-0.0028	0.0044	0.0863				
18	-0.0129	-0.0010	-0.0028	-0.0101	-0.1977				
19	-0.0009	0.0005	-0.0028	0.0020	0.0382				
20	0.0110	0.0163	-0.0029	0.0139	0.2723				
21	-0.0034	-0.0049	-0.0028	-0.0006	-0.0123				
22	0.0119	0.0126	-0.0029	0.0147	0.2888				
23	0.0016	-0.0003	-0.0028	0.0044	0.0858				
24	-0.0014	-0.0091	-0.0028	0.0014	0.0271				
25	0.0012	0.0067	-0.0028	0.0040	0.0784				
26	-0.0039	0.0016	-0.0028	-0.0011	-0.0212				
27	0.0767	0.0040	-0.0028	0.0795	1.5571				
28	0.0647	0.0011	-0.0028	0.0675	1.3228				
29	-0.0160	-0.0125	-0.0027	-0.0132	-0.2595				
30	0.0156	-0.0211	-0.0027	0.0183	0.3583				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	-0.002806252
Beta	-0.006042795
Standard Error	0.051043961
Standard Deviation	0.036958958

Table 4.3.2.1: t- Statistics of Cumulative Abnormal return for combined number of days for Torrent Pharmaceuticals Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.0405	-0.4903	Insignificant
Window 11 Days (-5,+5)	0.0243	0.1979	Insignificant
Window 23 Days (-11, +11)	0.0707	0.3991	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

It is evident from the above table that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions has not created significant impact on the Event Day '0' for Torrent Pharmaceuticals Ltd where the t-value is -0.8191 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30 days) and for Post Event Period (0 to + 30 days) indicates that the event had no significant impact on stock prices towards the Merger and Acquisition

The Company's t-statistics of Cumulative Abnormal return (CAR) for 2, -5, -11 days for Pre Merger Period (0 to -30 days) and +2, +5, +11 days for Post Event Period (0 to + 30 days) also indicates that the event had no significant impact on stock prices towards the Merger and Acquisition.

Table 4.3.2.1 provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) for 5 days (-2 +2) 11 days (-5 +5) and 23 days (-11 + 11) and it is apparent that values before and after the merger announcement are found to be insignificant.

Thus, it is inferred that the event did not create significant impact on Mergers and Acquisition announcement date for Torrent Pharmaceuticals Ltd.

4.3.3. Cadila Healthcare Ltd.

Table 4.3.3: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Cadila Healthcare Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0104	0.0077	0.0014	-0.0117	-0.7333				
-29	0.0182	0.0140	0.0027	0.0155	0.9649				
-28	0.0120	-0.0006	-0.0004	0.0123	0.7688				
-27	0.0035	-0.0048	-0.0012	0.0048	0.2970				
-26	0.0075	-0.0107	-0.0025	0.0100	0.6213				
-25	-0.0036	0.0098	0.0019	-0.0055	-0.3417				
-24	-0.0201	-0.0062	-0.0015	-0.0185	-1.1557				
-23	-0.0059	-0.0064	-0.0016	-0.0044	-0.2719				
-22	-0.0007	-0.0154	-0.0035	0.0028	0.1721				
-21	-0.0052	-0.0090	-0.0021	-0.0030	-0.1885				
-20	-0.0022	-0.0063	-0.0016	-0.0006	-0.0386				
-19	-0.0080	-0.0013	-0.0005	-0.0075	-0.4687				
-18	-0.0016	-0.0031	-0.0009	-0.0007	-0.0434				
-17	0.0148	0.0014	0.0001	0.0148	0.9227				
-16	0.0087	0.0072	0.0013	0.0074	0.4588				
-15	-0.0052	0.0038	0.0006	-0.0058	-0.3608				
-14	0.0096	0.0076	0.0014	0.0082	0.5144				
-13	0.0165	-0.0132	-0.0030	0.0195	1.2176				
-12	0.0008	-0.0175	-0.0039	0.0047	0.2949				
-11	-0.0068	-0.0039	-0.0011	-0.0058	-0.3593	-11	0.0008	11	0.0189
-10	0.0773	0.0639	0.0133	0.0639	**3.9905***				
-9	-0.0786	-0.0657	-0.0142	-0.0645	**-4.0240***				
-8	-0.0099	-0.0087	-0.0021	-0.0079	-0.4915				
-7	0.0044	0.0115	0.0022	0.0022	0.1377				
-6	-0.0077	0.0063	0.0011	-0.0088	-0.5506				
-5	-0.0181	-0.0118	-0.0027	-0.0153	-0.9572	-5	0.0216	5	0.7559
-4	0.0011	0.0072	0.0013	-0.0002	-0.0123				
-3	0.0186	0.0214	0.0043	0.0143	0.8948				
-2	0.0107	0.0000	-0.0002	0.0109	0.6824	-2	0.0228	2	1.2615
-1	0.0151	0.0165	0.0033	0.0118	0.7394				
0	**0.0089**	**0.0088**	**0.0016**	**0.0072**	**0.4508**				
1	-0.0033	0.0004	-0.0001	-0.0031	-0.1941				
2	0.0157	0.0135	0.0026	0.0131	0.8152	+2	0.0100	2	0.5511
3	-0.0073	-0.0076	-0.0018	-0.0055	-0.3425				
4	0.0023	0.0055	0.0009	0.0013	0.0819				
5	0.0117	0.0044	0.0007	0.0110	0.6835	+5	0.0167	5	0.5859
6	0.0003	0.0116	0.0022	-0.0020	-0.1232				
7	-0.0109	-0.0093	-0.0022	-0.0087	-0.5460				

8	-0.0011	-0.0034	-0.0010	-0.0001	-0.0089				
9	0.0039	0.0079	0.0015	0.0024	0.1501				
10	-0.0049	0.0121	0.0023	-0.0072	-0.4506				
11	0.0277	0.0043	0.0007	0.0270	1.6851	+11	0.0280	11	0.6623
12	-0.0286	-0.0032	-0.0009	-0.0277	-1.7271				
13	0.0163	0.0073	0.0013	0.0150	0.9362				
14	0.0097	0.0020	0.0002	0.0095	0.5947				
15	0.0127	-0.0210	-0.0047	0.0174	1.0841				
16	0.0328	0.0025	0.0003	0.0325	**2.0288***				
17	-0.0033	0.0249	0.0051	-0.0083	-0.5186				
18	0.0032	0.0038	0.0006	0.0026	0.1638				
19	-0.0200	0.0028	0.0004	-0.0204	-1.2732				
20	-0.0106	-0.0049	-0.0013	-0.0093	-0.5821				
21	-0.0263	-0.0070	-0.0017	-0.0246	-1.5352				
22	0.0080	-0.0032	-0.0009	0.0090	0.5592				
23	-0.0046	-0.0211	-0.0047	0.0002	0.0100				
24	0.0095	0.0028	0.0004	0.0091	0.5686				
25	-0.0086	0.0165	0.0033	-0.0119	-0.7435				
26	-0.0081	0.0046	0.0007	-0.0088	-0.5508				
27	0.0064	-0.0011	-0.0005	0.0069	0.4308				
28	-0.0164	0.0032	0.0005	-0.0169	-1.0545				
29	-0.0010	-0.0228	-0.0051	0.0040	0.2520				
30	-0.0054	-0.0108	-0.0025	-0.0029	-0.1815				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	-0.000231032
Beta	0.212163282
Standard Error	.016022063
Standard Deviation	0.012768289

Table 4.3.3.1: t- statistics of cumulative Abnormal return for combined number of days for Cadila Healthcare Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.0399	1.3994	Insignificant
Window 11 Days (-5, +5)	0.0455	1.0752	Insignificant
Window 23 Days (-11, +11)	0.0361	0.5890	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

It is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of abnormal returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions has not created significant impact on the Event Day '0' for Cadila Healthcare Ltd where the t-value is 0.4508 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30 days) for Cadila Healthcare Ltd has significant Impact on -9th day and -10th day with (t-values -4.0240, 3.9905) and t-statistics of Abnormal return for Post- Event Period (0 to + 30 days) has significant impact +16th days with (t-values 2.0288) greater than t-table values are found to be significant at 5% level.

The Company's t-statistics of Cumulative Abnormal return (CAR) for -2, -5, -11 days for Pre Merger Period (0 to -30 days) and +2, +5, +11 days for Post Event Period (0 to + 30 days) also indicates that the event had no significant impact on stock prices towards the Merger and Acquisition.

Table 4.3.3.1. provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Thus, it is inferred that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date for Cadila Healthcare Ltd.

4.3.4. Shukra Pharmaceutical Ltd (Relish Pharmaceuticals Ltd)

Table 4.3.4: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Shukra Pharmaceutical Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0397	0.0038	-0.0041	-0.0356	-0.2569				
-29	-0.0414	-0.0029	-0.0056	-0.0358	-0.2580				
-28	0.0140	0.0167	-0.0012	0.0152	0.1098				
-27	-0.0282	-0.0014	-0.0052	-0.0229	-0.1652				
-26	-0.0438	-0.0047	-0.0060	-0.0378	-0.2726				
-25	-0.0303	-0.0020	-0.0054	-0.0249	-0.1795				
-24	-0.0313	-0.0020	-0.0054	-0.0259	-0.1864				
-23	0.0157	-0.0055	-0.0062	0.0219	0.1579				
-22	0.0155	0.0173	-0.0011	0.0166	0.1198				
-21	-0.0473	0.0112	-0.0025	-0.0448	-0.3228				
-20	0.9227	-0.0744	-0.0214	0.9441	**6.8052***				
-19	-0.9723	0.0654	0.0095	-0.9819	**-7.0771***				
-18	0.0000	-0.0038	-0.0058	0.0058	0.0417				
-17	-0.0345	-0.0035	-0.0057	-0.0288	-0.2074				
-16	0.0345	-0.0306	-0.0117	0.0462	0.3331				
-15	-0.0345	0.0320	0.0021	-0.0366	-0.2640				
-14	0.0345	0.0019	-0.0045	0.0390	0.2811				
-13	0.0333	-0.0123	-0.0077	0.0410	0.2956				
-12	0.0480	-0.0205	-0.0095	0.0575	0.4143				
-11	0.0458	0.0190	-0.0007	0.0465	0.3355	-11	0.0501	11	0.1539
-10	0.0438	-0.0088	-0.0069	0.0507	0.3654				
-9	-0.0438	0.0054	-0.0038	-0.0400	-0.2887				
-8	-0.0458	0.0124	-0.0022	-0.0436	-0.3144				
-7	0.8716	-0.0608	-0.0184	0.8900	**6.4147***				
-6	-0.9196	0.0568	0.0076	-0.9272	**-6.6831***				
-5	-0.0333	0.0120	-0.0023	-0.0310	-0.2237	-5	0.0738	5	0.3361
-4	-0.0345	0.0018	-0.0045	-0.0300	-0.2159				
-3	0.0345	0.0156	-0.0015	0.0360	0.2593				
-2	0.0333	-0.0318	-0.0120	0.0453	0.3266	-2	0.0988	2	0.7116
-1	0.0480	-0.0023	-0.0055	0.0535	0.3853				
0	**0.0000**	**0.0047**	**-0.0039**	**0.0039**	**0.0282**				
1	0.0458	0.0188	-0.0008	0.0466	0.3359				
2	0.0438	-0.0119	-0.0076	0.0514	0.3703	+2	0.0980	2	0.7058
3	0.0420	-0.0031	-0.0056	0.0476	0.3430				
4	0.0403	-0.0045	-0.0059	0.0462	0.3331				
5	0.0387	0.0017	-0.0046	0.0433	0.3119	+5	0.2351	5	1.0710
6	-0.0387	-0.0008	-0.0051	-0.0336	-0.2422				
7	0.0387	0.0022	-0.0045	0.0432	0.3112				

8	0.0373	0.0131	-0.0020	0.0393	0.2833				
9	0.0476	0.0121	-0.0023	0.0499	0.3596				
10	0.0455	-0.0011	-0.0052	0.0507	0.3651				
11	0.0435	-0.0095	-0.0071	0.0505	0.3643	+11	0.4350	11	1.3363
12	0.0417	0.0067	-0.0035	0.0451	0.3253				
13	0.0400	0.0022	-0.0045	0.0445	0.3205				
14	0.0479	0.0041	-0.0040	0.0519	0.3741				
15	0.0457	0.0017	-0.0046	0.0502	0.3621				
16	0.0437	-0.0113	-0.0074	0.0511	0.3685				
17	0.0418	-0.0204	-0.0095	0.0513	0.3698				
18	0.0480	-0.0012	-0.0052	0.0532	0.3835				
19	0.0458	-0.0018	-0.0053	0.0511	0.3686				
20	0.0438	-0.0072	-0.0065	0.0503	0.3629				
21	0.0142	0.0008	-0.0048	0.0190	0.1367				
22	0.0140	-0.0150	-0.0083	0.0222	0.1603				
23	0.0138	0.0001	-0.0049	0.0187	0.1348				
24	0.0136	0.0024	-0.0044	0.0180	0.1298				
25	0.0134	0.0025	-0.0044	0.0178	0.1285				
26	0.0198	0.0032	-0.0042	0.0240	0.1732				
27	0.0194	-0.0021	-0.0054	0.0248	0.1789				
28	0.0127	0.0014	-0.0046	0.0174	0.1252				
29	0.0188	0.0042	-0.0040	0.0228	0.1645				
30	0.0123	-0.0126	-0.0077	0.0201	0.1447				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	-0.004942844
Beta	0.221408799
Standard Error	0.138738973
Standard Deviation	0.098152136

Table 4.3.4.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Shukra Pharmaceutical Ltd

Window	**CAR (Combined Number of Days**	**t-statistics of CAR**	**Significance**
Window 5 Days (-2, +2)	0.2007	0.9143	Insignificant
Window 11 Days (-5, +5)	0.3127	0.9607	Insignificant
Window 23 Days (-11, +11)	0.4890	1.0389	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions has not created significant impact on the Event Day '0' for Shukra Pharmaceutical Ltd where the t-value is 0.0282 < 1.96 The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Shukra Pharma Ltd has significant impact on -6th, -7th, -19th -20th days with (t-values -6.6831, 6.4147, -7.0777, -6.8052) greater than t-table values, are found to be significant at 5% level. The Company's t-statistics of Cumulative Abnormal return (CAR) for -2, -5, -11 days for Pre Merger Period (0 to -30 days) and +2, +5, +11 days for Post Event Period (0 to + 30 days) indicates that the event had no significant impact on stock prices towards the Merger and Acquisition.

Table 4.3.4.1. provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Thus, it is inferred that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date for Shukra Pharma Ltd.

4.3.5.TTK Healthcare Ltd

Table 4.3.5: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for TTK Healthcare Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0282	-0.0107	-0.0067	-0.0215	-0.9101				
-29	0.0017	0.0098	0.0074	-0.0056	-0.2390				
-28	-0.0011	-0.0062	-0.0036	0.0025	0.1052				
-27	-0.0184	-0.0064	-0.0038	-0.0146	-0.6198				
-26	-0.0213	-0.0154	-0.0100	-0.0114	-0.4819				
-25	-0.0403	-0.0090	-0.0056	-0.0347	-1.4701				
-24	0.0026	-0.0063	-0.0037	0.0063	0.2663				
-23	-0.0254	-0.0013	-0.0003	-0.0252	-1.0653				
-22	-0.0099	-0.0031	-0.0015	-0.0084	-0.3551				
-21	0.0442	0.0014	0.0016	0.0426	1.8046				
-20	-0.0126	0.0072	0.0056	-0.0182	-0.7719				
-19	0.0134	0.0038	0.0032	0.0101	0.4293				
-18	0.0307	0.0076	0.0058	0.0249	1.0543				
-17	0.0120	-0.0132	-0.0084	0.0204	0.8647				
-16	-0.0295	-0.0175	-0.0114	-0.0182	-0.7692				
-15	0.0007	-0.0039	-0.0020	0.0028	0.1170				
-14	-0.0010	-0.0019	-0.0007	-0.0003	-0.0127				
-13	-0.0141	-0.0087	-0.0053	-0.0087	-0.3695				
-12	-0.0240	0.0115	0.0085	-0.0325	-1.3756				
-11	0.1294	0.0063	0.0050	0.1245	**5.2719***	-11	0.1371	11	**2.3025***
-10	-0.0332	-0.0118	-0.0075	-0.0257	-1.0889				
-9	0.0000	0.0072	0.0055	-0.0055	-0.2347				
-8	0.0232	0.0214	0.0153	0.0079	0.3357				
-7	-0.0027	0.0000	0.0006	-0.0032	-0.1376				
-6	0.0085	0.0165	0.0119	-0.0034	-0.1430				
-5	-0.0020	0.0088	0.0067	-0.0087	-0.3668	-5	0.0426	5	1.0605
-4	0.0029	0.0004	0.0009	0.0020	0.0832				
-3	0.0335	0.0135	0.0099	0.0236	0.9998				
-2	0.0354	-0.0076	-0.0046	0.0400	1.6943	-2	0.0257	2	1.0107
-1	-0.0099	0.0055	0.0044	-0.0143	-0.6075				
0	**0.0058**	**0.0044**	**0.0036**	**0.0022**	**0.0916**				
1	0.0761	0.0116	0.0086	0.0675	**2.8586***				
2	-0.0181	-0.0093	-0.0057	-0.0123	-0.5216	+2	0.0552	2	**2.1734***
3	0.0106	0.0045	0.0037	0.0068	0.2898				
4	-0.0188	0.0121	0.0089	-0.0277	-1.1727				
5	0.0048	0.0043	0.0035	0.0013	0.0540	+5	0.0356	5	0.8870
6	-0.0253	-0.0032	-0.0016	-0.0237	-1.0039				
7	0.0030	0.0073	0.0057	-0.0026	-0.1121				
8	0.0026	0.0020	0.0020	0.0006	0.0245				
9	-0.0254	-0.0210	-0.0138	-0.0116	-0.4901				
10	0.0314	0.0025	0.0023	0.0291	1.2325				

11	0.0109	0.0249	0.0177	-0.0068	-0.2870	+11	0.0206	11	0.3458
12	0.0101	0.0038	0.0032	0.0070	0.2946				
13	-0.0037	0.0028	0.0025	-0.0062	-0.2643				
14	-0.0134	-0.0049	-0.0028	-0.0107	-0.4520				
15	0.0164	-0.0070	-0.0042	0.0205	0.8697				
16	0.0085	-0.0032	-0.0016	0.0101	0.4280				
17	0.0179	-0.0211	-0.0139	0.0317	1.3447				
18	0.1823	0.0028	0.0025	0.1798	**7.6146***				
19	-0.1238	0.0165	0.0119	-0.1357	**-5.7474***				
20	-0.0105	0.0046	0.0038	-0.0143	-0.6045				
21	0.0340	-0.0011	-0.0002	0.0341	1.4456				
22	-0.0209	0.0032	0.0028	-0.0237	-1.0041				
23	-0.0149	-0.0228	-0.0150	0.0002	0.0065				
24	-0.0104	-0.0078	-0.0048	-0.0057	-0.2409				
25	0.0023	-0.0033	-0.0017	0.0040	0.1680				
26	-0.0199	0.0007	0.0011	-0.0210	-0.8893				
27	-0.0205	-0.0004	0.0003	-0.0208	-0.8807				
28	-0.0009	-0.0068	-0.0041	0.0031	0.1329				
29	-0.0134	-0.0005	0.0003	-0.0136	-0.5778				
30	-0.0400	-0.0153	-0.0099	-0.0302	-1.2776				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.000611899
Beta	0.68631037
Standard Error	0.023610351
Standard Deviation	0.017951733

Table 4.3.5.1: t- Statistics of Cumulative Abnormal return for combined number of days TTK Healthcare Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2,+2)	0.0823	**2.0677***	Significant
Window 11 Days (-5,+5)	0.0803	1.3493	Insignificant
Window 23 Days (-11, +11)	0.1598	1.8566	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for TTK Healthcare Ltd where the t-value is 0.0916 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30 days) for TTK Healthcare Ltd has significant impact on -11th day with (t-value 5.2719) and t-statistics of Abnormal return for Post- Event Period (0 to + 30 days) had significant impact on +1st, +18th and +19th days with (t-values 2.8586, 7.6146, -5.7474) greater than t-table values, are found to be significant at 5% level.

The t-statistics of Cumulative Abnormal return (CAR) had significant impact on -11 days with (t-values 2.3025) for Pre Merger Period and +2 days with (t-values 2.1734) for Post Event Period which indicates significant market reaction of stock prices towards the Merger and Acquisition announcement date.

Table 4.3.5.1 provides that values before and after the merger announcement are found to be significant for 5 days (-2 +2) with (t-value 2.0677) for TTK Healthcare Ltd.

Based on above results, it is found that significant impact exists during the pre and post event period. The values nearer to the announcement day, that is (+1 day) are found significant (t-value=2.8586). Thus, it is concluded that Event had a significant impact on Mergers and Acquisition announcement date for TTK Healthcare Ltd.

4.3.6. J B Chemicals & Pharmaceuticals Ltd

Table 4.3.6: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for J B Chemicals & Pharmaceuticals Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0072	-0.0026	-0.0003	-0.0069	-0.2537				
-29	0.0080	0.0258	0.0190	-0.0111	-0.4079				
-28	-0.0122	0.0023	0.0030	-0.0152	-0.5626				
-27	-0.0142	0.0043	0.0044	-0.0185	-0.6844				
-26	0.0294	0.0168	0.0129	0.0165	0.6080				
-25	-0.0240	0.0039	0.0041	-0.0281	-1.0376				
-24	-0.0033	0.0036	0.0039	-0.0072	-0.2667				
-23	-0.0082	0.0084	0.0072	-0.0153	-0.5664				
-22	-0.0113	0.0084	0.0072	-0.0185	-0.6836				
-21	-0.0297	0.0004	0.0017	-0.0314	-1.1607				
-20	-0.0317	0.0043	0.0043	-0.0361	-1.3311				
-19	0.0502	-0.0162	-0.0095	0.0598	**2.2061***				
-18	0.0166	-0.0013	0.0006	0.0161	0.5931				
-17	-0.0269	-0.0047	-0.0017	-0.0252	-0.9293				
-16	0.0118	-0.0038	-0.0011	0.0130	0.4780				
-15	0.0135	-0.0014	0.0005	0.0130	0.4798				
-14	-0.0211	-0.0058	-0.0025	-0.0186	-0.6867				
-13	-0.0428	-0.0157	-0.0092	-0.0336	-1.2400				
-12	0.0019	0.0046	0.0046	-0.0026	-0.0975				
-11	0.0112	0.0072	0.0063	0.0049	0.1792	-11	0.0254	11	0.3753
-10	0.0776	0.0097	0.0080	0.0695	**2.5653***				
-9	-0.0257	0.0107	0.0087	-0.0344	-1.2714				
-8	-0.0169	0.0004	0.0017	-0.0186	-0.6881				
-7	0.0220	0.0068	0.0060	0.0160	0.5904				
-6	-0.0168	0.0029	0.0035	-0.0203	-0.7479				
-5	0.0005	-0.0070	-0.0033	0.0038	0.1406	-5	0.0084	5	0.1834
-4	-0.0060	-0.0089	-0.0046	-0.0014	-0.0508				
-3	-0.0039	0.0008	0.0020	-0.0059	-0.2194				
-2	-0.0114	0.0006	0.0018	-0.0132	-0.4884	-2	0.0119	2	0.4118
-1	0.0200	-0.0096	-0.0051	0.0251	0.9261				
0	**-0.0018**	**0.0183**	**0.0139**	**-0.0158**	**-0.5814***				
1	-0.0150	0.0065	0.0058	-0.0209	-0.7697				
2	0.0013	0.0061	0.0056	-0.0043	-0.1588	+2	-0.0252	2	-0.8734
3	0.0111	0.0044	0.0044	0.0066	0.2448				
4	-0.0228	-0.0082	-0.0041	-0.0187	-0.6889				
5	0.0571	0.0017	0.0026	0.0545	**2.0110***	+5	0.0173	5	0.3799
6	-0.0348	-0.0205	-0.0125	-0.0223	-0.8242				
7	-0.0153	-0.0051	-0.0020	-0.0133	-0.4908				
8	0.0069	-0.0014	0.0005	0.0064	0.2363				

9	0.0173	0.0087	0.0074	0.0099	0.3670				
10	-0.0160	-0.0147	-0.0086	-0.0074	-0.2739				
11	0.0904	-0.0017	0.0003	0.0901	**3.3246***	+11	0.0807	11	1.1943
12	0.0448	0.0104	0.0085	0.0363	1.3408				
13	-0.0624	-0.0043	-0.0015	-0.0609	**-2.2475***				
14	0.0235	-0.0059	-0.0026	0.0261	0.9643				
15	-0.0285	-0.0074	-0.0036	-0.0249	-0.9182				
16	-0.0475	-0.0023	-0.0001	-0.0474	-1.7486				
17	-0.0083	-0.0009	0.0008	-0.0091	-0.3370				
18	0.0209	-0.0014	0.0005	0.0204	0.7546				
19	-0.0018	-0.0224	-0.0138	0.0120	0.4419				
20	0.0094	-0.0001	0.0014	0.0080	0.2969				
21	0.0061	0.0179	0.0136	-0.0076	-0.2795				
22	0.0058	-0.0002	0.0013	0.0044	0.1639				
23	0.0359	0.0112	0.0090	0.0269	0.9933				
24	0.0370	0.0085	0.0073	0.0298	1.0990				
25	0.0088	0.0000	0.0015	0.0073	0.2709				
26	0.0058	0.0062	0.0057	0.0001	0.0028				
27	0.0021	0.0073	0.0064	-0.0044	-0.1606				
28	0.0260	0.0002	0.0016	0.0244	0.9010				
29	0.0120	0.0061	0.0056	0.0064	0.2361				
30	0.1375	-0.0095	-0.0050	0.1425	**5.2606***				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

<u>Note</u>

Intercept	0.001446311
Beta	0.680237572
Standard Error	0.027094296
Standard Deviation	0.020366621

Table 4.3.6.1: t- Statistics of Cumulative Abnormal return for Combined number of days for J B Chemicals & Pharmaceuticals Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.0290	-0.6378	Insignificant
Window 11 Days (-5, +5)	0.0099	0.1466	Insignificant
Window 23 Days (-11, +11)	0.0903	0.9240	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for J B Chemicals & Pharmaceuticals Ltd where the -0.5814 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30 days) for J B Chemicals & Pharmaceuticals Ltd had significant Impact on -10th day and -19th day with (t-values 2.5653, 2.2061) and t-statistics of Abnormal return for Post- Event Period (0 to + 30 days) had significant impact on +5th , +11th , +13th and +30th days with (t-values 2.0110, 3.3246, -2.2475, 5.2606) greater than t-table values are found to be significant at 5% level.

The above table also provides that values before and after the merger announcement are found to be insignificant for 5 days (-2 +2) 11 days (-5 +5) and 23 days (-11 + 11).

Based on above mentioned results, it was found that there was market reaction of stock prices towards the announcement date on the -10th day, -19th day, +5th day, +11th day and +30th day in the Event window. Except this, no significant reaction exists before and after the merger announcement. It is found that not many numbers of significant market reactions exist during this period. Thus, it is concluded that Event did not have any significant impact on Mergers and Acquisition announcement date for J B Chemicals & Pharmaceuticals Ltd.

4.3.7. Cipla Limited

Table 4.3.7: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Cipla Limited

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0021	-0.0051	-0.0056	0.0036	0.2414				
-29	0.0073	-0.0080	-0.0089	0.0161	1.0917				
-28	-0.0041	-0.0190	-0.0212	0.0172	1.1616				
-27	-0.0051	-0.0029	-0.0032	-0.0019	-0.1308				
-26	0.0113	0.0046	0.0051	0.0062	0.4192				
-25	0.0453	0.0056	0.0063	0.0391	**2.6409***				
-24	-0.0028	0.0131	0.0147	-0.0175	-1.1829				
-23	0.0046	0.0012	0.0014	0.0032	0.2170				
-22	-0.0037	-0.0031	-0.0034	-0.0003	-0.0221				
-21	0.0125	0.0060	0.0067	0.0058	0.3936				
-20	0.0067	0.0024	0.0027	0.0039	0.2658				
-19	-0.0115	-0.0028	-0.0031	-0.0084	-0.5654				
-18	0.0001	-0.0046	-0.0051	0.0052	0.3527				
-17	0.0055	-0.0074	-0.0083	0.0138	0.9336				
-16	-0.0162	-0.0134	-0.0150	-0.0012	-0.0809				
-15	0.0249	0.0008	0.0009	0.0240	1.6245				
-14	0.0192	0.0193	0.0216	-0.0023	-0.1587				
-13	-0.0505	-0.0049	-0.0054	-0.0451	**-3.0519***				
-12	-0.0279	-0.0013	-0.0014	-0.0265	-1.7927				
-11	0.0178	0.0034	0.0038	0.0140	0.9485	-11	0.0501	11	1.0559
-10	-0.0065	-0.0145	-0.0162	0.0097	0.6570				
-9	0.0084	-0.0087	-0.0097	0.0181	1.2231				
-8	-0.0924	-0.0610	-0.0682	-0.0242	-1.6385				
-7	0.0149	0.0091	0.0102	0.0047	0.3149				
-6	-0.0124	-0.0113	-0.0127	0.0003	0.0175				
-5	0.0362	0.0200	0.0224	0.0138	0.9364	-5	0.0275	5	0.8615
-4	-0.0017	0.0066	0.0075	-0.0091	-0.6170				
-3	0.0332	-0.0038	-0.0043	0.0375	**2.5356***				
-2	-0.0282	-0.0235	-0.0263	-0.0019	-0.1318	-2	-0.0147	2	-0.7268
-1	-0.0226	-0.0089	-0.0099	-0.0127	-0.8615				
0	**0.0113**	**0.0136**	**0.0153**	**-0.0040**	**-0.2713**				
1	-0.0093	-0.0217	-0.0242	0.0149	1.0072				
2	0.0000	-0.0127	-0.0141	0.0141	0.9549	+2	0.0290	2	1.4357
3	0.0007	0.0170	0.0190	-0.0183	-1.2391				
4	0.0099	0.0168	0.0188	-0.0090	-0.6056				
5	-0.0042	-0.0039	-0.0043	0.0001	0.0098	+5	0.0019	5	0.0589
6	-0.0008	0.0002	0.0002	-0.0010	-0.0704				
7	0.0115	0.0106	0.0119	-0.0004	-0.0258				
8	-0.0027	-0.0055	-0.0061	0.0034	0.2293				

9	0.0041	0.0089	0.0100	-0.0059	-0.3990				
10	-0.0146	0.0104	0.0117	-0.0263	-1.7782				
11	-0.0042	-0.0006	-0.0006	-0.0036	-0.2422	+11	-0.0319	11	-0.6736
12	-0.0079	-0.0209	-0.0234	0.0155	1.0464				
13	-0.0031	0.0043	0.0049	-0.0080	-0.5401				
14	0.0015	0.0029	0.0032	-0.0018	-0.1190				
15	-0.0019	-0.0093	-0.0104	0.0085	0.5747				
16	-0.0084	0.0061	0.0068	-0.0153	-1.0334				
17	-0.0007	0.0134	0.0150	-0.0157	-1.0610				
18	-0.0039	0.0003	0.0003	-0.0042	-0.2872				
19	0.0103	0.0210	0.0235	-0.0132	-0.8913				
20	0.0367	0.0041	0.0046	0.0320	**2.1644***				
21	0.0250	0.0030	0.0034	0.0216	1.4606				
22	-0.0008	-0.0059	-0.0066	0.0058	0.3891				
23	0.0136	0.0074	0.0083	0.0053	0.3569				
24	-0.0193	-0.0056	-0.0063	-0.0130	-0.8819				
25	0.0040	-0.0015	-0.0016	0.0056	0.3781				
26	0.0002	-0.0029	-0.0033	0.0035	0.2347				
27	-0.0122	0.0088	0.0099	-0.0221	-1.4930				
28	0.0126	0.0071	0.0080	0.0046	0.3090				
29	0.0132	0.0045	0.0050	0.0081	0.5499				
30	-0.0218	-0.0016	-0.0018	-0.0200	-1.3537				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.0000279163
Beta	1.118384339
Standard Error	0.014790056
Standard Deviation	0.014292746

Table 4.3.7.1: t- Statistics of Cumulative Abnormal return (CAR) for combined number of days for Cipla Limited

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.0103	0.3228	Insignificant
Window 11 Days (-5, +5)	0.0254	0.5359	Insignificant
Window 23 Days (-11, +11)	0.0141	0.2058	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions has not created significant impact on the Event Day '0' for Cipla Limited where the t-value is -0.2713 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30 days) for Cipla Limited has significant impact on -3rd, -13th and -25th day with (t-values 2.5356, -3.0519, 2.6409) and t-statistics of Abnormal return for Post- Event Period (0 to + 30 days) has significant impact on +20th day with (t-values 2.1644) greater than t-table values are found to be significant at 5% level.

Table 4.3.7.1 provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant for 5 days (-2 +2) 11 days (-5 +5) and 23 days (-11 + 11).

Based on above mentioned results, it was found that there was reaction of stock prices towards the announcement date on the -3rd day, -25th day, +20th day in the Event window. Except this, no significant reaction exists before and after the merger announcement. Thus, it is inferred that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date for Cipla Ltd.

4.3.8. Glenmark Pharmaceuticals Ltd

Table 4.3.8: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Glenmark Pharmaceuticals Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0038	-0.0082	-0.0032	0.0070	0.3649				
-29	0.0044	0.0173	0.0068	-0.0024	-0.1245				
-28	0.0047	0.0016	0.0006	0.0041	0.2131				
-27	0.0254	-0.0026	-0.0010	0.0264	1.3706				
-26	-0.0179	0.0017	0.0007	-0.0185	-0.9606				
-25	0.0117	0.0055	0.0022	0.0095	0.4928				
-24	-0.0111	-0.0036	-0.0014	-0.0097	-0.5024				
-23	0.0022	0.0020	0.0008	0.0014	0.0705				
-22	-0.0069	-0.0004	-0.0002	-0.0067	-0.3479				
-21	-0.0120	-0.0129	-0.0051	-0.0070	-0.3628				
-20	-0.0178	-0.0016	-0.0006	-0.0172	-0.8909				
-19	0.0061	-0.0032	-0.0013	0.0074	0.3816				
-18	-0.0067	-0.0047	-0.0019	-0.0048	-0.2502				
-17	-0.0005	0.0020	0.0008	-0.0013	-0.0656				
-16	-0.0002	-0.0010	-0.0004	0.0002	0.0109				
-15	0.0011	0.0005	0.0002	0.0009	0.0456				
-14	-0.0059	0.0163	0.0064	-0.0123	-0.6395				
-13	-0.0159	-0.0049	-0.0019	-0.0139	-0.7220				
-12	-0.0041	0.0126	0.0049	-0.0090	-0.4675				
-11	0.0058	-0.0003	-0.0001	0.0059	0.3059	-11	0.0900	11	1.6443
-10	0.0076	-0.0091	-0.0036	0.0112	0.5802				
-9	-0.0146	0.0067	0.0026	-0.0172	-0.8925				
-8	0.0013	0.0016	0.0006	0.0007	0.0358				
-7	0.0070	0.0040	0.0016	0.0054	0.2802				
-6	0.0061	0.0011	0.0004	0.0057	0.2963				
-5	0.0047	-0.0125	-0.0049	0.0096	0.4995	-5	0.0783	5	**2.1223***
-4	0.0488	-0.0211	-0.0083	0.0570	**2.9588***				
-3	0.0367	-0.0016	-0.0006	0.0374	1.9374				
-2	-0.0015	-0.0010	-0.0004	-0.0011	-0.0591	-2	-0.0257	2	-1.1018
-1	-0.0276	-0.0076	-0.0030	-0.0246	-1.2747				
0	0.0350	0.0026	0.0010	0.0340	**1.7642**				
1	-0.0075	-0.0145	-0.0057	-0.0018	-0.0953				
2	-0.0095	-0.0001	-0.0001	-0.0094	-0.4895	+2	-0.0113	2	-0.4831
3	-0.0007	0.0036	0.0014	-0.0021	-0.1102				
4	0.0222	0.0023	0.0009	0.0213	1.1064				
5	0.0027	0.0044	0.0017	0.0009	0.0481	+5	0.0089	5	0.2401
6	-0.0006	-0.0016	-0.0006	0.0000	0.0009				

7	-0.0191	0.0015	0.0006	-0.0197	-1.0215				
8	-0.0208	0.0035	0.0014	-0.0221	-1.1482				
9	-0.0360	-0.0137	-0.0054	-0.0307	-1.5899				
10	0.0161	0.0078	0.0031	0.0130	0.6740				
11	0.0140	0.0041	0.0016	0.0124	0.6451	+11	-0.0382	11	-0.6975
12	-0.0116	0.0088	0.0035	-0.0151	-0.7807				
13	-0.0020	0.0042	0.0016	-0.0036	-0.1873				
14	0.0080	-0.0100	-0.0039	0.0119	0.6181				
15	0.0000	0.0105	0.0041	-0.0041	-0.2124				
16	0.0205	0.0050	0.0019	0.0186	0.9649				
17	0.0050	0.0023	0.0009	0.0041	0.2152				
18	0.0071	0.0062	0.0024	0.0046	0.2410				
19	0.0307	0.0061	0.0024	0.0283	1.4664				
20	0.0201	-0.0089	-0.0035	0.0236	1.2223				
21	-0.0138	0.0122	0.0048	-0.0186	-0.9628				
22	0.0045	0.0049	0.0019	0.0026	0.1361				
23	-0.0017	0.0114	0.0045	-0.0062	-0.3217				
24	-0.0300	0.0194	0.0076	-0.0376	-1.9520				
25	-0.0335	0.0016	0.0006	-0.0342	-1.7723				
26	0.0199	-0.0039	-0.0015	0.0214	1.1123				
27	0.0106	0.0008	0.0003	0.0103	0.5332				
28	-0.0080	-0.0037	-0.0014	-0.0066	-0.3418				
29	-0.0111	0.0017	0.0007	-0.0118	-0.6111				
30	0.0155	0.0019	0.0007	0.0148	0.7679				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	-6.74298E-06
Beta	0.392535928
Standard Error	0.019279984
Standard Deviation	0.016502957

Table 4.3.8.1: t- Statistics of Cumulative Abnormal return (CAR) for combined number of days for Glenmark Pharmaceuticals Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.0030	-0.0806	Insignificant
Window 11 Days (-5, +5)	0.1212	**2.2141***	Significant
Window 23 Days (-11, +11)	0.0858	1.0845	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Glenmark Pharmaceuticals Ltd where the t-value is 1.7642 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Glenmark Pharmaceuticals Ltd had significant impact on - 4th days with (t-value 2.9588) greater than t-table values are found to be significant at 5% level which indicates that the results show a significant impact of stock prices before the announcement of Merger and Announcement date, but the event did not show any reaction on stock prices post the Merger and Acquisition Announcement date.

The table also provides t-statistics of Cumulative Abnormal return are found to be significant on -5 days with (t-values 2.1223) for Pre Merger Period which indicates that the results show a significant impact of stock prices towards the Merger and Acquisition Announcement date.

Table 4.3.8.1 provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be significant at 5% level on for 11 days (-5 +5) with (t-value 2.1223).

Thus, it is inferred that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date for Glenmark Pharmaceuticals Ltd.

4.3.9. Sun Pharmaceuticals Industries Ltd

Table 4.3.9: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Sun Pharmaceuticals Industries Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0065	0.0041	0.0011	-0.0077	-0.1517				
-29	0.0077	0.0088	0.0051	0.0025	0.0500				
-28	0.0220	0.0042	0.0012	0.0208	0.4120				
-27	-0.0059	-0.0100	-0.0108	0.0050	0.0985				
-26	-0.0073	0.0105	0.0065	-0.0138	-0.2738				
-25	0.0088	0.0050	0.0019	0.0070	0.1378				
-24	-0.0025	0.0023	-0.0004	-0.0021	-0.0409				
-23	0.0145	0.0062	0.0029	0.0116	0.2295				
-22	0.0261	0.0061	0.0028	0.0233	0.4611				
-21	-0.0309	-0.0089	-0.0099	-0.0210	-0.4162				
-20	-0.0092	0.0122	0.0080	-0.0172	-0.3406				
-19	0.0069	0.0049	0.0018	0.0051	0.1019				
-18	-0.0043	0.0114	0.0073	-0.0117	-0.2311				
-17	-0.0141	0.0194	0.0141	-0.0282	-0.5597				
-16	-0.0253	0.0016	-0.0010	-0.0243	-0.4825				
-15	-0.0285	-0.0039	-0.0056	-0.0228	-0.4523				
-14	0.0406	0.0008	-0.0017	0.0423	0.8387				
-13	-0.0533	-0.0037	-0.0055	-0.0478	-0.9481				
-12	0.0158	0.0017	-0.0009	0.0167	0.3302				
-11	-0.0046	0.0019	-0.0007	-0.0039	-0.0778	-11	-0.0125	11	-0.1012
-10	0.0102	0.0011	-0.0014	0.0116	0.2300				
-9	0.0083	-0.0063	-0.0077	0.0160	0.3177				
-8	-0.0167	0.0016	-0.0010	-0.0157	-0.3116				
-7	0.0070	0.0003	-0.0021	0.0091	0.1800				
-6	-0.0089	0.0135	0.0091	-0.0180	-0.3568				
-5	0.0000	0.0009	-0.0015	0.0015	0.0306	-5	-0.0116	5	-0.1388
-4	-0.0222	0.0018	-0.0008	-0.0213	-0.4226				
-3	-0.0107	0.0061	0.0028	-0.0136	-0.2688				
-2	0.0047	0.0081	0.0045	0.0002	0.0035	-2	0.0218	2	0.4131
-1	0.0203	0.0012	-0.0013	0.0216	0.4281				
0	**-0.0046**	**0.0025**	**-0.0002**	**-0.0044**	**-0.0873**				
1	0.0055	0.0047	0.0016	0.0039	0.0767				
2	0.0057	-0.0024	-0.0044	0.0101	0.2009	+2	0.0140	2	0.2658
3	-0.0117	-0.0062	-0.0076	-0.0041	-0.0816				
4	0.0281	0.0001	-0.0023	0.0304	0.6020				
5	0.0688	0.0150	0.0104	0.0584	1.1587	+5	0.0987	5	1.1845
6	-0.0234	0.0000	-0.0023	-0.0211	-0.4188				
7	0.0205	-0.0030	-0.0049	0.0254	0.5029				

8	-0.0189	-0.0064	-0.0078	-0.0111	-0.2203				
9	-0.0041	-0.0086	-0.0097	0.0055	0.1093				
10	0.0181	0.0155	0.0108	0.0073	0.1447				
11	-0.0061	0.0056	0.0024	-0.0085	-0.1690	+11	0.0961	11	0.7777
12	-0.0021	-0.0003	-0.0026	0.0005	0.0107				
13	0.0091	0.0037	0.0008	0.0083	0.1637				
14	-0.0058	-0.0085	-0.0096	0.0038	0.0754				
15	0.0233	-0.0032	-0.0050	0.0283	0.5614				
16	0.0044	-0.0068	-0.0081	0.0125	0.2483				
17	-0.0105	-0.0028	-0.0047	-0.0057	-0.1135				
18	-0.0046	-0.0002	-0.0025	-0.0020	-0.0405				
19	-0.0053	0.0007	-0.0018	-0.0035	-0.0690				
20	-0.0008	0.0024	-0.0003	-0.0005	-0.0093				
21	0.0074	-0.0094	-0.0103	0.0177	0.3511				
22	-0.0104	0.0011	-0.0014	-0.0090	-0.1789				
23	-0.0002	0.0294	0.0226	-0.0228	-0.4517				
24	-0.0174	0.0224	0.0167	-0.0340	-0.6749				
25	-0.0070	0.0134	0.0090	-0.0160	-0.3164				
26	0.0050	0.0000	-0.0023	0.0073	0.1455				
27	0.0150	0.0020	-0.0006	0.0156	0.3098				
28	-0.0128	0.0111	0.0071	-0.0199	-0.3946				
29	-0.0489	0.0084	0.0048	-0.0536	-1.0627				
30	0.0054	0.0016	-0.0010	0.0063	0.1255				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	- 0.002346253
Beta	0.84834902
Standard Error	0.050441872
Standard Deviation	0.03726743

Table 4.3.9.1: t- Statistics of Cumulative Abnormal return for combined number of days for Sun Pharmaceuticals Industries Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.0314	0.3765	Insignificant
Window 11 Days (-5, +5)	0.0827	0.6694	Insignificant
Window 23 Days (-11, +11)	0.0792	0.4432	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Sun Pharmaceuticals Industries Ltd where the t-value is -0.0873 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) and Post Event Period (0-+30) did not show any market reaction on stock prices post the Merger and Acquisition Announcement date.

Table 4.3.9.1 provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Thus, it is inferred that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date for Sun Pharmaceuticals Industries Ltd.

4.3.10. Ind- Swift Ltd

Table 4.3.10: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Ind- Swift Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0238	-0.0040	-0.0040	-0.0198	-0.8849				
-29	-0.0121	-0.0099	-0.0095	-0.0026	-0.1179				
-28	-0.0427	-0.0277	-0.0260	-0.0167	-0.7482				
-27	0.0357	0.0177	0.0161	0.0196	0.8752				
-26	-0.0070	0.0018	0.0014	-0.0084	-0.3767				
-25	-0.0107	-0.0085	-0.0082	-0.0025	-0.1115				
-24	0.0053	0.0037	0.0031	0.0022	0.0998				
-23	0.0088	0.0000	-0.0003	0.0091	0.4080				
-22	-0.0304	-0.0149	-0.0141	-0.0163	-0.7286				
-21	-0.0239	-0.0110	-0.0105	-0.0133	-0.5963				
-20	-0.0093	-0.0004	-0.0006	-0.0087	-0.3889				
-19	0.0204	0.0214	0.0196	0.0008	0.0364				
-18	0.0128	0.0049	0.0042	0.0086	0.3828				
-17	0.0018	0.0130	0.0118	-0.0099	-0.4443				
-16	-0.0018	0.0063	0.0056	-0.0074	-0.3303				
-15	-0.0036	-0.0154	-0.0146	0.0109	0.4892				
-14	-0.0128	-0.0117	-0.0112	-0.0017	-0.0747				
-13	-0.0037	-0.0115	-0.0110	0.0073	0.3257				
-12	-0.0056	0.0034	0.0028	-0.0084	-0.3764				
-11	0.0111	0.0169	0.0154	-0.0043	-0.1934	-11	-0.0015	11	-0.0222
-10	0.0055	-0.0258	-0.0242	0.0297	1.3296				
-9	-0.0018	0.0095	0.0085	-0.0103	-0.4622				
-8	-0.0260	-0.0180	-0.0170	-0.0091	-0.4047				
-7	-0.0133	0.0113	0.0102	-0.0235	-1.0494				
-6	-0.0038	-0.0093	-0.0089	0.0051	0.2272				
-5	0.0209	-0.0031	-0.0031	0.0240	1.0728	-5	0.0109	5	0.2412
-4	0.0019	0.0223	0.0204	-0.0185	-0.8285				
-3	0.0019	0.0042	0.0036	-0.0017	-0.0782				
-2	0.0074	0.0076	0.0068	0.0007	0.0303	-2	0.0072	2	0.2511
-1	0.0000	-0.0067	-0.0065	0.0065	0.2899				
0	-0.0019	-0.0168	-0.0159	0.0140	**0.6263**				
1	0.0074	0.0018	0.0013	0.0061	0.2714				
2	0.0018	-0.0032	-0.0033	0.0051	0.2284	+2	0.0112	2	0.3918
3	0.0308	0.0095	0.0085	0.0223	0.9961				
4	0.0403	-0.0132	-0.0126	0.0528	**2.3626***				
5	-0.0208	0.0036	0.0030	-0.0238	-1.0661	+5	0.0624	5	1.3848
6	0.0052	0.0121	0.0109	-0.0057	-0.2541				

7	0.0069	0.0019	0.0015	0.0054	0.2428				
8	0.0086	0.0061	0.0054	0.0032	0.1451				
9	-0.0156	-0.0078	-0.0076	-0.0080	-0.3577				
10	-0.0140	-0.0172	-0.0163	0.0022	0.1000				
11	-0.0107	0.0042	0.0036	-0.0143	-0.6391	+11	0.0454	11	0.6785
12	-0.0090	-0.0040	-0.0040	-0.0050	-0.2234				
13	-0.0219	-0.0025	-0.0026	-0.0192	-0.8604				
14	-0.0055	0.0003	0.0000	-0.0055	-0.2474				
15	-0.0074	0.0035	0.0030	-0.0104	-0.4663				
16	0.0185	0.0075	0.0067	0.0118	0.5287				
17	-0.0055	-0.0017	-0.0019	-0.0036	-0.1620				
18	-0.0093	-0.0097	-0.0093	0.0001	0.0037				
19	0.0056	-0.0198	-0.0186	0.0242	1.0825				
20	0.0110	0.0054	0.0047	0.0064	0.2840				
21	0.0145	-0.0226	-0.0213	0.0358	1.6001				
22	-0.0090	-0.0050	-0.0050	-0.0041	-0.1822				
23	0.0018	-0.0018	-0.0020	0.0038	0.1703				
24	-0.0018	-0.0074	-0.0072	0.0054	0.2407				
25	-0.0314	-0.0043	-0.0043	-0.0271	-1.2126				
26	0.0000	0.0071	0.0063	-0.0063	-0.2820				
27	-0.0344	-0.0173	-0.0163	-0.0180	-0.8066				
28	-0.0019	0.0025	0.0020	-0.0039	-0.1758				
29	-0.0356	0.0044	0.0038	-0.0394	-1.7616				
30	0.0020	0.0030	0.0025	-0.0005	-0.0206				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	-0.000292482
Beta	0.928712142
Standard Error	0.022364669
Standard Deviation	0.020168036

Table 4.3.10.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Ind- Swift Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.0323	0.7172	Insignificant
Window 11 Days (-5, +5)	0.0873	1.3056	Insignificant
Window 23 Days (-11, +11)	0.0579	0.5986	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Ind- Swift Ltd where the t-value is 0.6263 < 1.96.

The t-statistics of Abnormal return for Post- Event Period (0 to + 30) for Ind- Swift Ltd had a significant impact on + 4^{th} days with (t-value 2.3626) greater than t-table values are found to be significant which indicates that the results show a significant impact on stock prices after the announcement of Merger and Announcement date and the event did not show any reaction on stock prices before Merger and Acquisition Announcement date.

Table 4.3.10.1 provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Based on above mentioned results, it was found that there was significant market reaction of stock prices towards the merger deals on the + 4^{th} day in the Event window. Except this, no significant market reaction exists before and after the merger announcement. It is found that not many numbers of significant reactions exist during this period. Thus, it is inferred that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date Ind- Swift Ltd.

4.3. 11. Piramal Enterprises Ltd

Table 4.3.11: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Piramal Enterprises Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0107	0.0019	0.0007	0.0100	0.4207				
-29	-0.0036	0.0011	0.0002	-0.0038	-0.1590				
-28	0.0036	-0.0063	-0.0049	0.0085	0.3589				
-27	0.0066	0.0016	0.0005	0.0061	0.2564				
-26	0.0029	0.0003	-0.0004	0.0033	0.1389				
-25	-0.0038	0.0135	0.0087	-0.0126	-0.5297				
-24	0.0081	0.0009	0.0001	0.0081	0.3409				
-23	0.0111	0.0018	0.0006	0.0105	0.4420				
-22	-0.0008	0.0061	0.0036	-0.0044	-0.1874				
-21	0.0127	0.0081	0.0050	0.0077	0.3238				
-20	0.0224	0.0012	0.0003	0.0221	0.9340				
-19	-0.0129	0.0025	0.0011	-0.0141	-0.5933				
-18	0.0027	0.0047	0.0026	0.0001	0.0023				
-17	-0.0105	-0.0024	-0.0023	-0.0082	-0.3454				
-16	-0.0142	-0.0062	-0.0049	-0.0094	-0.3955				
-15	-0.0036	0.0001	-0.0005	-0.0031	-0.1295				
-14	0.0191	0.0150	0.0097	0.0094	0.3976				
-13	0.0288	0.0000	-0.0006	0.0293	1.2376				
-12	0.0602	-0.0030	-0.0026	0.0628	**2.6498***				
-11	-0.0020	-0.0064	-0.0050	0.0030	0.1280	-11	-0.0591	11	-0.9123
-10	0.0181	-0.0086	-0.0065	0.0246	1.0372				
-9	0.0144	0.0155	0.0100	0.0043	0.1825				
-8	-0.0181	0.0056	0.0033	-0.0213	-0.8998				
-7	-0.0136	-0.0003	-0.0008	-0.0128	-0.5393				
-6	-0.0054	0.0037	0.0020	-0.0073	-0.3098				
-5	-0.0146	-0.0085	-0.0065	-0.0081	-0.3423	-5	-0.0496	5	-1.1356
-4	-0.0254	-0.0032	-0.0028	-0.0226	-0.9549				
-3	0.0010	-0.0068	-0.0053	0.0063	0.2644				
-2	-0.0386	-0.0028	-0.0025	-0.0360	-1.5196	-2	-0.0251	2	-0.9097
-1	0.0101	-0.0002	-0.0008	0.0109	0.4590				
0	**0.0101**	**0.0007**	**-0.0001**	**0.0102**	**0.4319**				
1	0.0306	0.0024	0.0010	0.0296	1.2475				
2	0.0187	-0.0094	-0.0071	0.0258	1.0871	+2	0.0554	2	**2.0024***
3	0.0174	0.0011	0.0002	0.0172	0.7256				
4	0.0114	0.0294	0.0196	-0.0083	-0.3485				
5	-0.0094	0.0224	0.0148	-0.0242	-1.0227	+5	0.0400	5	0.9163
6	0.0055	0.0134	0.0086	-0.0031	-0.1316				

7	0.0057	0.0000	-0.0006	0.0063	0.2658				
8	-0.0014	0.0020	0.0008	-0.0022	-0.0936				
9	-0.0010	0.0111	0.0071	-0.0081	-0.3406				
10	-0.0023	0.0084	0.0052	-0.0074	-0.3133				
11	0.0205	0.0016	0.0005	0.0199	0.8409	+11	0.0454	11	0.7010
12	0.0118	-0.0031	-0.0027	0.0145	0.6127				
13	0.0170	0.0032	0.0016	0.0153	0.6463				
14	0.0229	0.0124	0.0079	0.0149	0.6304				
15	-0.0245	-0.0011	-0.0013	-0.0231	-0.9753				
16	-0.0201	-0.0056	-0.0044	-0.0156	-0.6597				
17	0.0038	0.0016	0.0005	0.0033	0.1374				
18	0.0306	-0.0129	-0.0095	0.0400	1.6891				
19	0.0664	-0.0008	-0.0011	0.0676	**2.8497***				
20	0.0307	0.0182	0.0119	0.0188	0.7945				
21	0.0027	0.0072	0.0044	-0.0017	-0.0725				
22	0.0014	-0.0018	-0.0019	0.0033	0.1387				
23	0.0145	0.0097	0.0060	0.0084	0.3551				
24	0.0075	0.0145	0.0094	-0.0019	-0.0794				
25	0.0006	0.0093	0.0058	-0.0053	-0.2223				
26	-0.0064	0.0002	-0.0004	-0.0059	-0.2506				
27	-0.0090	-0.0039	-0.0033	-0.0058	-0.2439				
28	-0.0016	0.0030	0.0015	-0.0030	-0.1282				
29	-0.0104	-0.0142	-0.0104	0.0000	0.0000				
30	-0.0077	-0.0011	-0.0014	-0.0063	-0.2671				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	-0.000595665
Beta	0.687601655
Standard Error	0.023709919
Standard Deviation	0.019547508

Table 4.3.11.1: t- Statistics of Cumulative Abnormal return for combined number of days for Piramal Enterprises Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.0404	0.9254	Insignificant
Window 11 Days (-5, +5)	0.0006	0.0101	Insignificant
Window 23 Days (-11, +11)	-0.0035	-0.0369	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Piramal Enterprises Ltd where the t-value is 0.4319 < 1.96. The t-statistics of Abnormal return for Pre- Event Period (0 to -30 days) for Piramal Enterprises Ltd had a significant impact on -12th day with (t-values 2.6498) and t-statistics of Abnormal return for Post- Event Period (0 to + 30 days) had significant impact on +19th day with (t-values 2.8497) greater than t-table values are found to be significant at 5% level.

The table also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for -2, -5, -11 days for Pre Merger Period (0 to -30 days) and +2, +5, +11 days for Post Event Period (0 to + 30 days). The t-statistics of Cumulative Abnormal return (CAR) are found to be significant at 5% level on +2 days with (t-values 2.0024) for Post Event Period which indicates that the results show a significant impact of stock prices towards the Merger and Acquisition Announcement date.

Table 4.3.11.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Based on above mentioned results, it was found that there was significant impact of stock prices on the -12th day and +19th day in the Event window.

Thus, it is inferred that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date for Piramal Enterprises Ltd.

4.3.12. Aurobindo Pharma Ltd

Table 4.3.12: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Aurobindo Pharma Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0299	-0.0006	0.0047	0.0252	1.0228				
-29	-0.0172	-0.0052	0.0034	-0.0206	-0.8353				
-28	0.0051	0.0023	0.0055	-0.0005	-0.0187				
-27	-0.0143	0.0089	0.0074	-0.0217	-0.8794				
-26	0.0049	0.0062	0.0066	-0.0017	-0.0683				
-25	-0.0057	-0.0079	0.0026	-0.0083	-0.3385				
-24	-0.0263	0.0015	0.0053	-0.0316	-1.2819				
-23	-0.0011	0.0022	0.0055	-0.0066	-0.2674				
-22	0.0090	0.0110	0.0080	0.0010	0.0409				
-21	0.0258	-0.0038	0.0038	0.0220	0.8939				
-20	0.0271	-0.0037	0.0038	0.0233	0.9455				
-19	-0.0047	0.0015	0.0053	-0.0100	-0.4076				
-18	-0.0083	0.0031	0.0057	-0.0141	-0.5714				
-17	-0.0084	-0.0031	0.0040	-0.0124	-0.5018				
-16	0.0314	-0.0118	0.0015	0.0298	1.2109				
-15	-0.0280	-0.0116	0.0016	-0.0296	-1.1996				
-14	-0.0054	0.0018	0.0054	-0.0107	-0.4359				
-13	0.0012	-0.0075	0.0027	-0.0015	-0.0608				
-12	0.0278	-0.0083	0.0025	0.0253	1.0252				
-11	-0.0231	-0.0005	0.0047	-0.0278	-1.1298	-11	-0.0810	11	-1.3256
-10	-0.0309	-0.0187	-0.0004	-0.0305	-1.2381				
-9	-0.0441	-0.0047	0.0035	-0.0476	-1.9320				
-8	0.0261	0.0160	0.0094	0.0167	0.6793				
-7	0.0274	0.0080	0.0071	0.0203	0.8241				
-6	0.0014	0.0119	0.0082	-0.0069	-0.2791				
-5	-0.0167	-0.0069	0.0029	-0.0196	-0.7948	-5	-0.0052	5	-0.1263
-4	0.0019	-0.0113	0.0017	0.0002	0.0098				
-3	0.0013	0.0032	0.0058	-0.0045	-0.1808				
-2	0.0141	0.0055	0.0064	0.0077	0.3104	-2	0.0186	2	0.7139
-1	0.0159	0.0002	0.0049	0.0110	0.4443				
0	**0.0083**	**0.0042**	**0.0060**	**0.0023**	**0.0920**				
1	-0.0076	0.0002	0.0049	-0.0125	-0.5077				
2	0.0048	0.0134	0.0086	-0.0039	-0.1564	+2	-0.0164	2	-0.6282
3	-0.0005	-0.0020	0.0043	-0.0048	-0.1940				
4	-0.0398	-0.0304	-0.0037	-0.0361	-1.4638				
5	0.0157	-0.0031	0.0040	0.0117	0.4764	+5	-0.0455	5	-1.1040
6	0.0194	0.0162	0.0094	0.0100	0.4042				

7	0.0373	0.0060	0.0066	0.0308	1.2478				
8	0.0069	0.0046	0.0062	0.0007	0.0278				
9	-0.0234	-0.0028	0.0041	-0.0275	-1.1149				
10	-0.0051	-0.0026	0.0041	-0.0092	-0.3742				
11	-0.0109	0.0258	0.0121	-0.0230	-0.9349	+11	-0.0638	11	-1.0445
12	0.0203	0.0023	0.0055	0.0148	0.6009				
13	0.0065	0.0043	0.0061	0.0004	0.0156				
14	0.0032	0.0168	0.0096	-0.0064	-0.2608				
15	0.0034	0.0039	0.0060	-0.0025	-0.1031				
16	0.0090	0.0036	0.0059	0.0031	0.1248				
17	-0.0011	0.0084	0.0072	-0.0083	-0.3369				
18	-0.0019	0.0084	0.0072	-0.0091	-0.3698				
19	0.0004	0.0004	0.0050	-0.0046	-0.1852				
20	0.0362	0.0043	0.0061	0.0301	1.2215				
21	0.0212	-0.0162	0.0003	0.0209	0.8482				
22	0.0131	-0.0013	0.0045	0.0086	0.3472				
23	-0.0321	-0.0047	0.0036	-0.0357	-1.4472				
24	-0.0118	-0.0038	0.0038	-0.0156	-0.6346				
25	-0.0500	-0.0014	0.0045	-0.0544	**-2.2086***				
26	-0.0371	-0.0058	0.0032	-0.0403	-1.6356				
27	-0.0570	-0.0157	0.0005	-0.0575	**-2.3312***				
28	-0.0141	0.0046	0.0062	-0.0203	-0.8234				
29	0.0678	0.0072	0.0069	0.0609	**2.4710***				
30	0.0167	0.0097	0.0076	0.0091	0.3704				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.004867955
Beta	0.28182837
Standard Error	0.024646922
Standard Deviation	0.018424811

Table 4.3.12.1: t- Statistics of Cumulative Abnormal return for combined number of days for Aurobindo Pharma Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2,+2)	0.0045	0.1092	Insignificant
Window 11 Days (-5,+5)	-0.0484	-0.7923	Insignificant
Window 23 Days (-11, +11)	-0.1425	-1.6134	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Aurobindo Pharma Ltd where the t-value is 0.0920 < 1.96.

The t-statistics of Abnormal return for Post- Event Period (0 to + 30) for Aurobindo Pharma Ltd had significant impact on +25th, +27th, +29th day with (t-values -2.2086, -2.3312, 2.4710) greater than t-table values are found to be significant at 5% level and the event did not show any reaction of stock prices before the Merger and Acquisition Announcement date.

Table 4.3.12.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR), and it is apparent that values before and after the merger announcement are found to be insignificant.

It is found that not many numbers of significant reactions exist during this period. Thus, it is inferred that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date for Aurobindo Pharma Ltd.

4.3.13. Vivimed Labs Limited

Table 4.3.13: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Vivimed Labs Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0064	0.0040	0.0039	-0.0104	-0.3525				
-29	0.0057	0.0127	0.0068	-0.0011	-0.0369				
-28	0.0897	-0.0007	0.0024	0.0873	**2.9680***				
-27	-0.0373	0.0053	0.0044	-0.0417	-1.4171				
-26	0.0142	0.0053	0.0044	0.0099	0.3349				
-25	-0.0310	-0.0200	-0.0041	-0.0269	-0.9130				
-24	-0.0077	-0.0054	0.0008	-0.0085	-0.2895				
-23	-0.0215	-0.0028	0.0016	-0.0231	-0.7859				
-22	-0.0424	-0.0138	-0.0020	-0.0404	-1.3725				
-21	0.0270	-0.0007	0.0024	0.0246	0.8363				
-20	-0.0116	0.0088	0.0055	-0.0172	-0.5834				
-19	0.0240	0.0126	0.0068	0.0171	0.5827				
-18	0.0192	0.0004	0.0027	0.0164	0.5586				
-17	0.0015	0.0031	0.0036	-0.0021	-0.0719				
-16	-0.0008	0.0029	0.0036	-0.0044	-0.1495				
-15	0.0297	0.0120	0.0066	0.0231	0.7855				
-14	-0.0066	0.0047	0.0042	-0.0108	-0.3655				
-13	-0.0025	0.0048	0.0042	-0.0067	-0.2266				
-12	-0.0112	-0.0055	0.0007	-0.0119	-0.4052				
-11	-0.0089	-0.0052	0.0008	-0.0098	-0.3326	-11	-0.0122	11	-0.1677
-10	0.0106	0.0037	0.0038	0.0068	0.2307				
-9	-0.0121	-0.0074	0.0001	-0.0123	-0.4164				
-8	-0.0111	-0.0161	-0.0028	-0.0083	-0.2815				
-7	0.0232	0.0095	0.0058	0.0175	0.5938				
-6	0.0304	0.0072	0.0050	0.0254	0.8628				
-5	0.0086	-0.0094	-0.0006	0.0091	0.3107	-5	-0.0315	5	-0.6441
-4	-0.0044	-0.0030	0.0016	-0.0060	-0.2024				
-3	-0.0296	-0.0102	-0.0008	-0.0288	-0.9771				
-2	0.0109	0.0075	0.0051	0.0059	0.1989	-2	-0.0059	2	-0.1913
-1	-0.0045	0.0141	0.0073	-0.0118	-0.3998				
0	-0.0025	0.0015	0.0031	-0.0056	**-0.1894**				
1	-0.0030	0.0071	0.0050	-0.0080	-0.2704				
2	0.0123	0.0110	0.0063	0.0060	0.2036	+2	-0.0020	2	-0.0636
3	0.0072	0.0011	0.0030	0.0042	0.1444				
4	0.0130	-0.0040	0.0012	0.0117	0.3992				
5	0.0034	0.0017	0.0032	0.0002	0.0071	+5	0.0142	5	0.2914
6	-0.0082	0.0023	0.0033	-0.0116	-0.3934				
7	-0.0013	0.0007	0.0028	-0.0041	-0.1397				

8	0.0023	0.0002	0.0027	-0.0004	-0.0134				
9	-0.0221	0.0044	0.0041	-0.0262	-0.8895				
10	0.0464	0.0029	0.0036	0.0428	1.4560				
11	0.0260	0.0086	0.0055	0.0206	0.6996	+11	0.0354	11	0.4885
12	-0.0093	0.0056	0.0045	-0.0138	-0.4676				
13	-0.0183	0.0045	0.0041	-0.0224	-0.7623				
14	0.0583	-0.0020	0.0019	0.0563	1.9145				
15	-0.0227	-0.0022	0.0019	-0.0245	-0.8330				
16	-0.0094	0.0108	0.0062	-0.0156	-0.5289				
17	-0.0110	-0.0020	0.0019	-0.0129	-0.4394				
18	0.0357	-0.0077	0.0000	0.0356	1.2115				
19	0.0072	-0.0023	0.0018	0.0054	0.1824				
20	0.0413	0.0024	0.0034	0.0379	1.2865				
21	0.0692	-0.0091	-0.0004	0.0697	**2.3671***				
22	-0.0091	-0.0122	-0.0015	-0.0077	-0.2602				
23	-0.0189	0.0052	0.0043	-0.0233	-0.7911				
24	0.1000	0.0179	0.0086	0.0915	**3.1080***				
25	-0.0104	-0.0008	0.0023	-0.0127	-0.4317				
26	0.0208	0.0043	0.0040	0.0168	0.5694				
27	-0.0171	-0.0160	-0.0028	-0.0144	-0.4889				
28	-0.0150	-0.0012	0.0022	-0.0172	-0.5853				
29	-0.0208	-0.0104	-0.0009	-0.0199	-0.6774				
30	0.0410	0.0060	0.0046	0.0364	1.2363				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.002590822
Beta	0.334837781
Standard Error	0.02942497
Standard Deviation	0.021855009

Table 4.3.13.1: t- Statistics of Cumulative Abnormal return for combined number of days for Vivimed Labs Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.0135	-0.2752	Insignificant
Window 11 Days (-5, +5)	-0.0228	-0.3147	Insignificant
Window 23 Days (-11, +11)	0.0177	0.1687	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Vivimed Labs Ltd where the t-value is -0.1894 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Vivimed Labs Limited had significant impact on -28th day with (t-value 2.9680) and t-statistics of Abnormal return for Post- Event Period (0 to +30) had significant impact on +21st, +24th days with (t-values 2.3671, 3.1080) greater than t-table values are found to be significant at 5% level.

Table 4.3.13.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Overall, it is inferred that there is no significant impact of merger announcements during the period. Thus, it is inferred that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date for Vivimed Labs Ltd.

4.3.14. Wockhardt Ltd

Table 4.3.14: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Wockhardt Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0344	-0.0090	-0.0048	-0.0296	-0.8506				
-29	-0.0057	-0.0155	-0.0089	0.0031	0.0892				
-28	0.0109	0.0106	0.0074	0.0036	0.1021				
-27	0.0589	0.0082	0.0059	0.0530	1.5223				
-26	0.0005	-0.0097	-0.0052	0.0057	0.1641				
-25	-0.0317	-0.0030	-0.0011	-0.0306	-0.8794				
-24	0.0045	-0.0106	-0.0058	0.0103	0.2969				
-23	0.0123	0.0076	0.0055	0.0068	0.1963				
-22	-0.0399	0.0132	0.0090	-0.0489	-1.4032				
-21	-0.0462	0.0016	0.0018	-0.0480	-1.3791				
-20	0.0422	0.0067	0.0050	0.0372	1.0683				
-19	0.0055	0.0105	0.0073	-0.0018	-0.0521				
-18	0.0278	0.0029	0.0026	0.0252	0.7229				
-17	0.0169	-0.0028	-0.0010	0.0179	0.5127				
-16	-0.0079	0.0020	0.0020	-0.0099	-0.2857				
-15	-0.0009	0.0028	0.0025	-0.0035	-0.0991				
-14	0.0122	-0.0009	0.0002	0.0120	0.3435				
-13	-0.0015	-0.0002	0.0007	-0.0022	-0.0635				
-12	-0.0117	0.0040	0.0032	-0.0149	-0.4281				
-11	-0.0184	0.0023	0.0022	-0.0206	-0.5911	-11	0.1694	11	**2.0000***
-10	0.0268	0.0092	0.0065	0.0203	0.5824				
-9	-0.0121	0.0069	0.0051	-0.0171	-0.4916				
-8	-0.0010	0.0039	0.0032	-0.0042	-0.1210				
-7	-0.0093	-0.0023	-0.0006	-0.0087	-0.2493				
-6	0.1259	-0.0011	0.0001	0.1258	**3.6136***				
-5	0.0257	0.0107	0.0075	0.0183	0.5246	-5	0.0739	5	1.2938
-4	0.0448	-0.0026	-0.0008	0.0456	1.3100				
-3	0.0071	-0.0072	-0.0037	0.0108	0.3102				
-2	-0.0141	-0.0010	0.0001	-0.0143	-0.4105	-2	-0.0008	2	-0.0224
-1	0.0158	0.0024	0.0023	0.0135	0.3873				
0	**0.0161**	**-0.0079**	**-0.0041**	**0.0202**	**0.5811**				
1	-0.0719	-0.0137	-0.0077	-0.0642	-1.8432				
2	0.0203	0.0054	0.0041	0.0161	0.4639	+2	-0.0480	2	-1.3299
3	0.0282	0.0173	0.0116	0.0167	0.4791				
4	-0.0307	0.0008	0.0013	-0.0320	-0.9185				
5	0.0038	0.0031	0.0027	0.0011	0.0311	+5	-0.0622	5	-1.0901
6	-0.0169	-0.0159	-0.0091	-0.0078	-0.2234				
7	-0.0191	-0.0019	-0.0004	-0.0188	-0.5387				
8	-0.0435	-0.0114	-0.0063	-0.0372	-1.0685				
9	0.0283	0.0072	0.0053	0.0231	0.6628				
10	0.0157	-0.0012	0.0000	0.0157	0.4496				
11	0.0055	0.0007	0.0012	0.0042	0.1209	+11	-0.0830	11	-0.9805

12	0.0090	-0.0024	-0.0007	0.0098	0.2801				
13	-0.0185	-0.0118	-0.0066	-0.0119	-0.3422				
14	-0.0117	-0.0012	0.0000	-0.0117	-0.3364				
15	0.0064	0.0149	0.0101	-0.0036	-0.1044				
16	-0.0194	-0.0127	-0.0071	-0.0122	-0.3516				
17	-0.0034	0.0031	0.0027	-0.0061	-0.1747				
18	-0.0166	-0.0026	-0.0008	-0.0158	-0.4527				
19	-0.0271	-0.0148	-0.0084	-0.0187	-0.5364				
20	-0.0095	0.0041	0.0033	-0.0128	-0.3674				
21	0.0046	0.0127	0.0087	-0.0041	-0.1187				
22	0.0096	0.0061	0.0046	0.0050	0.1429				
23	0.0091	0.0086	0.0061	0.0030	0.0851				
24	0.0066	0.0023	0.0022	0.0044	0.1254				
25	0.0091	-0.0029	-0.0010	0.0101	0.2889				
26	-0.0030	0.0045	0.0036	-0.0065	-0.1881				
27	0.0187	0.0078	0.0056	0.0130	0.3740				
28	-0.0178	0.0097	0.0068	-0.0246	-0.7072				
29	0.0009	0.0186	0.0123	-0.0114	-0.3278				
30	0.0162	0.0002	0.0009	0.0153	0.4394				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.000788359
Beta	0.622286249
Standard Error	0.034814162
Standard Deviation	0.025531213

Table 4.3.14.1: Showing the t- Statistics of Cumulative Abnormal return for combined number of days for Wockhardt Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.0286	-0.5009	Insignificant
Window 11 Days (-5,+5)	0.0319	0.3762	Insignificant
Window 23 Days (-11, +11)	0.1066	0.8703	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Wockhardt Ltd where the t-value is 0.5811 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Wockhardt Ltd has significant impact on -6th day with (t-value 3.6136) greater than t-table values are found to be significant at 5% level which indicates, that the results show a significant impact on stock prices before the announcement of Merger and Announcement date and the event did not show any reaction on stock prices post the Merger and Acquisition Announcement date.

Table 4.3.14.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Based on above mentioned results, it was found that there was significant impact of stock prices towards the announcement date on the -6th day in the Event window. Except this, no significant reaction exists before and after the merger announcement. It is found that not many numbers of significant reactions exist during this period.

Thus, it is inferred that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date for Wockhardt Ltd.

4.3.15. Strides Pharma Science Ltd (Strides Arcolab Ltd)

Table 4.3.15: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Strides Pharma Science Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0047	0.0067	0.0028	0.0019	0.0287				
-29	-0.0103	0.0105	0.0056	-0.0159	-0.2430				
-28	-0.0038	0.0029	0.0000	-0.0038	-0.0575				
-27	0.0178	-0.0028	-0.0043	0.0221	0.3370				
-26	0.0275	0.0020	-0.0007	0.0282	0.4295				
-25	-0.0236	0.0028	-0.0001	-0.0235	-0.3581				
-24	0.0128	-0.0009	-0.0028	0.0157	0.2389				
-23	-0.0157	-0.0002	-0.0023	-0.0134	-0.2042				
-22	0.0008	0.0040	0.0007	0.0001	0.0015				
-21	-0.0043	0.0023	-0.0005	-0.0038	-0.0586				
-20	0.0105	0.0092	0.0046	0.0059	0.0903				
-19	-0.0012	0.0069	0.0029	-0.0041	-0.0625				
-18	-0.0003	0.0039	0.0007	-0.0010	-0.0152				
-17	0.0302	-0.0023	-0.0039	0.0341	0.5200				
-16	0.0048	-0.0011	-0.0030	0.0078	0.1194				
-15	0.0353	0.0107	0.0057	0.0296	0.4513				
-14	-0.0001	-0.0026	-0.0041	0.0040	0.0611				
-13	-0.0041	-0.0072	-0.0075	0.0035	0.0526				
-12	0.0142	-0.0010	-0.0030	0.0172	0.2618				
-11	0.0156	0.0024	-0.0004	0.0160	0.2436	-11	-0.0783	11	-0.5041
-10	0.0124	-0.0079	-0.0080	0.0204	0.3107				
-9	-0.0432	-0.0137	-0.0123	-0.0309	-0.4714				
-8	0.0113	0.0054	0.0018	0.0095	0.1454				
-7	0.0190	0.0173	0.0106	0.0084	0.1284				
-6	-0.0114	0.0008	-0.0016	-0.0098	-0.1493				
-5	0.0018	0.0031	0.0001	0.0017	0.0263	-5	-0.0919	5	-0.8775
-4	-0.0306	-0.0159	-0.0140	-0.0166	-0.2531				
-3	0.0043	-0.0019	-0.0036	0.0079	0.1208				
-2	-0.1048	-0.0114	-0.0106	-0.0942	-1.4351	-2	-0.0850	2	-1.2825
-1	0.0123	0.0072	0.0031	0.0092	0.1400				
0	**0.0865**	**-0.0012**	**-0.0031**	**0.0896**	**1.3651**				
1	0.0207	0.0007	-0.0016	0.0223	0.3397				
2	-0.0005	-0.0024	-0.0040	0.0035	0.0531	+2	0.0258	2	0.3890
3	0.0372	-0.0118	-0.0109	0.0481	0.7329				
4	0.0057	-0.0012	-0.0031	0.0088	0.1334				
5	0.0107	0.0149	0.0088	0.0019	0.0291	+5	0.0845	5	0.8068
6	0.0102	-0.0127	-0.0116	0.0218	0.3326				
7	0.0302	0.0031	0.0001	0.0301	0.4592				

8	0.0159	-0.0026	-0.0041	0.0200	0.3052				
9	-0.2082	-0.0148	-0.0131	-0.1951	**-2.9733***				
10	0.0247	0.0041	0.0008	0.0239	0.3645				
11	-0.0232	0.0127	0.0072	-0.0304	-0.4634	+11	-0.0451	11	-0.2902
12	0.0044	0.0061	0.0023	0.0021	0.0313				
13	-0.0024	0.0086	0.0041	-0.0065	-0.0994				
14	0.0073	0.0023	-0.0005	0.0078	0.1181				
15	-0.0106	-0.0029	-0.0043	-0.0063	-0.0962				
16	0.0005	0.0045	0.0011	-0.0007	-0.0101				
17	0.0314	0.0078	0.0036	0.0278	0.4239				
18	0.0038	0.0097	0.0050	-0.0012	-0.0177				
19	-0.0065	0.0186	0.0115	-0.0180	-0.2749				
20	0.0092	0.0002	-0.0020	0.0112	0.1707				
21	-0.0061	0.0017	-0.0009	-0.0052	-0.0790				
22	0.0099	-0.0002	-0.0023	0.0122	0.1859				
23	0.0098	0.0009	-0.0015	0.0113	0.1729				
24	0.0010	0.0022	-0.0006	0.0016	0.0241				
25	0.0127	0.0025	-0.0004	0.0130	0.1986				
26	0.0173	-0.0030	-0.0044	0.0217	0.3310				
27	-0.0050	0.0038	0.0006	-0.0056	-0.0859				
28	0.0202	0.0049	0.0014	0.0188	0.2869				
29	0.0173	-0.0006	-0.0026	0.0199	0.3032				
30	0.0014	-0.0052	-0.0060	0.0075	0.1137				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	-0.002184534
Beta	0.7389526
Standard Error	0.065611788
Standard Deviation	0.046848552

Table 4.3.15.1: t- Statistics of cumulative Abnormal return for combined number of days for Strides Pharma Science Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.0303	0.2899	Insignificant
Window 11 Days (-5, +5)	0.0821	0.5288	Insignificant
Window 23 Days (-11, +11)	-0.0338	-0.1506	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions has not created significant impact on the Event Day '0' for Strides Pharma Science Ltd where the t-value is 1.3651 < 1.96.

The t-statistics of Abnormal return for Post Event Period (0 to +30) for Strides Pharma Science Ltd had a significant impact on the + 9^{th} showing market reaction on stock prices.

Table 4.3.15.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Based on above mentioned results, it was found that there was only one market reaction of stock prices towards the merger deals in the Event window. Overall, it is inferred that there is no significant impact of merger announcements and it is concluded that the Event did not create any statistically significant impact on Mergers and Acquisition announcement date for Strides Pharma Science Ltd.

4.3.16. Dr. Reddy's Laboratories

Table 4.3.16: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Dr. Reddy's Laboratories

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0009	0.0068	0.0032	-0.0023	-0.1380				
-29	0.0085	0.0029	0.0019	0.0066	0.4004				
-28	0.0062	-0.0070	-0.0014	0.0075	0.4582				
-27	-0.0042	-0.0089	-0.0020	-0.0021	-0.1299				
-26	-0.0089	0.0008	0.0012	-0.0101	-0.6140				
-25	-0.0242	0.0006	0.0011	-0.0254	-1.5396				
-24	-0.0083	-0.0096	-0.0022	-0.0061	-0.3704				
-23	0.0079	0.0183	0.0070	0.0009	0.0565				
-22	0.0214	0.0065	0.0031	0.0184	1.1151				
-21	0.0112	0.0061	0.0030	0.0082	0.4979				
-20	0.0063	0.0044	0.0024	0.0039	0.2348				
-19	-0.0051	-0.0082	-0.0018	-0.0034	-0.2042				
-18	0.0149	0.0017	0.0015	0.0134	0.8167				
-17	0.0075	-0.0205	-0.0058	0.0133	0.8106				
-16	-0.0088	-0.0051	-0.0007	-0.0080	-0.4866				
-15	0.0089	-0.0014	0.0005	0.0084	0.5108				
-14	-0.0102	0.0087	0.0038	-0.0140	-0.8507				
-13	-0.0165	-0.0147	-0.0039	-0.0126	-0.7654				
-12	-0.0190	-0.0017	0.0004	-0.0194	-1.1769				
-11	0.0369	0.0104	0.0044	0.0325	**1.9743***	-11	0.0468	11	1.0667
-10	-0.0030	-0.0043	-0.0005	-0.0026	-0.1549				
-9	-0.0007	-0.0059	-0.0010	0.0003	0.0199				
-8	0.0006	-0.0074	-0.0015	0.0021	0.1251				
-7	0.0093	-0.0023	0.0002	0.0091	0.5552				
-6	0.0152	-0.0009	0.0006	0.0145	0.8817				
-5	-0.0002	-0.0014	0.0005	-0.0007	-0.0432	-5	-0.0092	5	-0.3095
-4	-0.0187	-0.0224	-0.0064	-0.0122	-0.7423				
-3	-0.0088	-0.0001	0.0009	-0.0097	-0.5915				
-2	0.0029	0.0179	0.0069	-0.0040	-0.2402	-2	0.0135	2	0.7215
-1	0.0184	-0.0002	0.0009	0.0175	1.0607				
0	0.0128	0.0112	0.0046	0.0082	0.4962				
1	0.0400	0.0085	0.0038	0.0362	**2.2008***				
2	0.0019	0.0000	0.0010	0.0009	0.0576	+2	0.0372	2	**1.9860***
3	0.0190	0.0062	0.0030	0.0160	0.9708				
4	-0.0041	0.0073	0.0033	-0.0074	-0.4495				
5	0.0152	0.0002	0.0010	0.0141	0.8592	+5	0.0599	5	**2.0239***
6	-0.0005	0.0061	0.0029	-0.0035	-0.2117				
7	-0.0111	-0.0095	-0.0022	-0.0089	-0.5378				

8	-0.0197	-0.0050	-0.0007	-0.0190	-1.1547				
9	-0.0090	-0.0116	-0.0029	-0.0062	-0.3735				
10	-0.0222	-0.0185	-0.0052	-0.0171	-1.0355				
11	-0.0299	-0.0084	-0.0018	-0.0281	-1.7039	+11	-0.0226	11	-0.5168
12	0.0308	0.0062	0.0030	0.0278	1.6898				
13	-0.0117	-0.0037	-0.0003	-0.0114	-0.6922				
14	-0.0127	-0.0111	-0.0027	-0.0100	-0.6071				
15	-0.0287	-0.0111	-0.0027	-0.0260	-1.5776				
16	0.0078	0.0087	0.0038	0.0040	0.2449				
17	-0.0088	-0.0055	-0.0009	-0.0079	-0.4785				
18	-0.0216	-0.0071	-0.0014	-0.0202	-1.2251				
19	0.0253	0.0182	0.0069	0.0183	1.1142				
20	0.0022	-0.0009	0.0007	0.0016	0.0960				
21	-0.0146	-0.0277	-0.0082	-0.0064	-0.3867				
22	-0.0212	-0.0049	-0.0007	-0.0206	-1.2488				
23	0.0204	0.0165	0.0064	0.0140	0.8491				
24	0.0028	0.0162	0.0063	-0.0035	-0.2139				
25	0.0320	-0.0241	-0.0070	0.0390	**2.3681***				
26	0.0073	0.0133	0.0053	0.0019	0.1179				
27	0.0072	-0.0014	0.0005	0.0067	0.4077				
28	-0.0065	0.0046	0.0025	-0.0090	-0.5469				
29	0.0354	0.0134	0.0054	0.0301	1.8249				
30	0.0037	-0.0010	0.0006	0.0031	0.1889				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

<u>Note</u>

Intercept	0.000937961
Beta	0.329761397
Standard Error	0.016467673
Standard Deviation	0.013241311

Table 4.3.16.1: Showing the t- Statistics of Cumulative Abnormal return for Combined Number of Days for Dr. Reddy's Laboratories

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.058873311	**1.988394191***	Significant
Window 11 Days (-5, +5)	0.058931268	1.3418948	Insignificant
Window 23 Days (-11, +11)	0.032321981	0.508982771	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Dr. Reddy's Laboratories where the t-value is 0.4962 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Dr. Reddy's Laboratories had significant Impact on -11th day with (t- value 1.9743) and t-statistics of Abnormal return for Post- Event Period (0 to +30) had significant impact on +1st, +25th days with (t-values 2.2008, 2.3681) greater than the t-table values, are found to be significant at 5% level which indicates that results depicts a positive market reaction of stock market towards the Merger and Acquisition Announcement date.

The above table provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for Pre Event Period -2, -5, -11 days and Post Event Period +2, +5, +11 days. It is apparent from the above table that the event are found to be significant on +2 days and +5 days with (t-values 1.9860, 2.0239) for Dr. Reddy's Laboratories.

Table 4.3.16.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values are found to be significant impact for 5 days (-2 +2) with (t-values 1.9884).

Based on above mentioned results, it was found that there was significant impact of stock prices towards the merger announcement on the -11th day, +1st day, +25th day in the Event window. It is found that values are found to be significant for 5 days (-2 +2) with (t-values 1.9884).

Overall, it is concluded that the event had statistically significant impact on Mergers and Acquisition announcement date for Dr. Reddy's Laboratories.

4.3.17. Granules India Ltd

Table 4.3.17: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Granules India Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0244	-0.0171	-0.0187	-0.0057	-0.1958				
-29	-0.0240	-0.0206	-0.0223	-0.0017	-0.0570				
-28	-0.0035	0.0005	-0.0007	-0.0029	-0.0979				
-27	0.0025	-0.0032	-0.0044	0.0069	0.2353				
-26	-0.0071	0.0014	0.0003	-0.0074	-0.2536				
-25	0.0050	-0.0084	-0.0098	0.0147	0.5045				
-24	-0.0089	-0.0169	-0.0186	0.0097	0.3330				
-23	0.0534	0.0078	0.0069	0.0465	1.5943				
-22	0.0084	0.0222	0.0217	-0.0133	-0.4561				
-21	-0.0101	-0.0004	-0.0016	-0.0085	-0.2925				
-20	0.0398	-0.0002	-0.0013	0.0411	1.4092				
-19	0.0234	0.0038	0.0027	0.0207	0.7098				
-18	0.0322	0.0132	0.0125	0.0197	0.6740				
-17	-0.0208	0.0022	0.0012	-0.0220	-0.7534				
-16	0.0134	0.0124	0.0117	0.0017	0.0600				
-15	0.0392	0.0027	0.0016	0.0375	1.2861				
-14	-0.0147	-0.0039	-0.0051	-0.0096	-0.3278				
-13	0.0033	-0.0071	-0.0085	0.0118	0.4042				
-12	-0.0033	0.0235	0.0230	-0.0263	-0.9029				
-11	0.0042	0.0025	0.0015	0.0028	0.0949	-11	0.0498	11	0.6373
-10	0.0182	-0.0003	-0.0015	0.0197	0.6747				
-9	0.0187	-0.0039	-0.0052	0.0239	0.8206				
-8	-0.0178	-0.0023	-0.0035	-0.0144	-0.4925				
-7	-0.0089	-0.0032	-0.0044	-0.0045	-0.1542				
-6	0.0113	-0.0072	-0.0085	0.0198	0.6774				
-5	0.0376	0.0194	0.0189	0.0187	0.6403	-5	0.0026	5	0.0485
-4	0.0003	0.0049	0.0039	-0.0037	-0.1256				
-3	-0.0273	0.0076	0.0066	-0.0340	-1.1639				
-2	0.0015	0.0013	0.0002	0.0013	0.0439	-2	0.0215	2	0.6446
-1	0.0207	0.0016	0.0005	0.0202	0.6930				
0	**0.0164**	**-0.0102**	**-0.0117**	**0.0281**	**0.9617**				
1	-0.0135	-0.0061	-0.0074	-0.0061	-0.2101				
2	-0.0309	-0.0045	-0.0058	-0.0251	-0.8606	+2	-0.0312	2	-0.9365
3	-0.0352	-0.0075	-0.0089	-0.0263	-0.9011				
4	-0.0012	-0.0101	-0.0116	0.0104	0.3554				
5	-0.0012	-0.0100	-0.0115	0.0103	0.3520	+5	-0.0369	5	-0.6994
6	-0.0058	-0.0047	-0.0060	0.0002	0.0076				

7	0.0116	0.0110	0.0102	0.0013	0.0454				
8	0.0180	0.0217	0.0212	-0.0032	-0.1103				
9	-0.0051	0.0023	0.0012	-0.0063	-0.2163				
10	-0.0157	-0.0131	-0.0146	-0.0011	-0.0366				
11	0.0109	-0.0204	-0.0222	0.0331	1.1330	+11	-0.0129	11	-0.1647
12	-0.0063	-0.0006	-0.0018	-0.0046	-0.1565				
13	0.0009	0.0198	0.0193	-0.0183	-0.6290				
14	0.0012	-0.0092	-0.0107	0.0119	0.4067				
15	-0.0042	-0.0003	-0.0015	-0.0027	-0.0942				
16	-0.0052	0.0057	0.0048	-0.0099	-0.3397				
17	-0.0006	0.0137	0.0130	-0.0136	-0.4667				
18	0.0055	0.0067	0.0058	-0.0003	-0.0115				
19	0.1275	-0.0026	-0.0038	0.1313	**4.4994***				
20	-0.0169	-0.0066	-0.0080	-0.0090	-0.3078				
21	-0.0150	0.0129	0.0122	-0.0272	-0.9322				
22	-0.0052	0.0030	0.0020	-0.0072	-0.2468				
23	-0.0072	0.0165	0.0158	-0.0230	-0.7901				
24	-0.0308	-0.0049	-0.0062	-0.0247	-0.8455				
25	0.0422	-0.0039	-0.0052	0.0474	1.6251				
26	0.0156	-0.0113	-0.0128	0.0284	0.9720				
27	-0.0272	-0.0111	-0.0125	-0.0147	-0.5032				
28	0.0671	-0.0022	-0.0034	0.0705	**2.4177***				
29	0.0106	-0.0025	-0.0038	0.0144	0.4933				
30	-0.0008	0.0126	0.0119	-0.0127	-0.4338				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	-0.001140217
Beta	1.029986971
Standard Error	0.029171144
Standard Deviation	0.023582199

Table 4.3.17.1: t- Statistics of Cumulative Abnormal return for combined number of days for Granules India Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.018317999	0.347383131	Insignificant
Window 11 Days (-5, +5)	-0.006268072	-0.080140738	Insignificant
Window 23 Days (-11, +11)	0.065014934	0.57486373	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions has not created significant impact on the Event Day '0' for Granules India Ltd where the t-value is 0.9617 < 1.96.

The t-statistics of Abnormal return for Post- Event Period (0 to +30) Granules India Ltd has significant impact on +19th, + 28th days with (t-values 4.4994, 2.4177) greater than t-table values are found to be significant at 5% level which indicates, that the results show a positive reaction of stock prices after the announcement of Merger and Announcement date and the event did not show any market reaction of stock prices before the Merger and Acquisition Announcement date.

Table 4.3.17.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Based on above mentioned results, it was found that there was significant impact of stock prices towards the merger deals on the +19th, + 28th days in the Event window. Overall, it is inferred that there is no significant impact of merger announcements and it is concluded that merger announcements did not create any statistically significant impact for Granules India Ltd.

4.3.18. Hester Biosciences Limited

Table 4.3.18: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Hester Biosciences Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0334	0.0035	0.0085	0.0250	0.6331				
-29	0.0062	-0.0024	0.0024	0.0038	0.0973				
-28	-0.0149	0.0038	0.0087	-0.0236	-0.5979				
-27	0.0028	0.0047	0.0096	-0.0068	-0.1726				
-26	0.0532	-0.0005	0.0043	0.0489	1.2397				
-25	-0.0334	-0.0046	0.0001	-0.0335	-0.8508				
-24	0.0509	0.0012	0.0061	0.0448	1.1372				
-23	0.0374	0.0095	0.0145	0.0229	0.5813				
-22	-0.0203	0.0058	0.0108	-0.0311	-0.7880				
-21	-0.0595	-0.0057	-0.0009	-0.0585	-1.4851				
-20	-0.0073	0.0017	0.0066	-0.0139	-0.3517				
-19	-0.0096	0.0019	0.0067	-0.0163	-0.4139				
-18	-0.0094	0.0089	0.0139	-0.0233	-0.5922				
-17	-0.0195	-0.0047	0.0001	-0.0196	-0.4960				
-16	0.0408	-0.0041	0.0007	0.0401	1.0162				
-15	0.0529	0.0000	0.0048	0.0480	1.2190				
-14	0.0237	0.0042	0.0091	0.0145	0.3685				
-13	-0.0101	-0.0037	0.0011	-0.0112	-0.2836				
-12	-0.0022	-0.0120	-0.0073	0.0051	0.1302				
-11	0.0010	-0.0115	-0.0069	0.0079	0.1992	-11	-0.2270	11	-2.3566
-10	-0.0198	0.0012	0.0061	-0.0259	-0.6579				
-9	-0.0047	-0.0083	-0.0036	-0.0012	-0.0300				
-8	-0.0252	-0.0091	-0.0045	-0.0207	-0.5260				
-7	-0.0467	-0.0011	0.0037	-0.0504	-1.2787				
-6	-0.0837	-0.0199	-0.0154	-0.0683	-1.7336				
-5	0.0041	-0.0027	0.0021	0.0019	0.0491	-5	-0.0683	5	-1.0511
-4	0.0083	0.0155	0.0206	-0.0123	-0.3132				
-3	0.0324	0.0090	0.0140	0.0183	0.4653				
-2	-0.0227	0.0120	0.0171	-0.0398	-1.0095	-2	-0.0762	2	-1.8550
-1	-0.0387	-0.0071	-0.0023	-0.0364	-0.9234				
0	-0.0163	-0.0109	-0.0062	-0.0101	**-0.2561**				
1	0.0172	0.0012	0.0061	0.0111	0.2819				
2	0.0207	0.0056	0.0106	0.0101	0.2565	+2	0.0212	2	0.5168
3	0.0059	0.0003	0.0051	0.0008	0.0201				
4	-0.0039	0.0035	0.0084	-0.0123	-0.3125				
5	0.0007	0.0003	0.0052	-0.0044	-0.1125	+5	0.0053	5	0.0811
6	0.0810	0.0137	0.0188	0.0621	1.5766				

7	0.0117	-0.0016	0.0032	0.0085	0.2156				
8	-0.0315	-0.0312	-0.0269	-0.0047	-0.1182				
9	-0.0090	-0.0029	0.0019	-0.0109	-0.2772				
10	0.0029	0.0135	0.0186	-0.0157	-0.3987				
11	0.0067	0.0067	0.0117	-0.0050	-0.1265	+11	0.0396	11	0.4114
12	-0.0023	0.0046	0.0095	-0.0119	-0.3011				
13	-0.0185	-0.0058	-0.0010	-0.0174	-0.4421				
14	-0.0207	-0.0029	0.0019	-0.0226	-0.5730				
15	-0.0244	0.0263	0.0316	-0.0561	-1.4222				
16	-0.0039	0.0016	0.0065	-0.0105	-0.2657				
17	-0.0003	0.0050	0.0099	-0.0102	-0.2590				
18	0.0038	0.0183	0.0235	-0.0197	-0.5001				
19	0.0626	0.0036	0.0085	0.0541	1.3727				
20	0.0323	0.0040	0.0090	0.0233	0.5916				
21	-0.0147	0.0094	0.0144	-0.0291	-0.7372				
22	-0.0228	0.0099	0.0150	-0.0378	-0.9589				
23	-0.0105	-0.0004	0.0044	-0.0150	-0.3793				
24	-0.0245	0.0041	0.0091	-0.0335	-0.8509				
25	-0.0233	-0.0169	-0.0124	-0.0109	-0.2776				
26	0.0099	-0.0021	0.0027	0.0071	0.1807				
27	0.0129	-0.0009	0.0039	0.0090	0.2284				
28	0.0110	0.0014	0.0063	0.0048	0.1208				
29	-0.0312	0.0063	0.0113	-0.0425	-1.0775				
30	0.0281	0.0048	0.0098	0.0183	0.4647				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.004857251
Beta	1.017660633
Standard Error	0.039417394
Standard Deviation	0.02904203

Table 4.3.18.1: t- Statistics of Cumulative Abnormal return for combined number of days for Hester Biosciences Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.065059722	-1.001844304	Insignificant
Window 11 Days (-5, +5)	-0.073088467	-0.758796885	Insignificant
Window 23 Days (-11, +11)	-0.197463804	-1.417740064	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Hester Biosciences Ltd where the t-value is -0.2561 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) and Post Event Period (0 to +30) for Hester Biosciences Ltd had no statistically significant impact of stock prices before and after the Merger and Acquisition Announcement date.

Table 4.3.18.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Overall, it is inferred that there is no significant impact of merger announcements and it is concluded that merger announcements did not create any statistically significant impact for Hester Biosciences Ltd.

4.3.19. Natco Pharma Ltd

Table 4.3.19: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Natco Pharma Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0111	0.0062	0.0103	0.0008	0.0235				
-29	-0.0203	0.0073	0.0112	-0.0314	-0.9532				
-28	-0.0329	0.0002	0.0057	-0.0385	-1.1677				
-27	-0.0354	0.0061	0.0102	-0.0457	-1.3846				
-26	-0.0192	-0.0095	-0.0020	-0.0172	-0.5221				
-25	0.0093	-0.0050	0.0016	0.0078	0.2351				
-24	-0.0146	-0.0116	-0.0036	-0.0109	-0.3314				
-23	-0.0417	-0.0185	-0.0090	-0.0327	-0.9917				
-22	-0.0403	-0.0084	-0.0011	-0.0393	-1.1902				
-21	-0.0432	0.0062	0.0103	-0.0535	-1.6207				
-20	-0.0250	-0.0037	0.0026	-0.0276	-0.8357				
-19	-0.0379	-0.0111	-0.0032	-0.0346	-1.0503				
-18	-0.0465	-0.0111	-0.0032	-0.0433	-1.3118				
-17	0.1094	0.0087	0.0123	0.0972	**2.9460***				
-16	0.0187	-0.0055	0.0011	0.0176	0.5337				
-15	0.0161	-0.0071	-0.0001	0.0162	0.4912				
-14	0.0217	0.0182	0.0197	0.0020	0.0603				
-13	-0.0040	-0.0009	0.0048	-0.0088	-0.2671				
-12	-0.0886	-0.0277	-0.0162	-0.0724	**-2.1935***				
-11	0.0092	-0.0049	0.0016	0.0076	0.2302	-11	0.0509	11	0.6232
-10	0.0308	0.0165	0.0184	0.0125	0.3776				
-9	0.0122	0.0162	0.0181	-0.0059	-0.1797				
-8	-0.0102	-0.0241	-0.0134	0.0031	0.0954				
-7	0.0051	0.0133	0.0158	-0.0108	-0.3265				
-6	0.0185	-0.0014	0.0044	0.0141	0.4284				
-5	0.0847	0.0046	0.0091	0.0756	**2.2918***	-5	0.0303	5	0.5500
-4	0.0561	0.0134	0.0159	0.0402	1.2183				
-3	-0.0131	-0.0010	0.0047	-0.0178	-0.5395				
-2	-0.0176	0.0069	0.0108	-0.0284	-0.8612	-2	-0.0677	2	-1.9419
-1	-0.0340	-0.0003	0.0053	-0.0393	-1.1906				
0	-0.0058	0.0045	0.0090	-0.0148	**-0.4486**				
1	0.0234	-0.0105	-0.0028	0.0262	0.7931				
2	-0.0218	-0.0037	0.0026	-0.0243	-0.7382	+2	0.0018	2	0.0519
3	-0.0120	-0.0006	0.0050	-0.0171	-0.5173				
4	-0.0205	-0.0019	0.0040	-0.0245	-0.7420				
5	0.0005	0.0137	0.0162	-0.0157	-0.4764	+5	-0.0554	5	-1.0061
6	0.0031	0.0000	0.0054	-0.0023	-0.0708				

7	-0.0321	-0.0236	-0.0130	-0.0191	-0.5778				
8	-0.0359	-0.0124	-0.0042	-0.0317	-0.9619				
9	0.0178	-0.0005	0.0050	0.0128	0.3882				
10	-0.0019	-0.0020	0.0039	-0.0058	-0.1768				
11	-0.0101	-0.0087	-0.0014	-0.0087	-0.2640	+11	-0.1103	11	-1.3494
12	0.0048	-0.0027	0.0034	0.0015	0.0440				
13	0.0025	0.0126	0.0153	-0.0128	-0.3888				
14	-0.0249	-0.0198	-0.0100	-0.0149	-0.4530				
15	-0.0143	0.0022	0.0072	-0.0215	-0.6521				
16	-0.0007	0.0039	0.0085	-0.0092	-0.2787				
17	-0.0081	0.0042	0.0087	-0.0168	-0.5100				
18	0.0069	0.0055	0.0098	-0.0029	-0.0876				
19	0.0292	0.0102	0.0135	0.0157	0.4765				
20	0.0531	0.0061	0.0103	0.0429	1.2991				
21	0.0093	0.0155	0.0176	-0.0082	-0.2497				
22	-0.0203	0.0034	0.0081	-0.0285	-0.8629				
23	0.0049	-0.0025	0.0035	0.0014	0.0422				
24	0.0147	0.0044	0.0089	0.0058	0.1757				
25	-0.0014	-0.0020	0.0039	-0.0053	-0.1613				
26	0.0132	-0.0075	-0.0004	0.0136	0.4135				
27	0.0213	0.0060	0.0102	0.0111	0.3380				
28	0.0302	0.0101	0.0133	0.0169	0.5114				
29	-0.0067	-0.0010	0.0047	-0.0114	-0.3459				
30	-0.0139	0.0047	0.0092	-0.0231	-0.6989				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.005469638
Beta	0.78157826
Standard Error	0.032985724
Standard Deviation	0.024645226

Table 4.3.19.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Natco Pharma Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.080666336	-1.463775667	Insignificant
Window 11 Days (-5, +5)	-0.039932019	-0.488530987	Insignificant
Window 23 Days (-11, +11)	-0.074158928	-0.62743208	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions has not created significant impact on the Event Day '0' for Natco Pharma Ltd where the t-value is -0.4486< 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Natco Pharma Ltd has significant impact on -5th, -12th -17th days with (t-values 2.2918, -2.1935, 2.9460) greater than t-table values, found to be significant at 5% level and the event did not show any market reaction on stock prices post the Merger and Acquisition announcement date.

Table 4.3.19.1 provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Based on above mentioned results, it was found that there was significant impact of stock prices towards the merger announcement on the -5th, -17th days in the Event window. Overall, it is concluded that merger announcements did not create any statistically significant impact for Natco Pharma Ltd.

4.3.20. FDC Ltd

Table 4.3.20: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for FDC Limited

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0588	0.0108	0.0081	0.0507	**2.0185***				
-29	0.0073	0.0036	0.0037	0.0036	0.1441				
-28	-0.0161	0.0045	0.0042	-0.0204	-0.8109				
-27	0.0091	-0.0051	-0.0016	0.0107	0.4267				
-26	-0.0007	-0.0054	-0.0017	0.0010	0.0403				
-25	-0.0077	0.0055	0.0049	-0.0126	-0.5019				
-24	-0.0082	-0.0090	-0.0039	-0.0042	-0.1682				
-23	0.0078	-0.0155	-0.0078	0.0156	0.6227				
-22	-0.0153	0.0106	0.0080	-0.0233	-0.9264				
-21	0.0167	0.0082	0.0065	0.0102	0.4078				
-20	0.0007	-0.0097	-0.0043	0.0050	0.1996				
-19	-0.0153	-0.0030	-0.0003	-0.0150	-0.5978				
-18	-0.0320	-0.0106	-0.0049	-0.0271	-1.0800				
-17	0.0026	0.0076	0.0061	-0.0035	-0.1406				
-16	-0.0059	0.0132	0.0095	-0.0154	-0.6143				
-15	-0.0011	0.0016	0.0025	-0.0036	-0.1446				
-14	0.0166	0.0067	0.0056	0.0110	0.4364				
-13	0.0051	0.0105	0.0079	-0.0028	-0.1124				
-12	-0.0062	0.0029	0.0033	-0.0095	-0.3791				
-11	0.1076	-0.0028	-0.0002	0.1078	**4.2934***	-11	0.1032	11	1.6304
-10	-0.0256	0.0020	0.0028	-0.0283	-1.1289				
-9	-0.0091	0.0028	0.0032	-0.0124	-0.4924				
-8	0.0208	-0.0009	0.0010	0.0198	0.7898				
-7	0.0292	-0.0002	0.0014	0.0278	1.1056				
-6	0.0495	0.0040	0.0039	0.0456	1.8144				
-5	-0.0214	0.0023	0.0029	-0.0244	-0.9711	-5	-0.0571	5	-1.3373
-4	0.0131	0.0092	0.0071	0.0060	0.2396				
-3	0.0003	0.0069	0.0057	-0.0054	-0.2146				
-2	-0.0257	0.0039	0.0039	-0.0296	-1.1808	-2	-0.0333	2	-1.2340
-1	-0.0035	-0.0023	0.0001	-0.0037	-0.1455				
0	-0.0016	-0.0011	0.0009	-0.0025	**-0.0979**				
1	0.0171	0.0107	0.0080	0.0091	0.3624				
2	0.0078	-0.0026	0.0000	0.0078	0.3122	+2	0.0169	2	0.6277
3	0.0283	-0.0072	-0.0028	0.0311	1.2399				
4	-0.0159	-0.0010	0.0009	-0.0168	-0.6692				
5	-0.0196	0.0024	0.0030	-0.0226	-0.9008	+5	0.0086	5	0.2027
6	0.0072	-0.0079	-0.0032	0.0104	0.4149				
7	-0.0594	-0.0137	-0.0067	-0.0527	**-2.0989***				

8	-0.0190	0.0054	0.0048	-0.0238	-0.9489				
9	0.0279	0.0173	0.0120	0.0159	0.6343				
10	0.0065	0.0008	0.0020	0.0045	0.1792				
11	-0.0003	0.0031	0.0034	-0.0037	-0.1480	+11	-0.0407	11	-0.6439
12	-0.0341	-0.0159	-0.0081	-0.0260	-1.0376				
13	-0.0284	-0.0019	0.0004	-0.0288	-1.1467				
14	-0.0196	-0.0114	-0.0053	-0.0143	-0.5687				
15	-0.0043	0.0072	0.0059	-0.0101	-0.4039				
16	0.0169	-0.0012	0.0008	0.0161	0.6425				
17	0.0221	0.0007	0.0020	0.0201	0.8017				
18	-0.0079	-0.0024	0.0001	-0.0080	-0.3174				
19	0.0605	-0.0118	-0.0056	0.0661	**2.6321***				
20	-0.0306	-0.0012	0.0008	-0.0314	-1.2512				
21	0.0077	0.0149	0.0106	-0.0029	-0.1157				
22	-0.0067	-0.0127	-0.0062	-0.0005	-0.0200				
23	-0.0003	0.0031	0.0034	-0.0037	-0.1491				
24	0.0208	-0.0026	0.0000	0.0208	0.8304				
25	-0.0215	-0.0148	-0.0074	-0.0141	-0.5602				
26	-0.0179	0.0041	0.0040	-0.0219	-0.8713				
27	0.0068	0.0127	0.0092	-0.0025	-0.0980				
28	-0.0088	0.0061	0.0052	-0.0141	-0.5605				
29	0.0075	0.0086	0.0067	0.0008	0.0301				
30	0.0067	0.0023	0.0029	0.0038	0.1513				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.001540213
Beta	0.605077751
Standard Error	0.02510499
Standard Deviation	0.019079263

Table 4.3.20.1: t- Statistics of Cumulative Abnormal return for combined number of days for FDC Limited

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.018818177	-0.441093786	Insignificant
Window 11 Days (-5, +5)	-0.050857852	-0.8037113	Insignificant
Window 23 Days (-11, +11)	0.059970499	0.655408617	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for FDC Limited where the t-value is -0.0979 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for FDC Ltd had significant Impact on -11th, -30th days with (t-values 4.2934, 2.0185) and t-statistics of Abnormal return for Post- Event Period (0 to +30) has significant impact on +7th, +19th day with (t-values -2.0989, 2.6321) greater than t-table values, found to be significant at 5% level.

Table 4.3.20.1 provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Based on above mentioned results, it was found that there was significant impact of stock prices towards the merger deals on the -11th, -30th, +19th days in the Event window. Overall, it is concluded that merger announcements did not create any statistically significant impact for

for FDC Ltd.

4.3.21. Lupin Limited (Lupin)

Table 4.3.21: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Lupin Limited

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0291	-0.0198	-0.0198	-0.0093	-0.4680				
-29	0.0093	0.0022	0.0042	0.0051	0.2583				
-28	-0.0057	0.0039	0.0060	-0.0117	-0.5888				
-27	-0.0119	0.0042	0.0063	-0.0182	-0.9162				
-26	0.0234	0.0055	0.0078	0.0156	0.7876				
-25	0.0358	0.0102	0.0129	0.0229	1.1533				
-24	0.0122	0.0061	0.0085	0.0037	0.1851				
-23	-0.0059	0.0155	0.0187	-0.0245	-1.2342				
-22	-0.0195	0.0034	0.0055	-0.0250	-1.2608				
-21	0.0190	-0.0025	-0.0009	0.0199	1.0027				
-20	0.0147	0.0044	0.0066	0.0081	0.4090				
-19	0.0052	-0.0020	-0.0004	0.0056	0.2844				
-18	-0.0051	-0.0075	-0.0064	0.0013	0.0667				
-17	0.0289	0.0060	0.0083	0.0206	1.0381				
-16	-0.0061	0.0101	0.0127	-0.0188	-0.9489				
-15	-0.0024	-0.0010	0.0007	-0.0031	-0.1563				
-14	0.0163	0.0047	0.0069	0.0094	0.4735				
-13	0.0092	0.0044	0.0066	0.0026	0.1325				
-12	-0.0053	-0.0013	0.0003	-0.0056	-0.2823				
-11	-0.0162	-0.0175	-0.0173	0.0011	0.0547	-11	-0.0805	11	-1.4146
-10	0.0045	-0.0041	-0.0027	0.0072	0.3651				
-9	-0.0080	0.0038	0.0060	-0.0139	-0.7026				
-8	0.0097	0.0118	0.0146	-0.0050	-0.2511				
-7	0.0142	-0.0007	0.0011	0.0131	0.6612				
-6	0.0138	0.0082	0.0107	0.0031	0.1548				
-5	0.0061	0.0098	0.0125	-0.0064	-0.3240	-5	-0.0861	5	**-2.2443***
-4	0.0093	0.0002	0.0020	0.0073	0.3657				
-3	0.0027	-0.0007	0.0010	0.0017	0.0851				
-2	-0.0481	-0.0086	-0.0076	-0.0405	**-2.0390***	-2	-0.0886	2	**-3.6524***
-1	-0.0331	0.0121	0.0150	-0.0481	**-2.4225***				
0	**-0.0539**	**-0.0051**	**-0.0038**	**-0.0501**	**-2.5255***				
1	-0.0330	-0.0080	-0.0069	-0.0261	-1.3149				
2	-0.0332	-0.0190	-0.0190	-0.0142	-0.7149	+2	-0.0403	2	-1.6616
3	-0.0051	-0.0029	-0.0014	-0.0037	-0.1876				
4	0.0189	0.0046	0.0067	0.0122	0.6135				
5	-0.0081	0.0056	0.0079	-0.0160	-0.8042	+5	-0.0478	5	-1.2468
6	0.0420	0.0131	0.0161	0.0260	1.3079				

7	-0.0195	0.0012	0.0031	-0.0225	-1.1356				
8	-0.0142	-0.0031	-0.0016	-0.0127	-0.6376				
9	0.0240	0.0060	0.0083	0.0157	0.7924				
10	0.0149	0.0024	0.0044	0.0105	0.5275				
11	-0.0066	-0.0028	-0.0013	-0.0053	-0.2674	+11	-0.0361	11	-0.6356
12	0.0009	-0.0046	-0.0032	0.0041	0.2073				
13	0.0013	-0.0074	-0.0063	0.0076	0.3850				
14	0.0140	-0.0134	-0.0129	0.0269	1.3556				
15	0.0207	0.0008	0.0026	0.0180	0.9090				
16	0.0199	0.0193	0.0228	-0.0029	-0.1468				
17	0.0019	-0.0049	-0.0035	0.0054	0.2740				
18	-0.0258	-0.0013	0.0004	-0.0262	-1.3219				
19	0.0250	0.0034	0.0055	0.0196	0.9849				
20	0.0516	-0.0145	-0.0141	0.0657	**3.3093***				
21	-0.0068	-0.0087	-0.0078	0.0010	0.0495				
22	-0.0403	-0.0610	-0.0648	0.0245	1.2324				
23	0.0137	0.0091	0.0118	0.0020	0.0986				
24	-0.0100	-0.0113	-0.0106	0.0006	0.0311				
25	0.0482	0.0200	0.0236	0.0247	1.2425				
26	-0.0207	0.0066	0.0090	-0.0298	-1.4997				
27	0.0394	-0.0038	-0.0024	0.0418	**2.1039***				
28	-0.0395	-0.0235	-0.0239	-0.0156	-0.7878				
29	0.0106	-0.0089	-0.0079	0.0186	0.9345				
30	-0.0096	0.0136	0.0167	-0.0263	-1.3254				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.001779247
Beta	1.091220058
Standard Error	0.019852237
Standard Deviation	0.017147662

Table 4.3.21.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Lupin Limited

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.179003393	**-4.668435331***	Insignificant
Window 11 Days (-5, +5)	-0.183996682	**-3.23525663***	Insignificant
Window 23 Days (-11, +11)	-0.166735475	**-2.027492143***	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for FDC Limited where the calculated t-value -2.5255 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Lupin Limited had significant Impact on -1st, -2nd days with (t-values -2.4225, -2.0390) and t-statistics of Abnormal return for Post- Event Period (0 to +30) has significant impact on +20th, +27th day with (t-values 3.3093. 2.1039) greater than t-table values are found to be significant at 5% level.

The table also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for -2, -5, -11 days for Pre Merger Period (0 to -30 days) and +2, +5, +11 days for Post Event Period (0 to + 30 days). The t-statistics of Cumulative Abnormal return (CAR) had a significant impact on -2 days and -5 days with (t-values -3.6524, -2.2443) for Pre Merger Period.

The above table also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for combined number of days for Pre Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5) and 23 days (- 11, + 11 days) for Lupin Limited. It is apparent that values before and after the merger announcement are found to be insignificant at 5% for 5 days (-2 +2) 11 days (-5 +5) and 23 days (-11 + 11) with (t-values -4.6684, -3.2353, -2.02749).

Based on above mentioned results, it was found that there was significant impact of stock prices towards the merger deals on the +20th, +27th days in the Event window. Overall, it is concluded that merger announcements did not create any statistically significant impact for Lupin Limited.

4.3.22. Nutraplus India Ltd

Table 4.3.22: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Nutraplus India Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0007	0.0042	0.0102	-0.0095	-0.2974				
-29	0.0129	0.0067	0.0128	0.0001	0.0023				
-28	0.0129	0.0068	0.0129	0.0000	0.0005				
-27	0.0109	0.0121	0.0183	-0.0074	-0.2295				
-26	0.0045	-0.0111	-0.0056	0.0101	0.3148				
-25	0.0015	0.0085	0.0146	-0.0130	-0.4063				
-24	-0.0124	-0.0057	0.0000	-0.0124	-0.3868				
-23	-0.0019	0.0101	0.0163	-0.0182	-0.5665				
-22	0.0542	-0.0004	0.0054	0.0488	1.5194				
-21	0.0845	0.0075	0.0136	0.0708	**2.2062***				
-20	0.0047	0.0017	0.0076	-0.0029	-0.0905				
-19	0.0014	-0.0046	0.0011	0.0003	0.0098				
-18	-0.0014	0.0060	0.0121	-0.0135	-0.4206				
-17	0.0321	0.0017	0.0076	0.0246	0.7650				
-16	-0.0057	-0.0208	-0.0156	0.0099	0.3085				
-15	0.0046	-0.0017	0.0041	0.0005	0.0170				
-14	-0.0205	-0.0068	-0.0012	-0.0193	-0.6003				
-13	-0.0181	-0.0221	-0.0170	-0.0012	-0.0361				
-12	0.0459	0.0033	0.0093	0.0366	1.1394				
-11	0.0131	-0.0044	0.0013	0.0118	0.3670	-11	0.1827	11	**2.1931***
-10	0.0262	-0.0058	-0.0001	0.0263	0.8192				
-9	0.0105	0.0069	0.0130	-0.0025	-0.0785				
-8	-0.0155	-0.0033	0.0025	-0.0179	-0.5580				
-7	0.0167	-0.0129	-0.0075	0.0243	0.7556				
-6	0.0538	-0.0110	-0.0055	0.0593	1.8482				
-5	0.0144	0.0120	0.0182	-0.0038	-0.1188	-5	0.0814	5	1.4501
-4	0.0374	-0.0172	-0.0120	0.0493	1.5370				
-3	0.0343	-0.0042	0.0015	0.0327	1.0199				
-2	0.0053	0.0196	0.0261	-0.0208	-0.6468	-2	0.0032	2	0.0891
-1	0.0319	0.0021	0.0080	0.0239	0.7454				
0	**-0.0116**	**0.0003**	**0.0061**	**-0.0177**	**-0.5511**				
1	0.0176	-0.0009	0.0049	0.0127	0.3956				
2	-0.0002	0.0163	0.0227	-0.0229	-0.7128	+2	-0.0102	2	-0.2866
3	-0.0011	-0.0018	0.0039	-0.0050	-0.1560				
4	-0.0043	-0.0116	-0.0061	0.0019	0.0581				
5	0.0081	-0.0129	-0.0075	0.0156	0.4871	+5	0.0023	5	0.0413
6	-0.0216	0.0047	0.0107	-0.0324	-1.0080				
7	-0.2231	0.0114	0.0176	-0.2407	**-7.4982***				

8	-0.1513	-0.0135	-0.0081	-0.1432	**-4.4605***				
9	-0.0382	-0.0110	-0.0056	-0.0326	-1.0159				
10	0.0547	-0.0110	-0.0055	0.0602	1.8760				
11	0.0187	-0.0346	-0.0299	0.0486	1.5131	+11	-0.3378	11	**-4.0551***
12	-0.0312	0.0015	0.0074	-0.0385	-1.2006				
13	0.0330	0.0244	0.0311	0.0019	0.0589				
14	-0.0122	-0.0155	-0.0102	-0.0020	-0.0614				
15	0.0036	0.0082	0.0143	-0.0106	-0.3311				
16	0.0034	0.0114	0.0176	-0.0142	-0.4434				
17	-0.0153	0.0025	0.0085	-0.0238	-0.7413				
18	0.0565	0.0034	0.0093	0.0472	1.4710				
19	-0.0497	-0.0160	-0.0107	-0.0390	-1.2148				
20	-0.0354	-0.0138	-0.0084	-0.0269	-0.8392				
21	-0.0070	-0.0049	0.0008	-0.0078	-0.2431				
22	-0.0326	0.0077	0.0138	-0.0464	-1.4452				
23	-0.0134	-0.0066	-0.0010	-0.0124	-0.3855				
24	0.0117	0.0332	0.0402	-0.0285	-0.8883				
25	0.0010	0.0193	0.0258	-0.0248	-0.7719				
26	0.0099	0.0149	0.0212	-0.0114	-0.3543				
27	-0.0010	0.0016	0.0075	-0.0085	-0.2651				
28	-0.0273	0.0005	0.0064	-0.0336	-1.0480				
29	0.0101	0.0054	0.0115	-0.0014	-0.0441				
30	0.0010	-0.0069	-0.0013	0.0023	0.0725				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.005840508
Beta	1.033881821
Standard Error	0.032107449
Standard Deviation	0.025117496

Table 4.3.22.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Nutraplus India Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.024709312	-0.439945934	Insignificant
Window 11 Days (-5, +5)	0.06607028	0.793110083	Insignificant
Window 23 Days (-11, +11)	-0.172805165	-1.434552567	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company’s t-statistics of Abnormal Returns on the Event Day (‘0’ day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day ‘0’ for Nutraplus India Ltd where the calculated t-value -0.5511 < 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Nutraplus India Ltd has significant Impact on -21^{st} day with (t-value 2.2062) and t-statistics of Abnormal return for Post- Event Period (0 to +30) had significant impact on $+7^{th}$, $+8^{th}$ day with (t-values -7.4982, -4.4605) greater than t-table values are found to be significant at 5% level.

The above table provides the summary of Company’s t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for Pre Event Period -2, -5, -11 days and Post Event Period +2, +5, +11 days. It is apparent from the above table that the event is found to be significant on -11 day and +11 day with (t-values 2.1931, -4.0551) for Nutraplus India Ltd.

Table 4.3.22.1 also provides the summary of Company’s t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant.

Based on above mentioned results, it was found that there was significant impact on the -21^{st} days in the Event window. Overall, it is concluded that merger announcements did not create any statistically significant impact for Nutraplus India Ltd.

4.3.23. Lyka Labs Limited

Table 4.3.23: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Lyka Labs Limited

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0279	0.0002	0.0048	-0.0326	-0.8585				
-29	0.0211	-0.0018	0.0009	0.0202	0.5313				
-28	-0.0079	0.0185	0.0406	-0.0485	-1.2744				
-27	-0.0191	-0.0010	0.0024	-0.0215	-0.5657				
-26	-0.0433	-0.0134	-0.0218	-0.0215	-0.5653				
-25	-0.0290	-0.0127	-0.0204	-0.0086	-0.2259				
-24	-0.0515	0.0057	0.0155	-0.0670	-1.7620				
-23	0.0358	0.0114	0.0267	0.0091	0.2388				
-22	-0.0118	-0.0137	-0.0224	0.0106	0.2798				
-21	-0.0006	-0.0121	-0.0194	0.0188	0.4937				
-20	-0.0313	-0.0114	-0.0179	-0.0134	-0.3536				
-19	-0.1085	-0.0337	-0.0616	-0.0469	-1.2327				
-18	-0.0612	0.0007	0.0056	-0.0668	-1.7571				
-17	0.0405	0.0257	0.0547	-0.0142	-0.3729				
-16	-0.0782	-0.0161	-0.0272	-0.0510	-1.3403				
-15	0.0105	0.0085	0.0210	-0.0105	-0.2760				
-14	-0.0105	0.0117	0.0271	-0.0376	-0.9893				
-13	0.0090	0.0026	0.0095	-0.0005	-0.0135				
-12	0.0523	0.0033	0.0108	0.0415	1.0924				
-11	-0.0397	-0.0174	-0.0297	-0.0100	-0.2629	-11	0.0243	11	0.2334
-10	0.0132	-0.0129	-0.0208	0.0340	0.8935				
-9	-0.0288	-0.0069	-0.0091	-0.0197	-0.5174				
-8	-0.0319	0.0084	0.0209	-0.0528	-1.3889				
-7	-0.0070	-0.0061	-0.0076	0.0006	0.0154				
-6	0.0246	0.0331	0.0691	-0.0445	-1.1705				
-5	0.0121	0.0201	0.0436	-0.0316	-0.8299	-5	0.1167	5	1.6626
-4	0.0469	0.0144	0.0325	0.0144	0.3791				
-3	0.0864	0.0013	0.0069	0.0795	**2.0894***				
-2	0.0819	0.0000	0.0043	0.0776	**2.0399***	-2	0.0544	2	1.2257
-1	-0.0067	0.0062	0.0165	-0.0231	-0.6085				
0	-0.0067	-0.0061	-0.0075	0.0008	**0.0215**				
1	-0.0464	0.0032	0.0106	-0.0571	-1.5004				
2	-0.0032	0.0038	0.0118	-0.0150	-0.3941	+2	-0.0720	2	-1.6222
3	-0.0032	-0.0104	-0.0160	0.0128	0.3366				
4	-0.0382	0.0051	0.0143	-0.0525	-1.3816				
5	0.0363	0.0018	0.0079	0.0283	0.7449	+5	-0.0835	5	-1.1885
6	0.0026	0.0121	0.0281	-0.0255	-0.6710				

7	0.0103	0.0131	0.0299	-0.0196	-0.5152				
8	0.0171	0.0014	0.0071	0.0101	0.2646				
9	0.0316	0.0002	0.0048	0.0268	0.7046				
10	-0.0746	-0.0132	-0.0215	-0.0531	-1.3953				
11	0.0098	-0.0024	-0.0003	0.0101	0.2655	+11	-0.1347	11	-1.2929
12	0.0301	0.0180	0.0396	-0.0095	-0.2504				
13	-0.0057	0.0004	0.0052	-0.0109	-0.2853				
14	0.0182	-0.0033	-0.0021	0.0203	0.5335				
15	0.0179	0.0059	0.0159	0.0020	0.0521				
16	-0.0317	-0.0203	-0.0353	0.0036	0.0941				
17	0.0541	0.0015	0.0072	0.0469	1.2320				
18	-0.0181	-0.0090	-0.0132	-0.0049	-0.1299				
19	0.0115	0.0012	0.0066	0.0049	0.1285				
20	0.0232	0.0153	0.0342	-0.0110	-0.2890				
21	0.0375	0.0049	0.0139	0.0236	0.6212				
22	-0.0045	0.0182	0.0399	-0.0445	-1.1692				
23	0.0074	0.0082	0.0203	-0.0129	-0.3397				
24	-0.0188	0.0000	0.0044	-0.0232	-0.6096				
25	-0.0352	-0.0003	0.0037	-0.0388	-1.0213				
26	-0.0168	-0.0016	0.0012	-0.0180	-0.4742				
27	0.0079	-0.0056	-0.0066	0.0145	0.3810				
28	0.0042	0.0136	0.0310	-0.0268	-0.7035				
29	-0.0329	0.0022	0.0086	-0.0415	-1.0906				
30	-0.0283	-0.0168	-0.0284	0.0002	0.0045				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.004350829
Beta	1.955585836
Standard Error	0.038027552
Standard Deviation	0.031403819

Table 4.3.23.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Lyka Labs Limited

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.0168	-0.2391	Insignificant
Window 11 Days (-5, +5)	0.0341	0.3275	Insignificant
Window 23 Days (-11, +11)	-0.1095	-0.7273	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Lyka Labs Limited where the calculated t-value 0.0215< 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Lyka Labs Ltd had significant impact on -2th, -3rd day with (t-values 2.0399, 2.0894) greater than t-table values, found to be significant at 5% level which indicates, that the results show a significant impact of stock prices before the announcement of Merger and Announcement date and the event did not show any reaction on stock prices post the Merger and Acquisition Announcement date.

Table 4.3.23.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for combined number of days for Pre Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5) and 23 days (- 11, + 11 days) for Lyka Labs Ltd. It is apparent that values before and after the merger announcement are found to be insignificant.

Based on above mentioned results, it was found that there was significant impact of stock prices towards the announcement date on the -2th, -3rd day in the Event window. Overall, it is concluded that merger announcements did not create any statistically significant impact for Lyka Labs Ltd.

4.3.24. Suven Life Sciences Ltd

Table 4.3.24: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Suven Life Sciences Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0465	-0.0059	-0.0058	-0.0408	-1.5933				
-29	0.0000	-0.0263	-0.0218	0.0218	0.8511				
-28	0.0068	0.0071	0.0044	0.0024	0.0933				
-27	-0.0170	-0.0223	-0.0186	0.0015	0.0604				
-26	-0.0173	0.0106	0.0071	-0.0244	-0.9558				
-25	0.0000	-0.0098	-0.0088	0.0088	0.3454				
-24	0.0377	0.0295	0.0220	0.0158	0.6163				
-23	0.0034	-0.0096	-0.0087	0.0120	0.4696				
-22	-0.0067	0.0056	0.0032	-0.0100	-0.3892				
-21	0.0067	0.0215	0.0156	-0.0089	-0.3482				
-20	0.0034	0.0227	0.0166	-0.0133	-0.5183				
-19	0.0000	-0.0022	-0.0029	0.0029	0.1121				
-18	-0.0101	0.0046	0.0025	-0.0126	-0.4911				
-17	-0.0068	-0.0238	-0.0198	0.0130	0.5081				
-16	-0.0346	-0.0157	-0.0134	-0.0212	-0.8274				
-15	-0.0178	-0.0212	-0.0178	0.0000	-0.0001				
-14	-0.0108	0.0075	0.0047	-0.0155	-0.6078				
-13	-0.0332	-0.0078	-0.0073	-0.0259	-1.0117				
-12	-0.0227	-0.0036	-0.0039	-0.0188	-0.7345				
-11	0.0038	-0.0202	-0.0169	0.0208	0.8121	-11	-0.0675	11	-0.9502
-10	0.0264	-0.0083	-0.0077	0.0340	1.3305				
-9	-0.0379	-0.0150	-0.0129	-0.0249	-0.9751				
-8	0.0153	0.0323	0.0241	-0.0088	-0.3428				
-7	-0.0115	0.0086	0.0056	-0.0171	-0.6675				
-6	-0.0116	-0.0042	-0.0044	-0.0072	-0.2798				
-5	-0.0276	0.0137	0.0096	-0.0372	-1.4535	-5	-0.0644	5	-1.3439
-4	-0.0408	-0.0060	-0.0058	-0.0350	-1.3676				
-3	-0.0126	-0.0095	-0.0086	-0.0040	-0.1571				
-2	-0.0127	-0.0127	-0.0111	-0.0016	-0.0629	-2	0.0118	2	0.3883
-1	0.0085	-0.0047	-0.0049	0.0134	0.5230				
0	**-0.0171**	**0.0027**	**0.0009**	**-0.0180**	**-0.7053**				
1	0.0381	0.0273	0.0203	0.0178	0.6962				
2	-0.0083	-0.0033	-0.0037	-0.0046	-0.1798	+2	0.0132	2	0.4358
3	-0.0042	0.0001	-0.0011	-0.0031	-0.1205				
4	0.0167	0.0009	-0.0005	0.0171	0.6702				
5	0.0285	-0.0015	-0.0023	0.0309	1.2065	+5	0.0581	5	1.2129
6	0.0159	-0.0009	-0.0018	0.0178	0.6948				
7	0.0724	0.0223	0.0163	0.0561	**2.1950***				
8	0.0361	0.0023	0.0007	0.0354	1.3850				
9	-0.0324	-0.0061	-0.0060	-0.0265	-1.0352				

10	0.0604	0.0072	0.0045	0.0560	**2.1877***				
11	-0.0104	0.0016	0.0001	-0.0105	-0.4109	+11	0.1864	11	**2.6227***
12	-0.0247	0.0190	0.0137	-0.0384	-1.5011				
13	-0.0144	-0.0023	-0.0030	-0.0114	-0.4463				
14	0.0144	0.0126	0.0087	0.0057	0.2236				
15	0.0000	0.0060	0.0035	-0.0035	-0.1383				
16	-0.0036	-0.0005	-0.0015	-0.0021	-0.0803				
17	0.0213	0.0159	0.0113	0.0100	0.3891				
18	0.0446	0.0060	0.0036	0.0411	1.6049				
19	0.0166	0.0090	0.0059	0.0108	0.4217				
20	0.0546	-0.0228	-0.0190	0.0736	**2.8778***				
21	-0.0094	0.0218	0.0159	-0.0253	-0.9892				
22	-0.0063	0.0070	0.0043	-0.0106	-0.4160				
23	-0.0225	0.0065	0.0039	-0.0264	-1.0326				
24	-0.0033	0.0106	0.0071	-0.0104	-0.4051				
25	0.0225	0.0067	0.0041	0.0185	0.7217				
26	0.0375	-0.0050	-0.0050	0.0425	1.6632				
27	0.0061	0.0062	0.0037	0.0024	0.0957				
28	0.0030	0.0082	0.0053	-0.0022	-0.0867				
29	-0.0246	-0.0057	-0.0056	-0.0190	-0.7427				
30	0.0031	0.0016	0.0001	0.0030	0.1180				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	-0.001159009
Beta	0.782966466
Standard Error	0.025578333
Standard Deviation	0.021433101

Table 4.3.24.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Suven Life Sciences Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.0069	0.1447	Insignificant
Window 11 Days (-5+5)	-0.0243	-0.3421	Insignificant
Window 23 Days (-11, +11)	0.1009	0.9812	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Suven Life Science Ltd where the calculated t-value -0.7053< 1.96.

The t-statistics of Abnormal return for Post- Event Period (0 to +30) Suven Life Science Ltd had significant impact on +7th, +10th, +20th days with (t-values 2.1950, 2.1877, 2.8778) greater than t-table values are found to be significant at 5% level which indicates, that the results show a significant impact of stock prices after the announcement of Merger and Announcement date and the event did not show any reaction of stock prices before the Merger and Acquisition Announcement date.

The above table also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for Pre Event Period -2, -5, -11 days and Post Event Period +2, +5, +11 days. It is apparent from the above table that the event is found to be significant on + 11 day with (t-values 2.6227) for Suven Life Science Ltd.

Table 4.3.24.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for combined number of days for Pre Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5) and 23 days (- 11, + 11 days) for Suven Life Science Ltd. It is apparent that values before and after the merger announcement are found to be insignificant for 5 days (-2 +2) 11 days (-5 +5) and 23 days (-11 + 11).

Overall, it is concluded that merger announcements did not create any statistically significant impact for Suven Life Science Ltd.

4.3.25. Ipca Laboratories Ltd

Table 4.3.25: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Ipca Laboratories Ltd

Period	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0094	-0.0110	-0.0039	0.0133	0.7713				
-29	-0.0048	-0.0095	-0.0033	-0.0015	-0.0870				
-28	-0.0115	-0.0136	-0.0051	-0.0065	-0.3754				
-27	0.0014	-0.0229	-0.0090	0.0104	0.6042				
-26	-0.0208	-0.0180	-0.0069	-0.0139	-0.8041				
-25	-0.0136	-0.0090	-0.0031	-0.0106	-0.6127				
-24	0.0083	0.0172	0.0082	0.0002	0.0096				
-23	-0.0147	-0.0044	-0.0011	-0.0135	-0.7854				
-22	0.0126	-0.0128	-0.0047	0.0173	1.0062				
-21	0.0011	-0.0074	-0.0024	0.0035	0.2019				
-20	-0.0009	0.0041	0.0025	-0.0035	-0.2018				
-19	-0.0083	-0.0225	-0.0089	0.0005	0.0310				
-18	-0.0062	-0.0201	-0.0079	0.0017	0.0974				
-17	-0.0024	0.0109	0.0054	-0.0078	-0.4548				
-16	-0.0229	0.0102	0.0051	-0.0280	-1.6265				
-15	-0.0024	-0.0122	-0.0045	0.0020	0.1168				
-14	0.0132	-0.0101	-0.0036	0.0167	0.9710				
-13	-0.0053	-0.0192	-0.0074	0.0021	0.1222				
-12	-0.0015	0.0355	0.0160	-0.0175	-1.0143				
-11	0.0089	0.0164	0.0078	0.0011	0.0630	-11	-0.1148	11	**-2.3053***
-10	-0.0008	0.0078	0.0041	-0.0049	-0.2848				
-9	0.0122	-0.0045	-0.0012	0.0133	0.7745				
-8	0.0003	0.0093	0.0048	-0.0045	-0.2588				
-7	-0.0005	0.0118	0.0059	-0.0063	-0.3673				
-6	-0.0107	0.0056	0.0032	-0.0139	-0.8056				
-5	0.0039	-0.0184	-0.0071	0.0110	0.6362	-5	-0.0996	5	**-2.9681***
-4	-0.0089	-0.0225	-0.0089	0.0000	0.0018				
-3	-0.0246	-0.0012	0.0003	-0.0248	-1.4405				
-2	-0.0090	0.0144	0.0069	-0.0159	-0.9246	-2	-0.08579	2	**-4.0414***
-1	-0.0637	0.0125	0.0061	-0.0699	**-4.0533***				
0	**-0.0091**	**0.0017**	**0.0015**	**-0.0106**	**-0.6166**				
1	-0.0103	-0.0103	-0.0037	-0.0066	-0.3855				
2	-0.0195	0.0213	0.0099	-0.0294	-1.7035	+2	-0.0360	2	-1.6960
3	-0.0172	-0.0014	0.0002	-0.0174	-1.0090				
4	0.0049	-0.0417	-0.0171	0.0220	1.2768				
5	0.0160	-0.0114	-0.0041	0.0201	1.1684	+5	-0.0112	5	-0.3352
6	0.0033	-0.0067	-0.0021	0.0054	0.3138				
7	-0.0109	0.0277	0.0127	-0.0236	-1.3679				

8	-0.0088	-0.0051	-0.0014	-0.0074	-0.4272				
9	-0.0125	0.0140	0.0068	-0.0192	-1.1157				
10	-0.0225	-0.0145	-0.0054	-0.0170	-0.9888				
11	-0.0362	-0.0191	-0.0074	-0.0288	-1.6700	+11	-0.1018	11	**-2.0454***
12	-0.0500	-0.0161	-0.0061	-0.0439	**-2.5463***				
13	0.0047	-0.0044	-0.0011	0.0058	0.3342				
14	0.0554	0.0284	0.0129	0.0424	**2.4628***				
15	-0.0098	0.0186	0.0087	-0.0186	-1.0768				
16	-0.0372	-0.0011	0.0003	-0.0375	**-2.1746***				
17	0.0345	0.0248	0.0114	0.0231	1.3412				
18	-0.0219	-0.0042	-0.0010	-0.0208	-1.2076				
19	-0.0247	0.0107	0.0053	-0.0300	-1.7418				
20	0.0044	-0.0027	-0.0004	0.0048	0.2809				
21	-0.0117	-0.0159	-0.0061	-0.0056	-0.3254				
22	0.0552	0.0200	0.0093	0.0458	**2.6590***				
23	-0.0073	-0.0092	-0.0032	-0.0041	-0.2378				
24	-0.0237	-0.0083	-0.0028	-0.0209	-1.2112				
25	-0.0090	0.0095	0.0049	-0.0139	-0.8037				
26	0.0019	0.0181	0.0085	-0.0067	-0.3863				
27	0.0234	0.0020	0.0016	0.0218	1.2647				
28	-0.0138	0.0301	0.0137	-0.0275	-1.5952				
29	0.0543	-0.0064	-0.0020	0.0563	**3.2672***				
30	0.0728	-0.0130	-0.0048	0.0776	**4.5016***				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.000770378
Beta	0.42897108
Standard Error	0.017234099
Standard Deviation	0.0150101

Table 4.3.25.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Ipca Laboratories Ltd

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.1324	**-3.9452***	Insignificant
Window 11 Days (-5+5)	-0.1215	**-2.4405***	Insignificant
Window 23 Days (-11, +11)	-0.2272	**-3.1564***	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Ipca Laboratories Ltd where the calculated t-value -0.6166< 1.96.

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Ipca Laboratories Ltd has significant impact on -1st, with (t-values -4.0533) and t-statistics of Abnormal return for Post- Event Period (0 to +30) has significant impact on +12th, +14th, +16th, + 22nd, + 29th, +30th with (t-values -2.5463, 2.4628, -2.1746, 2.6590, 3.2672, 4.5016) greater than t-table values are found to be significant at 5% level.

The above table also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for Pre Event Period -2, -5, -11 days (-4.0414, -2.9681, -2.3053) and Post Event Period, +11 days. with t – values (-2.0454).

Table 4.3.25.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for combined number of days for Pre Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5) and 23 days (- 11, + 11 days) for Ipca Laboratories Ltd.

Overall, it is concluded that merger announcements have a statistically significant impact for Ipca Laboratories Ltd.

4.3.26. Aarti Drugs Limited

Table 4.3.26: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Aarti Drugs Limited

Periods	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0072	0.0117	0.0103	-0.0175	-0.8052				
-29	-0.0049	-0.0159	-0.0134	0.0084	0.3875				
-28	-0.0196	0.0109	0.0096	-0.0292	-1.3437				
-27	0.0016	-0.0090	-0.0074	0.0090	0.4141				
-26	0.0012	-0.0058	-0.0047	0.0059	0.2719				
-25	-0.0144	-0.0326	-0.0277	0.0133	0.6101				
-24	-0.0151	0.0077	0.0069	-0.0219	-1.0097				
-23	0.0056	0.0056	0.0050	0.0005	0.0246				
-22	0.0355	0.0348	0.0301	0.0054	0.2487				
-21	-0.0035	0.0025	0.0024	-0.0059	-0.2699				
-20	0.0046	0.0005	0.0007	0.0040	0.1819				
-19	0.0015	-0.0137	-0.0115	0.0130	0.6003				
-18	-0.0081	0.0105	0.0092	-0.0173	-0.7965				
-17	0.0012	0.0018	0.0018	-0.0007	-0.0314				
-16	-0.0008	-0.0066	-0.0054	0.0047	0.2144				
-15	-0.0167	-0.0089	-0.0074	-0.0093	-0.4277				
-14	-0.0090	0.0157	0.0137	-0.0227	-1.0463				
-13	-0.0183	-0.0149	-0.0125	-0.0058	-0.2685				
-12	0.0239	0.0112	0.0099	0.0140	0.6441				
-11	-0.0055	-0.0118	-0.0098	0.0043	0.1983	-11	-0.0488	11	-0.7969
-10	-0.0135	-0.0135	-0.0113	-0.0022	-0.1029				
-9	-0.0105	-0.0017	-0.0012	-0.0093	-0.4280				
-8	0.0299	0.0091	0.0081	0.0218	1.0054				
-7	-0.0067	0.0122	0.0107	-0.0174	-0.8007				
-6	-0.0151	0.0077	0.0068	-0.0220	-1.0108				
-5	-0.0073	0.0236	0.0205	-0.0277	-1.2757	-5	-0.0241	5	-0.5828
-4	-0.0089	0.0058	0.0052	-0.0142	-0.6526				
-3	0.0202	0.0086	0.0076	0.0126	0.5789				
-2	0.0210	0.0089	0.0079	0.0131	0.6025	-2	0.0053	2	0.2013
-1	-0.0008	0.0079	0.0071	-0.0078	-0.3606				
0	**0.0286**	**-0.0013**	**-0.0009**	**0.0295**	**1.3560**				
1	0.0099	0.0140	0.0123	-0.0024	-0.1119				
2	-0.0171	0.0003	0.0005	-0.0176	-0.8103	+2	-0.0200	2	-0.7674
3	0.0050	-0.0031	-0.0024	0.0074	0.3394				
4	-0.0027	-0.0010	-0.0006	-0.0021	-0.0945				
5	-0.0143	-0.0075	-0.0061	-0.0081	-0.3746	+5	-0.0229	5	-0.5536
6	0.1329	-0.0097	-0.0080	0.1409	**6.4853***				

7	-0.0563	0.0215	0.0187	-0.0750	**-3.4503***				
8	-0.0090	-0.0148	-0.0124	0.0034	0.1566				
9	-0.0310	-0.0165	-0.0139	-0.0171	-0.7854				
10	0.0000	0.0020	0.0020	-0.0020	-0.0919				
11	0.0149	0.0191	0.0166	-0.0018	-0.0820	+11	0.0256	11	0.4188
12	0.0084	0.0056	0.0051	0.0034	0.1549				
13	-0.0066	-0.0017	-0.0012	-0.0054	-0.2474				
14	0.0059	-0.0010	-0.0006	0.0065	0.2994				
15	0.0342	-0.0059	-0.0048	0.0390	1.7935				
16	0.0021	-0.0083	-0.0069	0.0090	0.4144				
17	0.0042	-0.0062	-0.0051	0.0093	0.4284				
18	-0.0235	-0.0084	-0.0070	-0.0165	-0.7601				
19	0.0107	-0.0242	-0.0204	0.0312	1.4343				
20	-0.0256	-0.0051	-0.0041	-0.0215	-0.9903				
21	0.0073	-0.0141	-0.0118	0.0191	0.8772				
22	0.0194	0.0166	0.0145	0.0049	0.2246				
23	-0.0158	-0.0001	0.0002	-0.0160	-0.7351				
24	-0.0018	-0.0018	-0.0013	-0.0005	-0.0250				
25	0.0040	0.0043	0.0039	0.0000	0.0021				
26	-0.0145	-0.0143	-0.0120	-0.0025	-0.1173				
27	0.0095	0.0106	0.0094	0.0001	0.0049				
28	-0.0040	-0.0083	-0.0068	0.0028	0.1310				
29	-0.0139	-0.0110	-0.0091	-0.0048	-0.2195				
30	0.0062	-0.0034	-0.0026	0.0089	0.4090				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.000257174
Beta	0.85629649
Standard Error	0.02172412
Standard Deviation	0.018460689

Table 4.3.26.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Aarti Drugs Limited

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.0147	0.3556	Insignificant
Window 11 Days (-5+5)	-0.0175	-0.2850	Insignificant
Window 23 Days (-11, +11)	0.0063	0.0712	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Aarti Drugs Limited where the calculated t-value 1.3560 < 1.96.

The t-statistics of Abnormal return for Post- Event Period (0 to +30) Aarti Drugs Ltd had significant impact on + 6th day and +7th day with (t- value 6.4853, -3.4503) greater than t-table values are found to be significant at 5% level which indicates that the results show a significant impact of stock prices after the announcement of Merger and Announcement date and the event did not show any reaction of stock prices before the Merger and Acquisition Announcement date.

Table 4.3.26.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant for 5 days (-2 +2) 11 days (-5 +5) and 23 days (-11 + 11).

Overall, it is concluded that merger announcements did not create any statistically significant impact for Aarti Drugs Ltd.

4.3.27. Amrutanjan Health Care Limited

Table 4.3.27: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Amrutanjan Health Care Limited

Periods	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	0.0037	-0.0043	-0.0042	0.0079	0.3930				
-29	-0.0088	-0.0024	-0.0024	-0.0065	-0.3216				
-28	-0.0167	0.0023	0.0021	-0.0187	-0.9332				
-27	-0.0009	0.0237	0.0223	-0.0232	-1.1542				
-26	-0.0195	0.0168	0.0158	-0.0353	-1.7594				
-25	0.0210	0.0107	0.0100	0.0110	0.5494				
-24	0.0176	0.0027	0.0024	0.0152	0.7593				
-23	-0.0114	-0.0023	-0.0022	-0.0092	-0.4562				
-22	0.0076	0.0024	0.0022	0.0054	0.2688				
-21	0.0007	0.0048	0.0044	-0.0036	-0.1810				
-20	-0.0010	0.0002	0.0001	-0.0011	-0.0541				
-19	0.0051	-0.0024	-0.0024	0.0074	0.3710				
-18	0.0005	0.0079	0.0074	-0.0069	-0.3434				
-17	0.0074	0.0008	0.0006	0.0067	0.3346				
-16	0.0032	-0.0084	-0.0081	0.0112	0.5603				
-15	-0.0106	-0.0041	-0.0040	-0.0067	-0.3319				
-14	-0.0015	-0.0073	-0.0070	0.0055	0.2757				
-13	0.0039	-0.0002	-0.0003	0.0043	0.2120				
-12	-0.0014	0.0120	0.0112	-0.0125	-0.6252				
-11	-0.0121	-0.0081	-0.0077	-0.0044	-0.2190	-11	0.0099	11	0.1680
-10	-0.0044	0.0036	0.0033	-0.0077	-0.3815				
-9	0.0097	0.0083	0.0077	0.0020	0.0973				
-8	-0.0089	-0.0023	-0.0022	-0.0067	-0.3338				
-7	0.0193	-0.0020	-0.0020	0.0213	1.0596				
-6	-0.0110	0.0081	0.0075	-0.0185	-0.9215				
-5	-0.0051	-0.0222	-0.0211	0.0160	0.7981	-5	0.0239	5	0.6028
-4	0.0116	0.0008	0.0006	0.0110	0.5497				
-3	0.0149	0.0041	0.0037	0.0112	0.5556				
-2	0.0004	0.0093	0.0087	-0.0083	-0.4148	-2	-0.0143	2	-0.5697
-1	0.0035	0.0102	0.0095	-0.0060	-0.2973				
0	**0.0070**	**0.0049**	**0.0045**	**0.0025**	**0.1235**				
1	-0.0008	0.0051	0.0047	-0.0055	-0.2747				
2	-0.0160	-0.0042	-0.0040	-0.0119	-0.5939	+2	-0.0174	2	-0.6949
3	0.0185	0.0002	0.0001	0.0184	0.9155				
4	0.0001	-0.0018	-0.0018	0.0019	0.0947				
5	0.0111	0.0172	0.0162	-0.0051	-0.2536	+5	-0.0022	5	-0.0567
6	0.0006	0.0063	0.0058	-0.0052	-0.2591				

7	0.0074	-0.0002	-0.0003	0.0077	0.3842				
8	0.0033	0.0053	0.0049	-0.0016	-0.0813				
9	-0.0069	-0.0028	-0.0027	-0.0042	-0.2096				
10	0.0040	-0.0038	-0.0037	0.0077	0.3854				
11	0.0016	0.0023	0.0021	-0.0004	-0.0221	+11	0.0017	11	0.0292
12	-0.0026	0.0044	0.0040	-0.0066	-0.3281				
13	0.0026	-0.0065	-0.0063	0.0089	0.4415				
14	0.0058	0.0036	0.0033	0.0025	0.1252				
15	0.0383	0.0110	0.0103	0.0280	1.3957				
16	-0.0123	-0.0052	-0.0050	-0.0072	-0.3611				
17	0.0085	0.0029	0.0026	0.0058	0.2906				
18	0.0544	0.0058	0.0054	0.0490	**2.4425***				
19	-0.0129	-0.0032	-0.0031	-0.0097	-0.4844				
20	-0.0255	-0.0002	-0.0003	-0.0251	-1.2530				
21	-0.0165	-0.0016	-0.0016	-0.0149	-0.7432				
22	-0.0169	-0.0091	-0.0087	-0.0082	-0.4094				
23	0.0130	0.0007	0.0006	0.0124	0.6176				
24	0.0054	0.0153	0.0144	-0.0089	-0.4455				
25	0.0397	0.0032	0.0029	0.0367	1.8301				
26	-0.0048	-0.0038	-0.0037	-0.0011	-0.0526				
27	-0.0275	-0.0119	-0.0114	-0.0161	-0.8039				
28	0.0068	0.0020	0.0017	0.0050	0.2514				
29	-0.0297	0.0093	0.0086	-0.0383	-1.9100				
30	0.0073	-0.0034	-0.0033	0.0106	0.5294				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	-0.000115557
Beta	0.94402369
Standard Error	0.020067637
Standard Deviation	0.017738113

Table 4.3.27.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Amrutanjan Health Care Limited

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	-0.029243056	-0.737276413	Insignificant
Window 11 Days (-5+5)	0.024138649	0.410307267	Insignificant
Window 23 Days (-11, +11)	0.014079232	0.16550367	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Amrutanjan Health Care Limited where the (calculated t-value < t-table value) i.e. (0.1235 < 1.96).

The t-statistics of Abnormal return for Post- Event Period (0 to + 30) Amrutanjan Health Care Ltd has significant impact on +18th day with (t- value 2.4425) greater than t-table values are found to be significant at 5% level and the event did not show any reaction of stock prices before the Merger and Acquisition Announcement date.

Table 4.3.27.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and it is apparent that values before and after the merger announcement are found to be insignificant for 5 days (-2 +2) 11 days (-5 +5) and 23 days (-11 + 11).

Overall, it is concluded that merger announcements did not create any statistically significant impact for Amrutanjan Health Care Ltd.

4.3.28. Shilpa Medicare Ltd

Table 4.3.28: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Shilpa Medicare Limited

Periods	Stocks Returns	Market return Nifty 50	Expected returns	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0183	0.0058	0.0067	-0.0249	-0.4242				
-29	0.0150	0.0038	0.0034	0.0116	0.1973				
-28	-0.0147	-0.0026	-0.0066	-0.0081	-0.1378				
-27	0.0019	-0.0111	-0.0199	0.0218	0.3714				
-26	-0.0243	-0.0043	-0.0093	-0.0150	-0.2546				
-25	-0.0210	-0.0024	-0.0063	-0.0147	-0.2504				
-24	-0.0226	0.0023	0.0011	-0.0237	-0.4031				
-23	0.0198	0.0237	0.0347	-0.0149	-0.2530				
-22	-0.0287	0.0168	0.0239	-0.0526	-0.8951				
-21	0.0048	0.0107	0.0143	-0.0095	-0.1619				
-20	0.0554	0.0027	0.0017	0.0537	0.9139				
-19	-0.0381	-0.0023	-0.0061	-0.0321	-0.5458				
-18	0.0253	0.0024	0.0013	0.0240	0.4080				
-17	0.0060	0.0048	0.0049	0.0010	0.0176				
-16	-0.0102	0.0002	-0.0022	-0.0081	-0.1371				
-15	-0.0004	-0.0024	-0.0063	0.0059	0.0998				
-14	0.0136	0.0079	0.0099	0.0036	0.0621				
-13	0.0046	0.0008	-0.0013	0.0059	0.1005				
-12	-0.0141	-0.0084	-0.0158	0.0017	0.0287				
-11	-0.0001	-0.0041	-0.0090	0.0088	0.1506	-11	0.0684	11	0.4278
-10	0.0043	-0.0073	-0.0140	0.0183	0.3121				
-9	-0.0007	-0.0002	-0.0029	0.0022	0.0377				
-8	0.0062	0.0120	0.0163	-0.0101	-0.1719				
-7	-0.0087	-0.0081	-0.0152	0.0065	0.1106				
-6	0.0212	0.0036	0.0031	0.0181	0.3077				
-5	0.0340	0.0083	0.0105	0.0235	0.4002	-5	0.0245	5	0.2276
-4	-0.0106	-0.0023	-0.0061	-0.0045	-0.0764				
-3	-0.0012	-0.0020	-0.0056	0.0044	0.0744				
-2	0.0008	0.0081	0.0102	-0.0094	-0.1592	-2	0.0011	2	0.0168
-1	-0.0269	-0.0222	-0.0374	0.0105	0.1787				
0	0.0386	0.0008	-0.0013	0.0400	**0.6800**				
1	0.0072	0.0041	0.0039	0.0033	0.0561				
2	0.0243	0.0093	0.0121	0.0122	0.2081	+2	0.0155	2	0.2276
3	-0.0050	0.0102	0.0134	-0.0184	-0.3133				
4	0.1120	0.0049	0.0051	0.1069	1.8196				
5	0.0269	0.0051	0.0054	0.0214	0.3650	+5	0.1255	5	1.1637
6	-0.0108	-0.0042	-0.0091	-0.0017	-0.0295				

7	-0.0089	0.0002	-0.0022	-0.0068	-0.1155				
8	-0.0033	-0.0018	-0.0053	0.0020	0.0340				
9	0.0288	0.0172	0.0245	0.0043	0.0724				
10	-0.0149	0.0063	0.0073	-0.0221	-0.3769				
11	0.0267	-0.0002	-0.0028	0.0296	0.5032	+11	0.1306	11	0.8168
12	0.0117	0.0053	0.0058	0.0058	0.0995				
13	-0.0102	-0.0028	-0.0069	-0.0034	-0.0572				
14	-0.0210	-0.0038	-0.0085	-0.0125	-0.2122				
15	-0.0063	0.0023	0.0011	-0.0074	-0.1266				
16	0.0027	0.0044	0.0043	-0.0016	-0.0272				
17	-0.0214	-0.0065	-0.0128	-0.0086	-0.1462				
18	-0.0183	0.0036	0.0032	-0.0215	-0.3653				
19	0.0208	0.0110	0.0147	0.0060	0.1029				
20	0.0448	-0.0052	-0.0107	0.0556	0.9456				
21	0.0194	0.0029	0.0021	0.0173	0.2948				
22	-0.0176	0.0058	0.0066	-0.0242	-0.4124				
23	-0.0005	-0.0032	-0.0076	0.0071	0.1201				
24	-0.0217	-0.0002	-0.0029	-0.0189	-0.3210				
25	-0.0200	-0.0016	-0.0050	-0.0150	-0.2551				
26	-0.0025	-0.0091	-0.0168	0.0143	0.2434				
27	-0.0027	0.0007	-0.0014	-0.0013	-0.0221				
28	0.0235	0.0153	0.0215	0.0020	0.0340				
29	0.0039	0.0032	0.0026	0.0014	0.0232				
30	-0.0121	-0.0038	-0.0085	-0.0036	-0.0610				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

<u>Note</u>

Intercept	-0.002527275
Beta	1.56881453
Standard Error	0.058751
Standard Deviation	0.048213405

Table 4.3.28.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days for Shilpa Medicare Limited

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.0566	0.5251	Insignificant
Window 11 Days (-5+5)	0.1899	1.1878	Insignificant
Window 23 Days (-11, +11)	0.2389	1.0335	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Shilpa Medicare Limited where the calculated t-value 0.6800 < 1.96.

The t-statistics of Abnormal return for Pre – Event Period (0 to -30) and Post- Event Period (0 to + 30) did not show any significant impact of stock prices before and after the Merger and Acquisition Announcement date.

Table 4.3.28.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for combined number of days for Pre Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5) and 23 days (- 11, + 11 days) for Shilpa Medicare Limited. It is apparent that values before and after the merger announcement are found to be insignificant for 5 days (-2 +2) 11 days (-5 +5) and 23 days (-11 + 11).

Overall, it is concluded that merger announcements did not create any statistically significant impact for Shilpa Medicare Limited.

4.3.29. Neuland Laboratories Ltd

Table 4.3.29: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Neuland Laboratories Ltd

Periods	Stocks Returns	Market return Nifty 50	Expected Return	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0081	0.0001	0.0015	-0.0096	-0.3434				
-29	0.0051	0.0102	0.0107	-0.0056	-0.2021				
-28	0.0124	-0.0041	-0.0024	0.0148	0.5306				
-27	-0.0104	-0.0124	-0.0100	-0.0005	-0.0164				
-26	-0.0019	-0.0019	-0.0004	-0.0015	-0.0552				
-25	0.0014	0.0044	0.0054	-0.0040	-0.1434				
-24	-0.0230	-0.0178	-0.0149	-0.0081	-0.2897				
-23	-0.0059	0.0023	0.0034	-0.0093	-0.3352				
-22	0.0228	0.0146	0.0147	0.0081	0.2901				
-21	0.0043	0.0035	0.0046	-0.0003	-0.0115				
-20	0.0083	-0.0029	-0.0013	0.0096	0.3448				
-19	-0.0038	-0.0039	-0.0023	-0.0016	-0.0559				
-18	0.0014	-0.0014	0.0001	0.0013	0.0470				
-17	-0.0004	0.0013	0.0025	-0.0029	-0.1044				
-16	-0.0157	-0.0157	-0.0130	-0.0027	-0.0966				
-15	0.0083	0.0012	0.0024	0.0059	0.2114				
-14	-0.0192	-0.0074	-0.0054	-0.0138	-0.4959				
-13	0.0082	0.0183	0.0181	-0.0099	-0.3550				
-12	0.0031	-0.0022	-0.0006	0.0037	0.1339				
-11	-0.0289	0.0046	0.0056	-0.0345	-1.2368	-11	0.0047	11	0.0652
-10	0.0076	-0.0007	0.0007	0.0069	0.2491				
-9	-0.0026	0.0018	0.0030	-0.0056	-0.2024				
-8	-0.0013	-0.0020	-0.0005	-0.0008	-0.0297				
-7	0.0232	-0.0088	-0.0067	0.0299	1.0741				
-6	-0.0150	0.0000	0.0013	-0.0164	-0.5875				
-5	0.0144	0.0026	0.0037	0.0107	0.3833	-5	0.0251	5	0.5193
-4	-0.0066	-0.0014	0.0000	-0.0066	-0.2381				
-3	-0.0078	0.0001	0.0014	-0.0092	-0.3309				
-2	-0.0003	-0.0131	-0.0106	0.0104	0.3725	-2	0.0303	2	0.9903
-1	0.0181	-0.0034	-0.0018	0.0199	0.7144				
0	**-0.0018**	**-0.0061**	**-0.0042**	**0.0024**	**0.0872**				
1	0.0357	0.0075	0.0082	0.0276	0.9892				
2	0.0082	0.0055	0.0063	0.0018	0.0658	+2	0.0294	2	0.9612
3	-0.0235	-0.0131	-0.0107	-0.0128	-0.4597				
4	-0.0021	0.0111	0.0114	-0.0136	-0.4871				
5	-0.0015	-0.0273	-0.0236	0.0221	0.7934	+5	0.0251	5	0.5195
6	-0.0054	-0.0229	-0.0196	0.0142	0.5102				
7	-0.0122	0.0004	0.0017	-0.0139	-0.4990				
8	-0.0119	-0.0039	-0.0022	-0.0097	-0.3469				
9	-0.0106	-0.0007	0.0007	-0.0113	-0.4045				

10	-0.0398	-0.0181	-0.0152	-0.0246	-0.8830				
11	0.0110	0.0092	0.0097	0.0013	0.0463	+11	-0.0188	11	-0.2624
12	0.0636	0.0039	0.0049	0.0587	**2.1066***				
13	-0.0095	-0.0085	-0.0064	-0.0031	-0.1122				
14	0.0112	0.0185	0.0182	-0.0071	-0.2537				
15	0.0001	0.0016	0.0028	-0.0026	-0.0935				
16	0.0011	0.0019	0.0030	-0.0020	-0.0701				
17	0.0131	0.0101	0.0105	0.0025	0.0908				
18	0.0086	-0.0038	-0.0022	0.0108	0.3875				
19	-0.0022	-0.0130	-0.0106	0.0083	0.2990				
20	0.0048	0.0052	0.0061	-0.0012	-0.0445				
21	-0.0027	0.0018	0.0030	-0.0057	-0.2038				
22	-0.0058	-0.0051	-0.0033	-0.0025	-0.0908				
23	0.0040	0.0177	0.0175	-0.0136	-0.4867				
24	0.0094	0.0018	0.0030	0.0064	0.2313				
25	-0.0084	-0.0111	-0.0088	0.0004	0.0152				
26	0.0144	0.0062	0.0070	0.0074	0.2659				
27	-0.0159	-0.0048	-0.0030	-0.0128	-0.4611				
28	0.0003	-0.0035	-0.0019	0.0022	0.0802				
29	0.0040	-0.0017	-0.0003	0.0043	0.1542				
30	-0.0011	-0.0043	-0.0026	0.0015	0.0536				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.001335831
Beta	0.913692428
Standard Error	0.027856009
Standard Deviation	0.021618672

Table 4.3.29.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, +2)	0.0621	1.2845	Insignificant
Window 11 Days (-5+5)	0.0526	0.7342	Insignificant
Window 23 Days (-11, +11)	-0.0118	-0.1129	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions has not created significant impact on the Event Day '0' for Neuland Laboratories Ltd where the calculated t-value 0.0872< 1.96.

The t-statistics of Abnormal return for Post- Event Period (0 to + 30) Neuland Laboratories Ltd has significant impact on +12th day with (t-value 2.1066) greater than t-table values are found to be significant at 5% level and the event did not show any reaction of stock prices before the Merger and Acquisition Announcement date.

Table 4.2.29.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for combined number of days for Pre Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5) and 23 days (- 11, + 11 days) for Neuland Laboratories Ltd. It is apparent that values before and after the merger announcement are found to be insignificant for 5 days (-2 +2) 11 days (-5 +5) and 23 days (-11 + 11).

Overall, it is concluded that merger announcements did not create any statistically significant impact for Neuland Laboratories Ltd.

4.3.30. Gufic Bio Science Ltd

Table 4.3.30: Summary of Abnormal Returns, t-Statistics of AR, CAR, t-Statistics of CAR during the Pre-Merger Period and Post -Merger Period for Gufic Bio Science Ltd

Periods	Stocks Returns	Market return Nifty 50	Expected Return	Abnormal returns	t-statistics of AR	Window	CAR	t (No of days in Window)	t-statistics of CAR
-30	-0.0571	-0.0157	-0.0244	-0.0327	-1.0789				
-29	0.0473	0.0012	-0.0014	0.0487	1.6093				
-28	0.1360	-0.0074	-0.0131	0.1490	**4.9207***				
-27	0.0832	0.0183	0.0220	0.0613	**2.0231***				
-26	-0.0579	-0.0022	-0.0060	-0.0519	-1.7137				
-25	-0.0193	0.0046	0.0033	-0.0226	-0.7450				
-24	0.0048	-0.0007	-0.0040	0.0089	0.2927				
-23	0.1636	0.0018	-0.0005	0.1641	**5.4189***				
-22	-0.0527	-0.0020	-0.0058	-0.0469	-1.5488				
-21	-0.0142	-0.0088	-0.0150	0.0008	0.0276				
-20	0.0011	0.0000	-0.0030	0.0041	0.1360				
-19	0.1188	0.0026	0.0006	0.1182	**3.9017***				
-18	0.1192	-0.0014	-0.0050	0.1242	**4.0988***				
-17	-0.0139	0.0001	-0.0029	-0.0110	-0.3629				
-16	-0.0384	-0.0131	-0.0209	-0.0175	-0.5788				
-15	-0.0258	-0.0034	-0.0077	-0.0181	-0.5992				
-14	-0.1054	-0.0061	-0.0113	-0.0941	**-3.1062***				
-13	0.0287	0.0075	0.0072	0.0215	0.7093				
-12	-0.0051	0.0055	0.0044	-0.0095	-0.3130				
-11	-0.0071	-0.0131	-0.0209	0.0138	0.4562	-11	0.0507	11	0.6326
-10	0.0222	0.0111	0.0121	0.0102	0.3356				
-9	-0.0397	-0.0273	-0.0402	0.0005	0.0159				
-8	-0.0823	-0.0229	-0.0343	-0.0480	-1.5862				
-7	-0.0251	0.0004	-0.0025	-0.0227	-0.7479				
-6	-0.0377	-0.0039	-0.0084	-0.0294	-0.9702				
-5	0.0131	-0.0007	-0.0040	0.0171	0.5660	-5	0.1264	5	**2.3363***
-4	-0.0095	-0.0181	-0.0277	0.0182	0.6008				
-3	0.0178	0.0092	0.0095	0.0083	0.2738				
-2	0.0594	0.0039	0.0023	0.0571	1.8860	-2	0.0827	2	**2.4184***
-1	0.0110	-0.0085	-0.0146	0.0256	0.8453				
0	**0.0270**	**0.0185**	**0.0222**	**0.0048**	**0.1593**				
1	0.0263	0.0016	-0.0009	0.0272	0.8992				
2	-0.0178	0.0019	-0.0005	-0.0174	-0.5733	2+	0.0099	2	0.2886
3	0.0105	0.0101	0.0107	-0.0002	-0.0058				
4	-0.0158	-0.0038	-0.0083	-0.0076	-0.2496				
5	-0.0302	-0.0130	-0.0208	-0.0094	-0.3118	5+	-0.0073	5	-0.1351
6	0.0142	0.0052	0.0040	0.0101	0.3341				

7	-0.0043	0.0018	-0.0006	-0.0037	-0.1230				
8	0.0119	-0.0051	-0.0099	0.0218	0.7195				
9	0.0011	0.0177	0.0211	-0.0201	-0.6624				
10	0.1008	0.0018	-0.0006	0.1014	**3.3479***				
11	-0.0315	-0.0111	-0.0181	-0.0134	-0.4418	11+	0.0888	11	1.1074
12	0.0139	0.0062	0.0055	0.0084	0.2786				
13	0.0224	-0.0048	-0.0096	0.0320	1.0562				
14	-0.0116	-0.0035	-0.0078	-0.0038	-0.1255				
15	-0.0020	-0.0017	-0.0054	0.0034	0.1135				
16	0.0270	-0.0043	-0.0089	0.0359	1.1858				
17	-0.0309	-0.0027	-0.0067	-0.0242	-0.7990				
18	-0.0099	-0.0026	-0.0066	-0.0033	-0.1082				
19	0.0891	-0.0102	-0.0170	0.1061	**3.5019***				
20	-0.0322	0.0008	-0.0019	-0.0304	-1.0024				
21	-0.0295	-0.0098	-0.0163	-0.0131	-0.4337				
22	0.0182	0.0156	0.0183	-0.0001	-0.0046				
23	-0.0105	0.0002	-0.0027	-0.0078	-0.2572				
24	0.0086	0.0085	0.0086	0.0000	-0.0007				
25	0.0094	0.0101	0.0107	-0.0013	-0.0429				
26	-0.0009	-0.0008	-0.0041	0.0031	0.1034				
27	0.0708	0.0016	-0.0009	0.0717	**2.3674***				
28	0.0471	-0.0002	-0.0033	0.0504	1.6636				
29	0.0207	0.0101	0.0108	0.0099	0.3272				
30	-0.0333	-0.0036	-0.0080	-0.0253	-0.8364				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Note

Intercept	0.680317053
Beta	0.680317053
Standard Error	0.030289729
Standard Deviation	0.024189054

Table 4.3.30.1: t- Statistics of Cumulative Abnormal return for Combined Number of Days

Window	CAR (Combined Number of Days	t-statistics of CAR	Significance
Window 5 Days (-2, + 2)	0.097427986	1.801274219	Insignificant
Window 11 Days (-5, + 5)	0.123883194	1.544177285	Insignificant
Window 23 Days (-11, +11)	0.144414775	1.244883807	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

From the above table, it is evident that during the Pre-Merger Period (0 to -30 days) and Post -Merger Period (0 to + 30 days), the Company's t-statistics of Abnormal Returns on the Event Day ('0' day) i.e. the announcement of mergers and acquisitions had not created significant impact on the Event Day '0' for Gufic Bio Sciences Ltd where the calculated t-value (0.1593 < 1.96).

The t-statistics of Abnormal return for Pre- Event Period (0 to -30) for Gufic Bio Sciences Ltd has significant Impact on -18th, -19th, -23th, -27th, -28th days with (t-values 4.0988, 3.9017, 5.4189, 2.0231, 4.9207) and t-statistics of Abnormal return for Post- Event Period (0 to + 30) has significant impact on +10th, +19th, + 27th days with (t-values 3.3479, 3.5019, 2.3674)

greater than t-table values are found to be significant at 5% level which indicates that results depict a significant impact of stock price towards the Merger and Acquisition Announcement date.

The above table provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for Pre Event Period -2, -5, -11 days and Post Event Period +2, +5, +11 days. It is apparent from the above table that the event is found to be significant on -2 day and – 5 days with (t-values 2.4184, 2.3363) for Gufic Bio Sciences Ltd.

Table 4.3.30.1 also provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for combined number of days for Pre Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5) and 23 days (- 11, + 11 days) for Gufic Bio Sciences Ltd. It is apparent that values before and after the merger announcement are found to be insignificant for 5 days (-2 +2) 11 days (-5 +5) and 23 days (-11 + 11).

Overall, it is concluded that merger announcements did not create any statistically significant impact for Gufic Bio Sciences Ltd.

Table 4.3.31: Summary of t-statistics of Abnormal Returns on the Event Day ('0') for the Selected Pharmaceutical Companies in India during Pre-Merger Period and Post -Merger Period

Sl.No	Indian Pharmaceutical Acquirer Company	t-statistics of AR (Event Day - 0)	Significant Impact
1	Pfizer Ltd	**9.462307103***	**Significant**
2	Torrent Pharmaceuticals Ltd	-0.819050162	Insignificant
3	Cadila Healthcare Ltd	0.450783993	Insignificant
4	Shukra Pharma Ltd (Relish Pharmaceuticals Ltd)	0.028174529	Insignificant
5	TTK Healthcare Ltd	0.091602514	Insignificant
6	J B Chemicals & Pharamaceuticals Ltd	-0.581383763	Insignificant
7	Cipla Limited	-0.271252064	Insignificant
8	Glenmark Pharmaceuticals Ltd	1.764233552	Insignificant
9	Sun Pharmaceuticals Industries Ltd	-0.087320949	Insignificant
10	Ind- Swift Ltd	0.62626899	Insignificant
11	Piramal Enterprises Ltd	0.431933443	Insignificant
12	Aurobindo Pharma Ltd	0.09204706	Insignificant
13	Vivimed Labs Limited	-0.189397458	Insignificant
14	Wockhardt Ltd	0.581143963	Insignificant
15	Strides Arcolab Ltd	1.36510654	Insignificant
16	Dr. Reddy's Laboratories	0.4962009	Insignificant
17	Granules India Ltd	0.96173148	Insignificant
18	Hester Biosciences Ltd	-0.25614332	Insignificant
19	Natco Pharma Ltd	-0.448558987	Insignificant
20	FDC Ltd	-0.097865055	Insignificant
21	Lupin Limited	**-2.525506721***	**Significant**
22	Nutraplus India Ltd	-0.551086491	Insignificant
23	Lyka Labs Ltd	0.021465823	Insignificant
24	Suven Life Science	-0.705306811	Insignificant
25	Ipca Laboratories Ltd	-0.61659675	Insignificant
26	Aarti Drugs Ltd	1.35601412	Insignificant
27	Amrutanjan Health Care Ltd	0.123506359	Insignificant
28	Shilpa Medicare Ltd	0.680024954	Insignificant
29	Neuland Laboratories Ltd	0.08715901	Insignificant
30	Gufic BioSciences Ltd	0.159310848	Insignificant

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion

The Company’s t-statistics of Abnormal Returns on the Event Day (‘0’ day) i.e. the announcement of mergers and acquisitions had created significant impact on the Event Day ‘0’ for Pfizer Ltd and for Lupin Limited, where the (calculated t-value > t-table value) and for the remaining 28 Pharmaceutical companies the event had not created significant impact on the Event Day.

Table 4.3.32: Summary of Statistically Significant Impact of t-statistics of Abnormal Returns for Pre-Event Period (0 to -30 days) and Post Event Period (0 to + 30 days) for Selected Pharmaceutical companies in India

Sl.No	Acquirer Company	t-statistics of AR - Pre - Event Period (0 -30 days)	t-statistics of AR - Post - Event Period (0 – 30 days)
		Significant Impact	**Significant Impact**
1	Pfizer Ltd	-3rd, -4th, -5th, -6th, -8th, -10th, -11th, -17th days with (t-values 4.3551, 5.0013, 2.2723, 2.0639, 3.6580, 4.6677, 2.5458, 2.2489)	+8th, +9th, +10th +11th, +13th, +19th days with (t-values -25.0448, -2.4063, -13.1531, 8.7855, 2.3300, 2.3287)
2	Torrent Pharmaceuticals Ltd	0	0
3	Cadila Healthcare Ltd	-9th day and -10th day with (t-values -4.0240, 3.9905)	+16th days with (t-values 2.0288)
4	Shukra Pharma Ltd (Relish Pharmaceuticals Ltd)	-6th, -7th, -19th -20th days with (t-values -6.6831, 6.4147, -7.0777, -6.8052)	0
5	TTK Healthcare Ltd	-11 day with (t- value = 5.2719)	+1st, +18th and +19th days with (t-values 2.8586, 7.6146, -5.7474)
6	J B Chemicals & Pharamaceuticals Ltd	-10, -19 days with (t-values = 2.565, 2.2061)	+5th, +11th, +13th and +30th days with (t-values 2.0110, 3.3246, -2.2475, 5.2606)
7	Cipla Limited	-3rd, -13th and -25th day with (t-values 2.5356, -3.0519, 2.6409)	+20th day with (t-values 2.1644)
8	Glenmark Pharmaceuticals Ltd	- 4th days with (t-value 2.9588)	0
9	Sun Pharmaceuticals Industries Ltd	0	0
10	Ind- Swift Ltd	0	+ 4th days with (t-value 2.3626)
11	Piramal Enterprises Ltd	-12th day with (t-values 2.6498)	19th day with (t-values 2.8497)
12	Aurobindo Pharma Ltd	0	+25th, +27th, +29th day with (t-values -2.2086, -2.3312, 2.4710)
13	Vivimed Labs Limited	-28th day with (t-value 2.9680)	+21st, +24th days with (t-values 2.3671, 3.1080)
14	Wockhardt Ltd	- 6th day with (t-value 3.6136)	0
15	Strides Arcolab Ltd	0	0
16	Dr. Reddy's Laboratories	-11th day with (t- value 1.9743)	+1st, +25th days with (t-values 2.2008, 2.3681)
17	Granules India Ltd	0	+19th, + 28th days with (t-values 4.4994, 2.4177)
18	Hester Biosciences Ltd	0	0
19	Natco Pharma Ltd	-5th, -12th, -17th days with (t-values 2.2918, -2.1935, 2.9460)	0
20	FDC Ltd	-11th, -30th days with (t-values 4.2934, 2.0185)	+7th, +19th day with (t-values -2.0989, 2.6321)
21	Lupin Limited (Inbound Merger)	-1st, -2nd days with (t-values -2.4225, -2.0390)	+20th, +27th day with (t-values 3.3093. 2.1039)

22	Nutraplus India Ltd	-21st day with (t-value 2.2062)	+7th, +8th day with (t-values -7.4982, -4.4605)
23	Lyka Labs Ltd	-2nd, -3rd day with (t-values 2.0399, 2.0894)	0
24	Suven Life Science	0	+7th, +10th, +20th days with (t-values 2.1950, 2.1877, 2.8778)
25	Ipca Laboratories Ltd	-1st with (t-values -4.0533)	+12th, +14th, +16th, + 22nd, + 29th, +30th with (t-values -2.5463, 2.4628, -2.1746, 2.6590, 3.2672, 4.5016)
26	Aarti Drugs Ltd	0	+ 6th day with (t- value 6.4853)
27	Amrutanjan Health Care Ltd	0	+18th day with (t- value 2.4425)
28	Shilpa Medicare Ltd	0	0
29	Neuland Laboratories Ltd	0	12 days (t-value = 2.1066)
30	Gufic BioSciences Ltd	-14th, -18th, -19th, -23th, -27th, -28th days) (t-value = -3.1062, 4.0988, 3.9017, 5.4189, 2.0231, 4.9207)	10th ,19th ,27th days) (t-value = 3.3479, 3.5019, 2.3674)

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion

The above table provides the summary of t-statistics of Abnormal Returns for the merger announcement period of - 30 to + 30 days and shows the significant impact for the Pre Event Period and Post Event Period.

From the results, 42 stock market reactions have been found in Pre-Merger announcement Period (0 to -30), and 47 stock market reactions have been found in Post-Merger announcement Period (0 to + 30), which depict a significant impact of stock prices towards the Merger and Acquisition.

Table 4.3.33: Summary of t- Statistics of Cumulative Abnormal return (CAR) for Pre Event Period (-2, -5, -11) days and Post Event Period (+2, +5, +11) days for Selected Pharmaceutical companies in India

Sl.No	Acquirer Company	t- Statistics of CAR - Pre-Event Period			t- Statistics of CAR - Post-Event Period		
		-2 days	**-5 days**	**-11 days**	**+ 2 days**	**+ 5 days**	**+ 11 days**
1	Pfizer Ltd	1.1378	**5.4152***	**2.9302***	1.2693	**2.3526***	**- 7.0890***
2	Torrent Pharmaceuticals Ltd	0.4949	0.6132	0.7920	- 0.4702	0.1862	0.1261
3	Cadila Healthcare Ltd	1.2615	0.7560	0.0186	0.5511	0.5859	0.6623
4	Shukra Pharma Ltd (Relish Pharmaceuticals Ltd)	0.7116	0.3361	0.1539	0.7058	1.071	1.3363
5	TTK Healthcare Ltd	1.0107	1.0605	**2.3025***	**2.1734***	0.8870	0.3458
6	J B Chemicals & Pharamaceuticals Ltd	0.4118	0.1834	0.3753	- 0.8733	0.3799	1.1943
7	Cipla Limited	- 0.7268	0.8615	1.0559	1.4357	0.0589	- 0.6736
8	Glenmark Pharmaceuticals Ltd	-1.1018	**2.1223***	1.6443	- 0.4831	0.2401	- 0.6975
9	Sun Pharmaceuticals Industries Ltd	0.4131	- 0.1388	- 0.1012	0.2658	1.1845	0.7777
10	Ind- Swift Ltd	0.2511	0.2412	- 0.0222	0.3918	1.3848	0.6785
11	Piramal Enterprises Ltd	- 0.9097	- 1.1356	- 0.9123	**2.0024***	0.9163	0.7010
12	Aurobindo Pharma Ltd	0.7139	- 0.1263	- 1.3256	- 0.6282	- 1.1040	-1.0445
13	Vivimed Labs Limited	- 0.1912	- 0.6441	- 0.1677	-0.0636	0.2916	0.4885
14	Wockhardt Ltd	- 0.0224	1.2938	**2.0000***	-1.3299	-1.0901	- 0.9805
15	Strides Arcolab Ltd	-1.2825	- 0.8775	- 0.5041	0.3890	0.8068	- 0.2902
16	Dr. Reddy’s Laboratories	0.7215	- 0.3095	1.0668	**1.9860***	**2.0239***	- 0.5168
17	Granules India Ltd	0.6446	0.0485	0.6373	- 0.9365	- 0.6994	- 0.1647
18	Hester Biosciences Ltd	- 1.8550	- 1.051	**- 2.3566***	0.5168	0.0811	0.4114
19	Natco Pharma Ltd	- 1.9417	0.5499	0.6232	0.0519	-1.0061	- 1.3494
20	FDC Ltd	- 1.2341	-1.3373	1.6304	0.6277	0.2027	- 0.6439
21	Lupin Limited	**- 3.6524***	**- 2.2443***	- 1.4146	- 1.6616	- 1.2468	- 0.6356
22	Nutraplus India Ltd	0.0891	1.4502	**2.1931***	- 0.2866	0.0412	**- 4.0555***
23	Lyka Labs Ltd	1.2257	1.6626	0.2334	-1.6222	- 1.1885	- 1.2929
24	Suven Life Science	0.3883	- 1.3439	- 0.9502	0.4358	1.213	**2.6227***
25	Ipca Laboratories Ltd	**- 4.0414***	**- 2.9681***	**- 2.3053***	- 1.6960	- 0.3352	**- 2.0454***
26	Aarti Drugs Ltd	0.2013	- 0.5829	- 0.7969	- 0.7674	- 0.5536	0.4188
27	Amrutanjan Health Care Ltd	- 0.5697	0.6028	0.1680	- 0.6949	- 0.0567	0.0292
28	Shilpa Medicare Ltd	0.0168	0.2276	0.4278	0.2276	1.1637	0.8168
29	Neuland Laboratories Ltd	0.9903	0.5193	0.0652	0.9612	0.5195	- 0.2624
30	Gufic BioSciences Ltd	**2.4184***	**2.3363***	0.6326	0.2886	- 0.1351	1.1074

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion

The above table provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for Pre Event Period -2, -5, -11 days and Post Event Period +2, +5, +11 days. The event is the M&A announcement date.

It is apparent that fourteen values, before the merger announcement are found to be significant for -5th day (t-value 5.4152), -11th day (t-value 2.9302) for Pfizer Ltd, -11th day (t-value 2.3025) for TTK Healthcare Ltd, -5th day (t-value 2.1223) for Glenmark Pharmaceuticals Ltd, -11th day (t-value 2.0000) for Wockhardt Ltd, -11th day (t-value 2.3566) for Hester Biosciences Ltd, -2nd day and -5th day (t-value -3.6524, -2.2443) for Lupin Limited, -2nd day, -5th day, -11th day (t-value -4.0414, -2.9681, - 2.3053) for Ipca Laboratories Ltd, -11th day (t-value 2.1931) for Nutraplus India Ltd and for -2th day and -5th day (t-values 2.4184, 2.3363) for Gufic Bio Sciences Ltd.

It is also evident that nine values, after the merger announcement are found to be significant that is for +5th day, +11th day (t-value 2.3526, - 7.0890) for Pfizer Ltd, +2nd day (t-value 2.1734) for TTK Healthcare Ltd, +2nd day (t-value 2.0024) for Piramal Enterprises Ltd, +2th day and +5th day (t-values 1.9860, 2.0239) for Dr. Reddy's Laboratories, +11th day (t-value - 4.0555) for Nutraplus India Ltd , +11th day (t-value 2.6227) for Suven Life Science Ltd and +11th day (t-value - 2.0454) for Ipca Laboratories Ltd.

Except this, no significant reaction exists before and after the merger announcement. Thus, it is concluded announcement of mergers and acquisitions had not created any statistically significance impact of Indian Pharmaceutical Companies.

Table 4.3.34: Summary of t- Statistics of Cumulative Abnormal return (CAR) for Combined Number of Days (Pre-Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5), 23 days (- 11, + 11 days)) for Selected Pharmaceutical companies in India

Sl.No	Acquirer Company	t- Statistics of CAR		
		5 days (-2 +2)	**11 days (-5 + 5)**	**23 days (- 11, + 11)**
1	Pfizer Ltd	**5.342565645***	**7.812704859***	1.818548659
2	Torrent Pharmaceuticals Ltd	-0.490276105	0.197910644	0.399054211
3	Cadila Healthcare Ltd	1.399392603	1.07520048	0.589010112
4	Shukra Pharma Ltd (Relish Pharmaceuticals Ltd)	0.914273888	0.960651018	1.038870768
5	TTK Healthcare Ltd	**2.067687252***	1.349317369	1.856592383
6	J B Chemicals & Pharamaceuticals Ltd	-0.637815942	0.146550174	0.924235747
7	Cipla Limited	0.322788363	0.535907492	0.205819736
8	Glenmark Pharmaceuticals Ltd	-0.080620472	**2.214143337***	1.084547474
9	Sun Pharmaceuticals Industries Ltd	0.376459197	0.669350169	0.443198054
10	Ind- Swift Ltd	0.717197995	1.305629002	0.598641444
11	Piramal Enterprises Ltd	0.925388945	0.01010511	-0.036863917
12	Aurobindo Pharma Ltd	0.109255533	-0.79233399	-1.613418077
13	Vivimed Labs Limited	-0.275235394	-0.314728401	0.168707473
14	Wockhardt Ltd	-0.500878247	0.376247654	0.870309908
15	Strides Arcolab Ltd	0.289897345	0.528782625	-0.150649268
16	Dr. Reddy’s Laboratories	**1.988394191***	1.3418948	0.508982771
17	Granules India Ltd	0.347383131	-0.080140738	0.57486373
18	Hester Biosciences Ltd	-1.001844304	-0.758796885	-1.417740064
19	Natco Pharma Ltd	-1.463775667	-0.488530987	-0.62743208
20	FDC Ltd	-0.441093786	-0.8037113	0.655408617
21	Lupin Limited	**-4.668435331***	**-3.23525663***	**-2.027492143***
22	Nutraplus India Ltd	-0.439945934	0.793110083	-1.434552567
23	Lyka Labs Ltd	-0.239148867	0.3274736	-0.727339235
24	Suven Life Science	0.144730392	-0.342117345	0.981188191
25	Ipca Laboratories Ltd	**-3.94525624***	**-2.440510322***	**-3.156446539***
26	Aarti Drugs Ltd	0.355608343	-0.285022889	0.07122012
27	Amrutanjan Health Care Ltd	-0.737276413	0.410307267	0.16550367
28	Shilpa Medicare Ltd	0.525133607	1.187897903	1.033532104
29	Neuland Laboratories Ltd	1.284460146	0.734231951	-0.112933286
30	Gufic BioSciences Ltd	1.801274219	1.544177285	1.244883807

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

The above table provides the summary of Company's t-statistics of Cumulative Abnormal return (CAR) and shows the significant impact for combined days, for Pre Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5) and 23 days (- 11, + 11 days) for Selected Pharmaceutical companies in India

It is apparent from the above table that eleven values, before and after the merger announcement are found to be significant at 5% for 5 days (-2 +2) (t-value 5.3426) and 11 days (-5 + 5) (t-value 7.8127) for Pfizer Ltd, 5 days (-2 +2) (t-value 2.0677) for TTK Healthcare Ltd, 11 days (-5 + 5) (t-value 2.2141) for Glenmark Pharmaceuticals Ltd, 5 days (-2 +2) (t-value 1.9884) for Dr. Reddy's Laboratories. The values are found to be negative for Lupin Limited for 5 days (-2 +2) (t-value -4.6684), 11 days (-5 + 5) (t-value -3.2352) and 23 days (t-value -2.0275) and Ipca Laboratories Limited for 5 days (-2 +2) (t-value -3.9453), 11 days (-5 + 5) (t-value -2.4405) and 23 days (t-value -3.1564).

Except this, no significant reaction exists before and after the merger announcement. Thus, it is concluded that merger announcements do not have a significant impact on the stock prices Selected Pharmaceutical Companies in India.

CAAR: Results and Analysis

Table 4.3.35: Summary of t- Statistics of Cumulative Average Abnormal Return (CAAR) and Significant Impact for Pre-Event Period (-2, -5, -11) days and Post Event Period (+2, +5, +11) days for Selected Pharmaceutical companies in India

Days	AAR	Window	CAAR	t - statistics of CAAR	Significant
-30	-0.00391456				
-29	0.001360994				
-28	0.003560476				
-27	0.002007817				
-26	-0.00393601				
-25	-0.007252089				
-24	-0.004554284				
-23	0.004229493				
-22	-0.008285015				
-21	-0.002499077				
-20	0.031841131				
-19	-0.029266759				
-18	0.001111997				
-17	0.003887191				
-16	-0.002242293				
-15	0.00278935				
-14	-0.003729407				
-13	-0.002280065				
-12	-0.00036621				
-11	0.011260773	-11	0.0243608	0.960075271	Insignificant
-10	0.013629347				
-9	-0.008613796				
-8	-0.006364612				
-7	0.030569304				
-6	-0.028613017				
-5	0.003089831	-5	0.0124928	0.730272862	Insignificant
-4	0.002901214				
-3	0.008043435				
-2	-0.001534072	-2	-0.001542	-0.142489809	Insignificant
-1	-7.5893E-06				
0	**0.007117988**				
1	0.004577123				
2	-0.000845991	+ 2	0.0037311	0.34485414	Insignificant
3	0.005533739				
4	0.003035693				
5	0.007962057	+ 5	0.0202626	1.184460024	Insignificant
6	0.004311808				

7	-0.011594261				
8	-0.015829884				
9	-0.011046356				
10	0.002003496				
11	0.008450188	+ 11	-0.003442	-0.13566667	Insignificant
12	-0.000323779				
13	-0.003086025				
14	0.006214232				
15	-0.00209933				
16	6.32288E-05				
17	0.002084335				
18	0.009886578				
19	0.013230028				
20	0.010152112				
21	0.002473039				
22	-0.003650559				
23	-0.003775607				
24	-0.003162628				
25	-0.00211198				
26	0.001087787				
27	0.004253744				
28	0.001756364				
29	-0.002235984				
30	0.007924436				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

The above table provides the summary of Company's t-statistics of Cumulative Average Abnormal return (CAAR) and shows the significant impact at 5% level for Pre Event Period -2, -5, -11 days and Post Event Period +2, +5, +11 days. The event is the M&A announcement date. CAAR is computed for Pre Event Period and Post Event Period for the Window period of 61 days and shows the significant impact at 5% for Pre Event Period -2, -5, -11 days and Post Event Period +2, +5, +11 days. The overall movement of CAAR is range bound throughout the period of 61 days. CAAR values and t-statistics of CAAR before and after the merger have not been found significant throughout the period and have been moving in moderate range.

Table 4.3.36: Summary of t- Statistics of Cumulative Average Abnormal return (CAAR) for Combined Number of Days (Pre Event Period and Post Event Period for 5 days (-2 +2), 11 days (-5 + 5), 23 days (- 11, + 11 days)) for Selected Pharmaceutical companies in India

Days	AAR	Days in t - Statistics	CAAR (Combined Number of days ((-2+2) 5 days, (-5 + 5) 11 days, (-11 +11) 23 days)	t - statistics of CAAR (Combined Number of days ((-2+2) 5 days, (-5 + 5) 11 days, (-11 +11) 23 days)	Significant
-30	-0.00391456				
-29	0.001360994				
-28	0.003560476				
-27	0.002007817				
-26	-0.00393601				
-25	-0.007252089				
-24	-0.004554284				
-23	0.004229493				
-22	-0.008285015				
-21	-0.002499077				
-20	0.031841131				
-19	-0.029266759				
-18	0.001111997				
-17	0.003887191				
-16	-0.002242293				
-15	0.00278935				
-14	-0.003729407				
-13	-0.002280065				
-12	-0.00036621				
-11	0.011260773				
-10	0.013629347				
-9	-0.008613796				
-8	-0.006364612				
-7	0.030569304				
-6	-0.028613017	(-11, + 11) 23 days	0.028036418	0.764131973	Insignificant
-5	0.003089831				
-4	0.002901214				
-3	0.008043435	(-5, + 5) 11 days	0.039873427	1.571437055	Insignificant
-2	-0.001534072				
-1	-7.5893E-06				
0	**0.007117988**				
1	0.004577123				
2	-0.000845991	(-2, + 2) 5 days	0.009307459	0.544071378	Insignificant
3	0.005533739				
4	0.003035693				
5	0.007962057	(-5, + 5) 11 days			

6	0.004311808				
7	-0.011594261				
8	-0.015829884				
9	-0.011046356				
10	0.002003496				
11	0.008450188	(-11, + 11) 23 days			
12	-0.000323779				
13	-0.003086025				
14	0.006214232				
15	-0.00209933				
16	6.32288E-05				
17	0.002084335				
18	0.009886578				
19	0.013230028				
20	0.010152112				
21	0.002473039				
22	-0.003650559				
23	-0.003775607				
24	-0.003162628				
25	-0.00211198				
26	0.001087787				
27	0.004253744				
28	0.001756364				
29	-0.002235984				
30	0.007924436				

Source: Calculations based upon the stock price data extracted from: Capitaline databases - Nifty 50.

*Significant at 5% level.

Results and Discussion:

Based on above results, it is concluded that merger announcements do not have a significant impact on the stock prices of Selected Indian Pharmaceutical Companies.

The Overall results indicate that Mergers and Acquisitions in Selected Pharmaceutical Companies in India have no impact on Stock Price. The result of the study adds to existing study presented in Literature review and contributes by applying the event study methodology in Indian Pharmaceutical Sector, which has been widely used to analyse the effect of Merger and Acquisition.

CHAPTER – 5

5. FINDINGS, SUGGESTIONS AND CONCLUSION OF THE STUDY

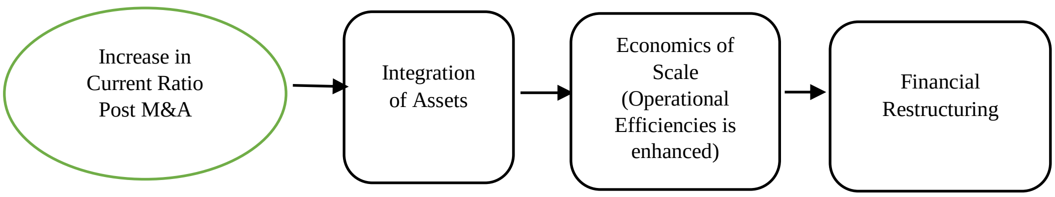
5.1. FINDINGS OF THE STUDY

5.1.1. Financial and Operating Performance of Selected Indian Pharmaceutical Companies during Pre-Merger Period and Post -Merger Period

The study examines the impact of Mergers and acquisitions on the Indian Pharmaceutical acquirer's companies by analysing the liquidity position, turnover efficiency, profitability position, research intensive, solvency position and investment evaluation ratios by using paired sample t-test. The study compares the financial indicators of the acquiring company before and after the merger or acquisition using 32 different financial indicators, the study aims to determine if there is a statistically significant impact on the acquiring company's financial performance as a result of the merger or acquisition and also examines the causes.

From the analysis the findings drawn are:

Flow Chart 5.1.1.1: Summary of Liquidity Ratios Post Merger and Acquisitions



Integration of Assets

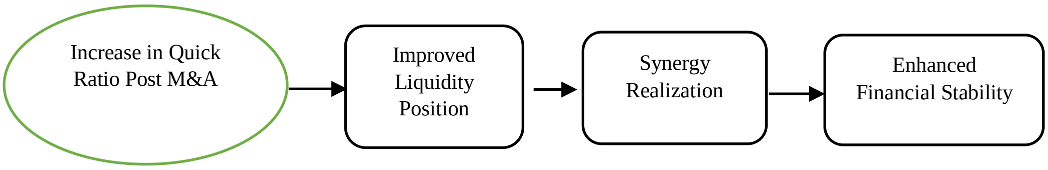
Following a merger, integration led to more efficient use of resources, increasing current assets or decreasing current liabilities and improved liquidity and better Current Ratio.

Economics of Scale

Post-merger, the consolidated entity has streamline operations, eliminate redundancies, and optimize workflows and lead to reduced costs, improved cash flow management, increased liquidity, thereby increasing the Current Ratio.

Financial Restructuring

Post - merger involves restructuring debt and obtaining more favorable financing terms by which the company's current liabilities has decrease, resulting in a higher Current Ratio.



Improved Liquidity Position

Post merger better managed inventories, optimized supply chains, and elimination of redundant stock has improved liquidity.

Synergy Realization

The synergies achieved through post-merger integration and operational efficiencies may lead to increased cash flows, which can increase the company's liquidity position and improve its Quick Ratio.

Enhanced Financial Stability

A higher Quick Ratio signifies enhanced liquidity and financial stability.

The comparison of liquidity ratios, including the current ratio and quick ratio, before and after mergers and acquisitions (M&A) in the Indian Pharmaceutical Sector reveals that the liquidity position of selected companies remains satisfactory. The mean values of both ratios have increased post-merger, indicating that acquiring firms have successfully maintained liquidity throughout both phases. Liquidity ratios in acquiring pharmaceutical companies can be attributed to various factors. Integration of assets during the merger process leads to an increase in current assets, thereby improving operational efficiencies. This enhancement facilitates more effective management of inventories and receivables. Additionally, financial restructuring during the acquisition process significantly contributes to strengthening the liquidity position.

However, despite these improvements, the results of the paired sample t-test indicate that there is no statistically significant impact on the liquidity position of acquiring firms post-M&A. Several factors specific to the pharmaceutical industry may contribute to this outcome. Firstly, pharmaceutical companies tend to allocate substantial capital expenditures to research and development (R&D) activities, crucial for innovation and product development. While essential, these investments can temporarily reduce short-term liquidity due to the significant upfront costs involved. Moreover, the defensive nature of the pharmaceutical sector necessitates maintaining sufficient levels of inventory. This strategic approach ensures companies can meet product demand, particularly during market volatility or disruption. These factors, combined with others inherent to the industry, may explain the lack of significant impact on liquidity ratios post-M&A in the pharmaceutical sector.

Flow Chart 5.1.1.2: Summary of Turnover Ratios Post Merger and Acquisition

Decrease in Inventory Turnover Ratio → Operational Disruptions → Supply Chain Integration → Change in Product Mix

Operational Disruptions

Mergers bring initial disruptions in operations, including inventory management. Merging systems, processes, and cultures can temporarily impair the efficiency of inventory turnover.

Supply Chain Integration

Integrating the supply chains of two companies can be complex and lead to inefficiencies particularly if the companies had significantly different supply chain strategies or operational scales.

Change in Product Mix

Post-merger, the combined entity may have a broader product portfolio. If new products have different turnover rates, especially slower ones then the overall inventory turnover ratio decrease.

Decrease in Receivables Turnover Ratio → Integration Challenges → Change in Credit Policy and Enhancing Collection efforts → Change in Customer Mix

Integration Challenges

Integrating financial systems and processes of two merging companies can lead to discrepancies and inefficiencies in managing receivables and differences in credit management cultures and practices.

Change in Credit Policy and Enhancing Collection efforts

To consolidate market share or enter new markets, the merged entity might extend more favorable credit terms to customers, resulting in slower collections.

Change in Customer Mix

The merger brings in a new mix of customers with different payment behaviors, especially if expanding into new geographic or market segments that have inherently slower payment cycles.

Decrease in Payable Turnover Ratio → Integration Challenges → Suppliers Database Consolidation → Financial restructuring and Debt Serving

Integration Challenges

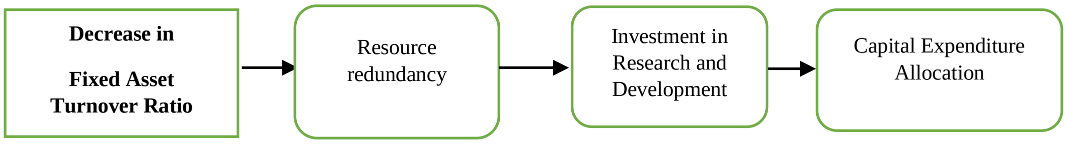
Merging the financial systems and processes of two companies can lead to temporary disruptions and inefficiencies in managing accounts payables.

Suppliers Database Consolidation

Consolidating supplier databases and payment systems can take time and may result in delays in payment processing.

Financial restructuring and Debt Serving

Post-merger, the company undergo financial restructuring, leading to cash flow constraints that result in delayed payments to suppliers. If the merged entity has higher debt obligations, it may prioritize debt servicing over timely payments to suppliers, resulting in a decrease in the payables turnover ratio.



Resource redundancy

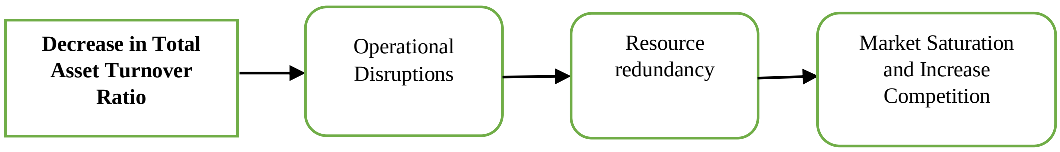
The merged entity may inherit redundant or underutilized assets from both companies, which could lower overall asset efficiency.

Investment in Research and Development

Increased investment in research and development (R&D) activities post-merger could lead to a decrease in fixed asset turnover ratio if the revenue generated from new products has not yet caught up with the increased investment.

Capital Expenditure Allocation

The merged entity may allocate significant resources to capital expenditures for expansion or modernization, resulting in a temporary decrease in fixed asset turnover ratio until the new assets start contributing to revenue.



Operational Disruptions

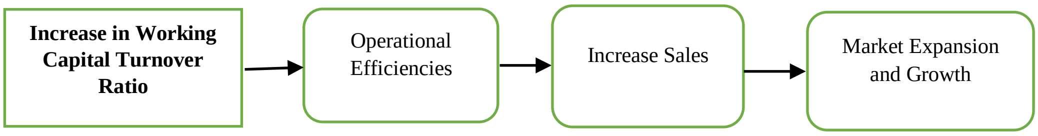
Merging two companies can lead to operational disruptions, affecting the efficiency with which assets are utilized, especially if there are differences in operational processes or technology platforms.

Resource redundancy

The merged entity may inherit redundant or underutilized assets from both companies, which could lower overall asset efficiency.

Market Saturation and Increase Competition

Saturation or slowdown in market growth post-merger could lead to decreased revenue generation despite consistent or increased investment in total asset.



Operational Efficiencies

Integration of operations post-merger lead to streamlined processes, reducing inefficiencies and optimizing the use of working capital.

Increase Sales

Expansion into new markets or increased market share post-merger lead to higher sales volumes, improving working capital turnover.

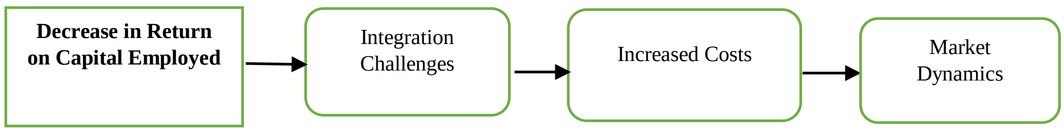
Market Expansion and Growth

Product portfolio post-merger attract a wider customer base, resulting in market expansion and growth.

The decrease in the turnover ratio post-merger within Indian pharmaceutical companies necessitates a comprehensive analysis to identify specific causes and implement strategies for enhancing efficiency. It is crucial for pharmaceutical companies to understand these factors and the implications of such a decrease to direct the company towards efficient cash flow management and stronger financial health. Conversely, an increase in the Working Capital Turnover Ratio post-merger in Indian pharmaceutical companies signifies improved operational efficiency, supply chain optimization, and market expansion.

Also, the analysis conducted using paired sample t-test indicates a statistically significant impact on the payable turnover ratio and total asset turnover ratio. As a result, the null hypothesis is rejected for these indicators. However, for the fixed asset turnover ratio, inventory turnover ratio, receivable turnover ratio, and working capital turnover ratio, there is no statistically significant impact on the financial performance, leading to the acceptance of the null hypothesis for these measures.

Flow Chart 5.1.1.3: Summary of Profitability Ratios Post Merger and Acquisitions



Integration Challenges

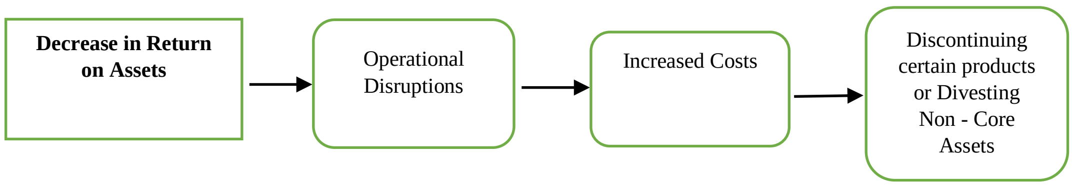
Merging two companies lead to operational disruptions, affecting productivity and efficiency, which impacts profitability also integration challenges related to different organizational cultures and processes may hinder post-merger performance.

Increased Costs

Costs associated with merging operations, systems, and personnel can be substantial and may negatively impact profitability in the short term.

Market Dynamics

Increased competition or pricing pressure in the pharmaceutical industry post-merger may reduce profit margins and overall profitability and also changes in regulatory requirements or pricing regulations in the pharmaceutical market can impact product pricing and profitability.



Operational Disruptions

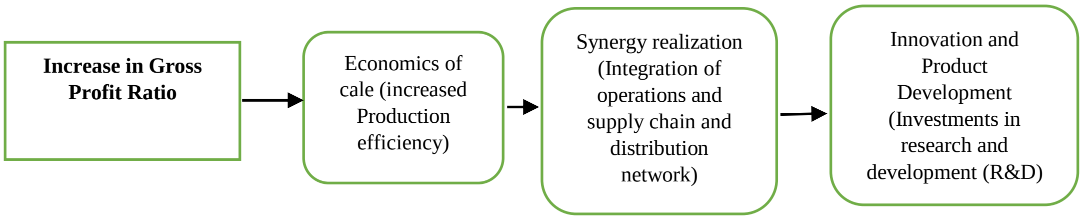
Merging two companies lead to operational disruptions, affecting productivity and efficiency, which impacts profitability also integration challenges related to different organizational cultures and processes may hinder post-merger performance.

Increased Costs

Costs associated with merging operations, systems, and personnel can be substantial and may negatively impact profitability in the short term.

Discontinuing certain products or Divesting Non - Core Assets

Discontinuing certain products or divesting non-core assets, may result in short-term revenue loss and impact profitability



Economics of scale (increased Production efficiency)

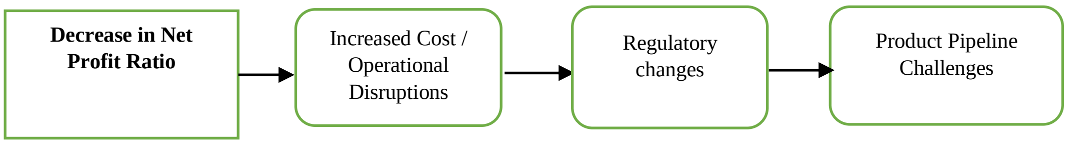
Merging companies may benefit from economies of scale, leading to lower per-unit production costs and higher gross profit margins. Consolidation of purchasing activities post-merger may lead to cost savings on raw materials or production inputs, contributing to higher gross profit margins.

Synergy realization (Integration of operations and supply chain and distribution network)

Integration of operations post-merger can lead to streamlined processes and reduced inefficiencies, resulting in higher productivity and lower production costs.
Integration of supply chains and distribution networks can lead to cost savings and improved efficiency, contributing to higher gross profit margins.

Innovation and Product Development (Investments in research and development (R&D) to develop innovative products)

Investments in research and development (R&D) to develop innovative products with higher profit margins can contribute to increased gross profit ratios



Increased Cost

Costs associated with merging operations, systems, and personnel can be substantial and may negatively impact profitability in the short term.

Operational Disruptions

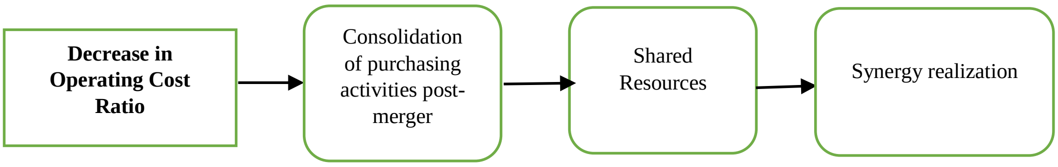
Merging two companies can lead to operational disruptions, affecting productivity, and efficiency, which may impact profitability.

Regulatory changes

The pharmaceutical industry is subject to regulatory changes, both domestically in India and internationally. Post-merger, companies may face regulatory hurdles or changes in compliance requirements, which could increase operating costs and reduce profitability.

Product Pipeline Challenges

Merged pharmaceutical companies may face challenges in their product pipelines, such as delays in new drug approvals or patent expirations of key products. These factors can affect revenue streams and, consequently, the net profit ratio.



Consolidation of purchasing activities post-merger

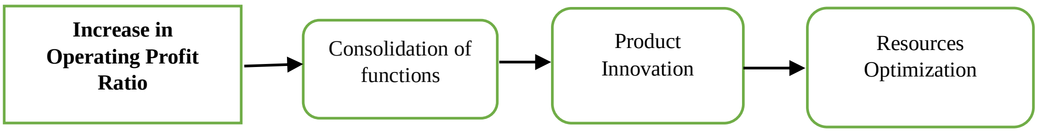
Consolidation of purchasing activities post-merger may lead to better negotiation terms with suppliers, resulting in cost savings on raw materials and other inputs

Shared Resources

Consolidation of functions such as production, distribution, and administration can lead to economies of scale and lower per-unit costs

Synergy realization

Integration of operations post-merger can lead to streamlined processes, reduced duplication, and elimination of inefficiencies, resulting in lower operating costs



Consolidation of functions

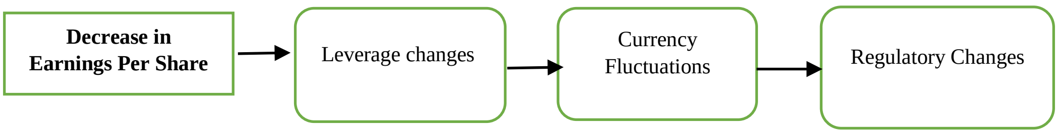
Consolidation of functions such as production, distribution, and administration can lead to economies of scale and lower per-unit costs, contributing to higher operating profit margins.

Product Innovation

Introduction of new or improved products post-merger can drive revenue growth and improve operating profit margins.

Resources Optimization

Efficient allocation of resources and workforce post-merger can improve productivity and reduce overhead costs, contributing to higher operating profits.



Leverage changes

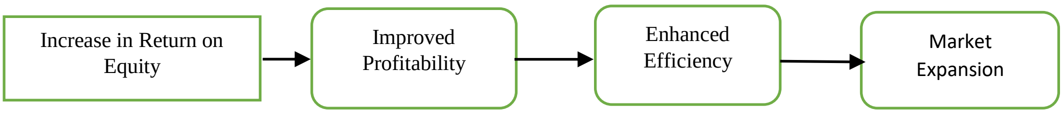
Changes in the capital structure post-merger, such as increased debt levels, can influence interest expenses and EPS.

Currency Fluctuations

Exchange rate fluctuations, especially if the merged entity operates in multiple countries, can affect financial results and EPS

Regulatory Changes

Delays in obtaining regulatory approvals for merged entities or challenges in product integration can impact revenue and profitability, consequently leading to lower EPS.



Improved Profitability

Elimination of redundancies, optimization of resources, and improved productivity can contribute to higher profitability and ROE.

Enhanced Efficiency

Implementation of best practices, automation, and process improvements can lead to higher operational efficiency, lower costs, and improved profitability, positively impacting ROE. Efficient allocation of resources and capital post-merger can maximize returns on equity investment and drive higher ROE.

Market Expansion

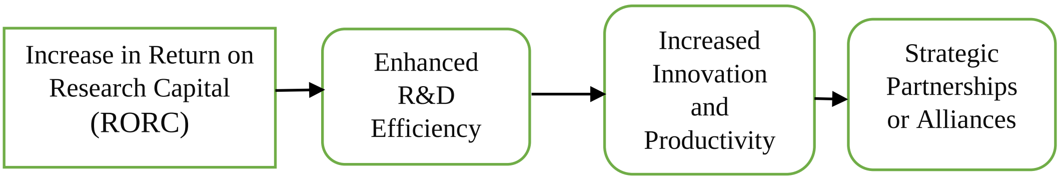
Merging companies may gain access to new markets, distribution channels, or customer segments, leading to revenue growth and higher profitability, which positively affects ROE Introduction of new or improved products post-merger can drive revenue growth and increase profitability, contributing to higher ROE.

A thorough examination of the factors contributing to the decline in Return on Capital Employed, Return on Assets, Net Profit Ratio and Earnings per Share (EPS) post-merger within the Indian pharmaceutical sector is crucial for identifying root causes and implementing effective solutions to enhance profitability.

Integration of operations following the merger can streamline processes, reduce inefficiencies, and increase productivity, ultimately leading to lower production costs. Additionally, the integration of supply chains and distribution networks can yield cost savings and enhance efficiency, thereby positively impacting gross profit margins.

An increase in Return on Equity (ROE) post-merger indicates that the company is generating higher returns for its shareholders relative to the equity invested. This improvement may result from various factors, including operational improvements, financial optimizations, or strategic initiatives implemented post-merger.

Flow Chart 5.1.1.4: Summary of Research-Intensive Indicators Post Merger and Acquisitions



Enhanced R&D Efficiency

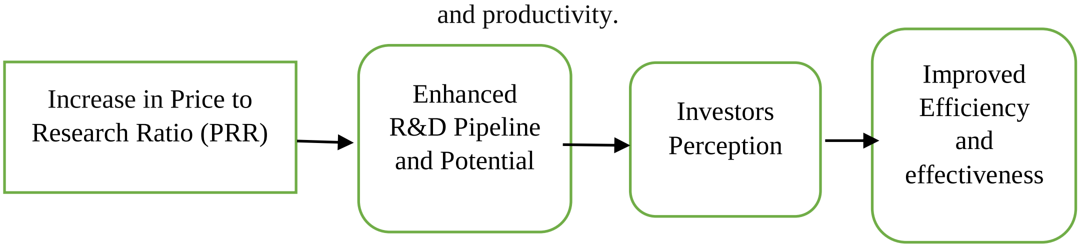
Post-merger, the combined resources and expertise lead to more efficient utilization of R&D capabilities, resulting in higher returns on R&D investments.

Increased Innovation and Productivity

Collaboration between merged entities may develop innovation synergies, leading to the development of breakthrough therapies and products with higher commercial potential. Merging companies may gain access to a larger pool of skilled researchers and scientists, developing a culture of innovation and productivity in R&D activities.

Strategic Partnerships or Alliances

Forming strategic partnerships or alliances with academic institutions, research organizations, or biotech firms provide access to innovative technologies and expertise, enhancing R&D efficiency and productivity.



Enhanced R&D Pipeline and Potential

Merging companies bring together complementary R&D pipelines, leading to a broader and more diverse portfolio of potential drugs and therapies.
A stronger R&D portfolio with a higher likelihood of successful drug development and commercialization can lead to increased investor confidence and a higher valuation of the company's research activities.

Investors Perception

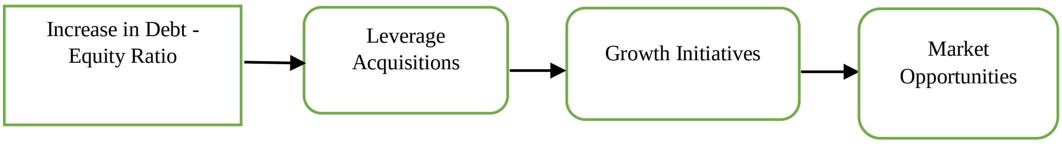
The market may perceive the post-merger entity as more innovative and growth-oriented, leading to a higher valuation of its R&D investments relative to its market capitalization.

Improved Efficiency and effectiveness

Integration of R&D operations post-merger lead to cost savings, increased efficiency, and better resource utilization, enhancing the overall effectiveness of R&D investments.

The significant increase in the mean of Return on Research Capital Ratio post-merger within Indian pharmaceutical companies suggests enhanced efficiency and effectiveness in converting R&D investments into profitable outcomes. On the other hand, the increase in the Price to Research Ratio (PRR) post-merger reflects increased investor confidence in the company's research and development (R&D) capabilities, as well as its potential for innovation and future growth. However, it's important that no statistically significant difference was observed in the Return on Research Capital Ratio and Price to research ratio. Nevertheless, the increase in the mean of research incentive indicators offers improved insights for both management and investors, aiding in making more informed decisions regarding the state of research and development within the company.

Flow Chart 5.1.1.5: Summary of Solvency Ratios of Post Merger and Acquisitions



<u>Leverage Acquisitions</u>

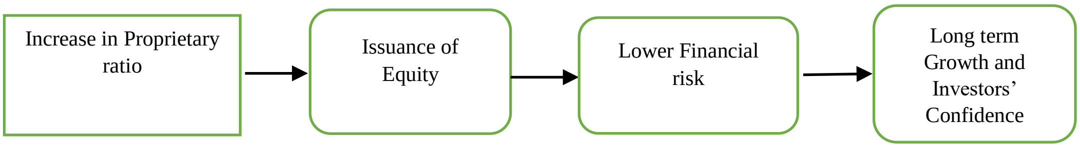
The acquiring company may have used debt financing to fund the merger or acquisition, resulting in an increase in total debt.

<u>Growth Initiatives</u>

The merged entity may undertake strategic investments or expansion projects, such as R&D investments, new product launches, or market expansion, which require additional financing through debt.

<u>Market Opportunities</u>

The company may seize market opportunities post-merger that require significant capital investment, leading to higher debt levels to fund these initiatives.



<u>Issuance of Equity</u>

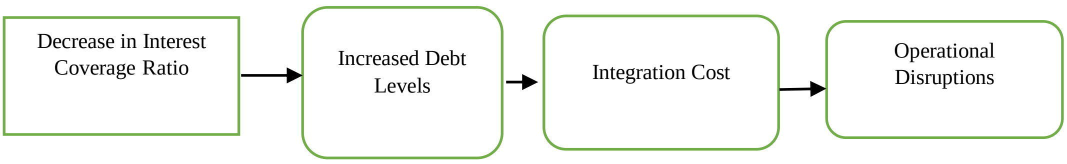
The merged entity may have raised additional equity capital to finance the merger or acquisition, leading to an increase in equity financing.

<u>Lower Financial risk</u>

Increasing the proprietary ratio can enhance financial stability and reduce financial risk, as equity capital does not carry the obligation of regular interest payments or fixed repayment schedules.

<u>Long term Growth and Investors' Confidence</u>

Higher equity financing can provide the company with a more stable and sustainable source of capital for long-term growth initiatives, such as research and development, market expansion, or acquisitions.



<u>Increased Debt Levels</u>

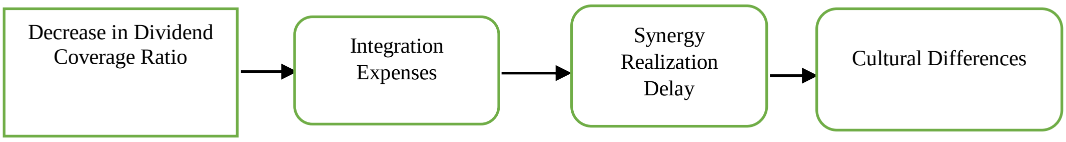
If the merger was financed through debt, it would lead to higher interest expenses, potentially reducing the company's ability to cover these expenses.

Integration Cost

Costs associated with integrating operations, systems, and personnel post-merger may increase overall expenses, impacting EBIT and subsequently decreasing the ICR.

Operational Disruptions

Merging two companies can lead to operational disruptions, affecting productivity and profitability, thereby reducing EBIT and the ICR.



Integration Expenses

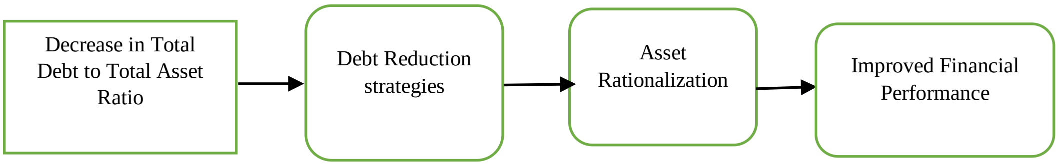
Costs associated with integrating operations, systems and personnel, post-merger may increase overall expenses, reducing earnings available for dividend payments.

Synergy Realization Delay

Delays in realizing anticipated synergies from the merger may lead to lower-than-expected earnings, affecting the company's ability to cover dividends.

Cultural Differences

Integration challenges related to different organizational cultures and processes may hinder post-merger performance, impacting dividend coverage.



Debt Reduction strategies

The merged entity may prioritize reducing debt levels post-merger to strengthen its balance sheet and improve financial stability.

Asset Rationalization

Selling non-core assets or underperforming divisions acquired during the merger process to generate proceeds for debt repayment and reduce the Total Debt to Total Asset Ratio.

Improved Financial Performance

Enhanced operational efficiency, synergies realized from the merger, or revenue growth may lead to higher earnings, allowing the company to reduce debt levels relative to total assets

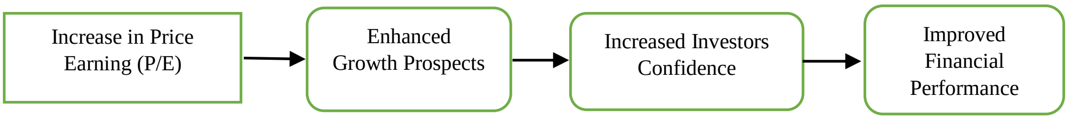
The increase in the mean of the proprietary ratio post-merger suggests that the merged entity has raised additional equity capital to finance the merger or acquisition, resulting in an increase in equity financing. There is also an increase in the mean of the debt equity ratio and proprietary ratio post-merger, but there is no statistically significant impact, and the null hypothesis is accepted. The acquiring company may have utilized debt financing to facilitate the merger or acquisition, thereby leading to an increase in total debt.

The results depict a decrease in the mean of the interest coverage ratio, dividend coverage ratio, and total debt to total asset ratio post-merger, with no statistically significant impact observed. Consequently, the null hypothesis is accepted.

The decrease in the interest coverage ratio (ICR) and dividend coverage ratio (DCR) may be attributed to costs associated with integrating operations and systems post merger, which can increase overall expenses, impacting earnings before interest and taxes (EBIT) and subsequently reducing the ICR and earnings available for dividend payments. Furthermore, the decrease in the total debt to total asset ratio may be due to the merged entity prioritizing the reduction of debt levels post-merger to strengthen its balance sheet and improve financial stability.

Overall, the solvency of all Indian pharmaceutical companies is satisfactory in selected Indian pharmaceutical companies.

Flow Chart 5.1.1.6: Summary of Investment Valuation Ratios Post Merger and Acquisitions



Enhanced Growth Prospects

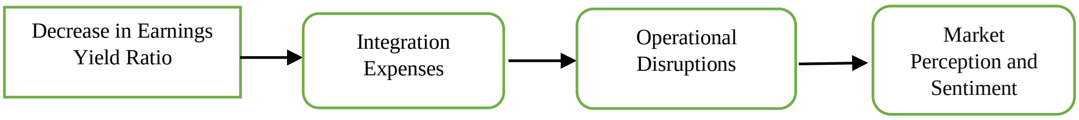
Merging companies may gain access to new markets, distribution channels, or beneficial areas, driving revenue growth and increasing investor confidence in the company's future earnings.

Increased Investors' Confidence

Investors may perceive the merger as strategically beneficial, resulting in increased confidence in the company's ability to execute its growth strategy and bring strong financial performance.

Improved Financial Performance

Operational enhancements, cost synergies, or revenue expansion strategies post-merger may result in increased earnings, thereby elevating the P/E ratio as investors anticipate sustained growth in profitability.



Integration Expenses

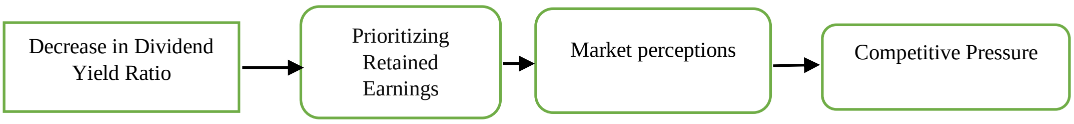
Costs associated with integrating operations, systems, and personnel post-merger may increase overall expenses, reducing earnings available for shareholders and lowering the earnings yield ratio.

Operational Disruptions

Merging companies can lead to operational disruptions, affecting productivity and profitability, thereby reducing earnings and the earnings yield ratio.

Market Perception and Sentiment

Uncertainty among investors regarding the merger's success or the company's future prospects may lead to a decline in the stock price relative to earnings, resulting in a lower earnings yield ratio. Negative industry trends, regulatory challenges, or competitive pressures post-merger may reduce investor sentiment, leading to a decrease in the earnings yield ratio.



Prioritizing Retained Earnings

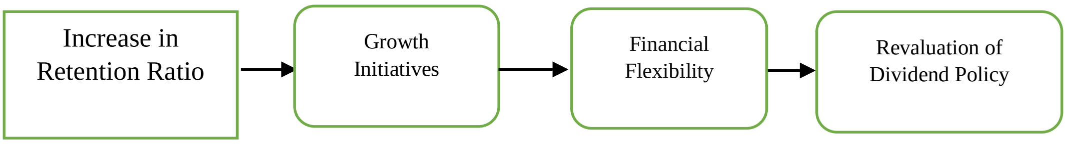
Post-merger, the company may prioritize reinvesting earnings into growth initiatives, debt reduction, or capital expenditures rather than distributing dividends to shareholders.
Post-merger, the company may prioritize reinvesting earnings into growth initiatives, debt reduction, or capital expenditures rather than distributing dividends to shareholders.

Market perceptions

Uncertainty surrounding the merger's success or the company's future prospects may lead to a decrease in investor confidence, resulting in a lower stock price relative to dividend payouts.

Competitive Pressure

Increased competition or regulatory challenges in the pharmaceutical industry post-merger may impact profitability, affecting the company's ability to maintain dividend payments



Growth Initiatives

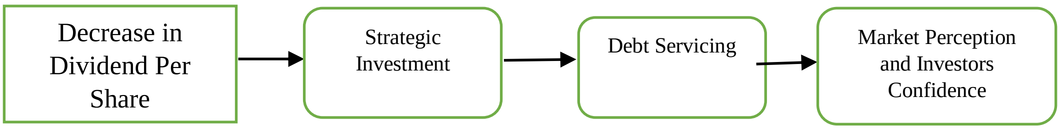
Post-merger, the company may identify attractive investment opportunities in research and development, product innovation, market expansion, or acquisitions, necessitating higher reinvestment of earnings.

Financial Flexibility

Maintaining a higher level of retained earnings provides the company with greater financial flexibility to navigate uncertain economic conditions or industry challenges post-merger.

Revaluation of Dividend Policy

Management may revise the dividend policy post-merger to align with the company's growth objectives, resulting in a higher retention ratio and lower dividend payouts.



Strategic Investment

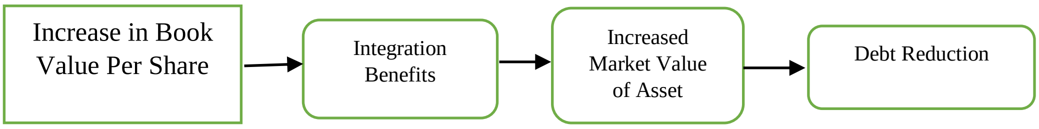
Post-merger, the company prioritize reinvesting earnings into growth initiatives such as research and development, market expansion, or acquisitions rather than distributing dividends.

Debt Servicing

If the merger increased the company's debt burden, management may prioritize debt repayment over dividend distributions to reduce interest expenses and strengthen the balance sheet.

Market Perception and Investors Confidence

Uncertainty surrounding the merger's success or the company's future prospects may lead management to adopt a conservative approach to dividend distributions, resulting in lower DPS
A decline in investor confidence post-merger due to integration challenges or performance concerns may prompt management to conserve cash rather than distribute dividends



Integration Benefits

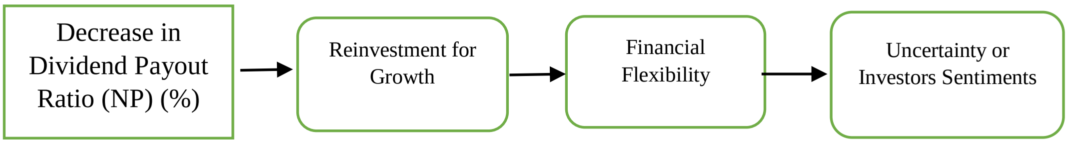
Successful merger integration efforts may result in cost synergies, operational efficiencies, and asset optimization, leading to an increase in the overall net asset value of the company.

Increased Market Value of Asset

Post-merger, the market may reassess the value of the company’s assets, including intellectual property, research pipelines, and brand value, leading to an upward adjustment in the book value per share.

Debt Reduction

The merged entity may prioritize debt reduction post-merger, leading to a decrease in liabilities and an increase in equity, thereby boosting the book value per share.



Reinvestment for Growth

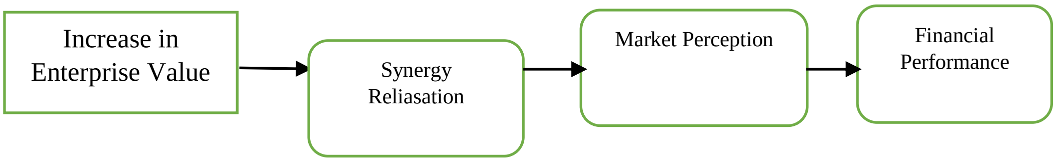
Post-merger, the company may prioritize reinvesting a larger portion of its profits into growth initiatives such as research and development, market expansion, or acquisitions instead of distributing them as dividends

Financial Flexibility

Maintaining a lower dividend payout ratio provides the company with greater financial flexibility to navigate uncertain economic conditions or industry challenges post-merger.

Uncertainty or Investors Sentiments

Uncertainty surrounding the merger’s success or the company’s future prospects may lead management to adopt a conservative approach to dividend distributions, resulting in a lower dividend payout ratio.
A decline in investor confidence post-merger due to integration challenges or performance concerns may prompt management to conserve cash rather than distribute dividends.



Synergy Reliasation

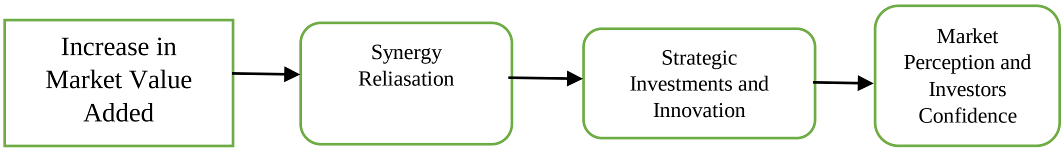
Merged companies may capitalize on complementary strengths and expanded market presence, leading to higher revenue generation and increased enterprise value.

Market Perception

Positive market sentiment surrounding the pharmaceutical sector, industry trends, or favorable regulatory developments may contribute to an increase in enterprise value post-merger.

Financial Performance

Improved financial performance, profitability, and earnings growth post-merger may positively impact investor valuation metrics, driving up the enterprise value.



Synergy Reliasation

Successful integration efforts post-merger may result in cost savings, improved productivity, and increased profitability, leading to a higher market valuation and MVA. Merged entities may leverage complementary strengths, expanded market presence, and enhanced competitive positioning to capture market share and create value for shareholders.

Strategic Investments and Innovation

Commitment to innovation and R&D initiatives post-merger may lead to the development of new drugs, technologies, or therapies, enhancing the company's competitive edge and increasing market valuation and MVA.

Market Perception and Investors Confidence

Favorable industry trends, regulatory developments, or investor sentiment surrounding the pharmaceutical sector may contribute to an increase in market valuation and MVA post-merger Investor's confidence in the management team's ability to execute the merger strategy, achieve synergies, and transfer long-term value creation positively impact market valuation and MVA

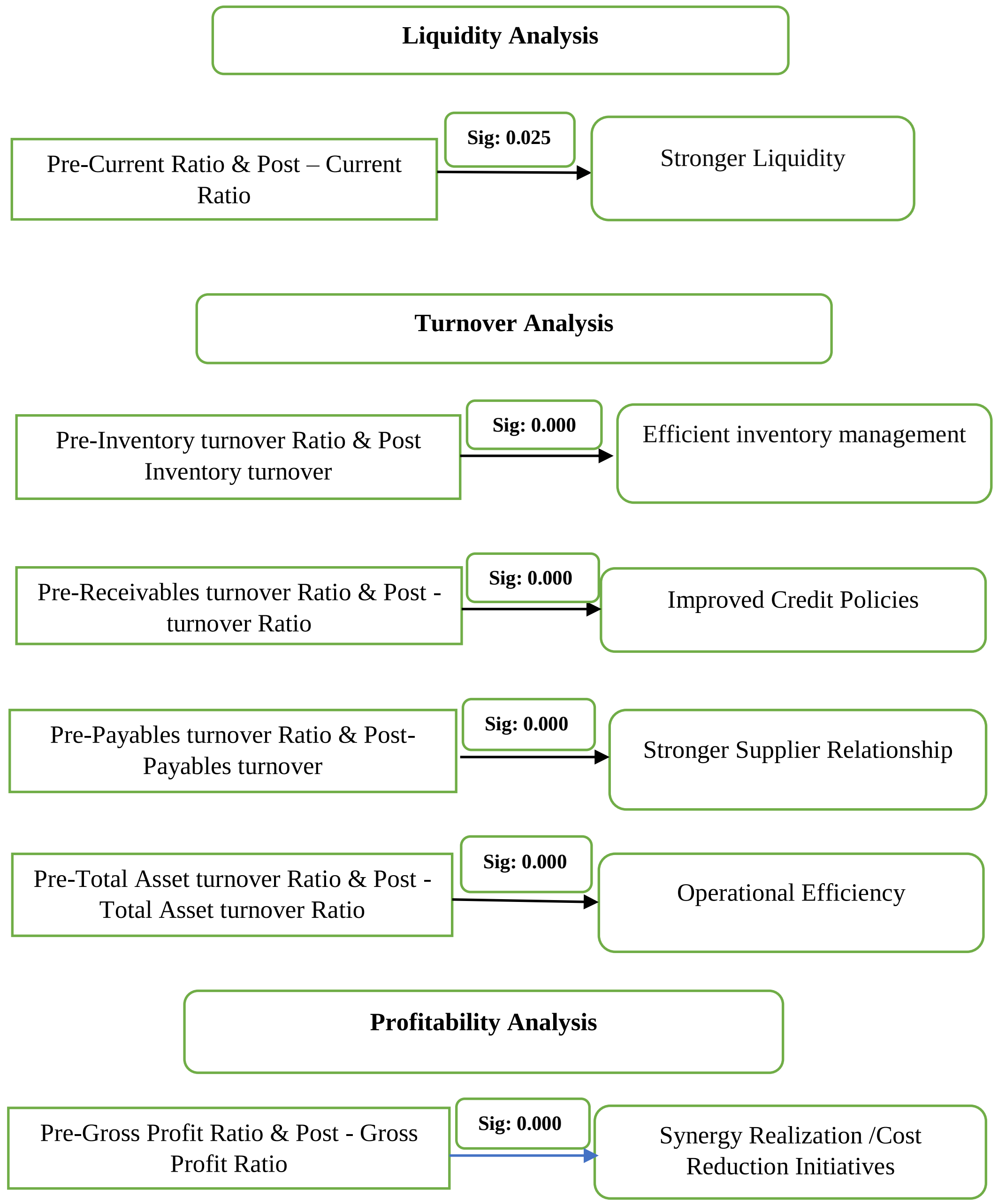
Post merger Pharmaceutical companies experience higher financial performance as indicated by statistically significant increase in Earnings Yield Ratio, Dividend Yield Ratio, Book Value Per Share, Dividend Payout Ratio, Enterprise Value and Market Value Added.

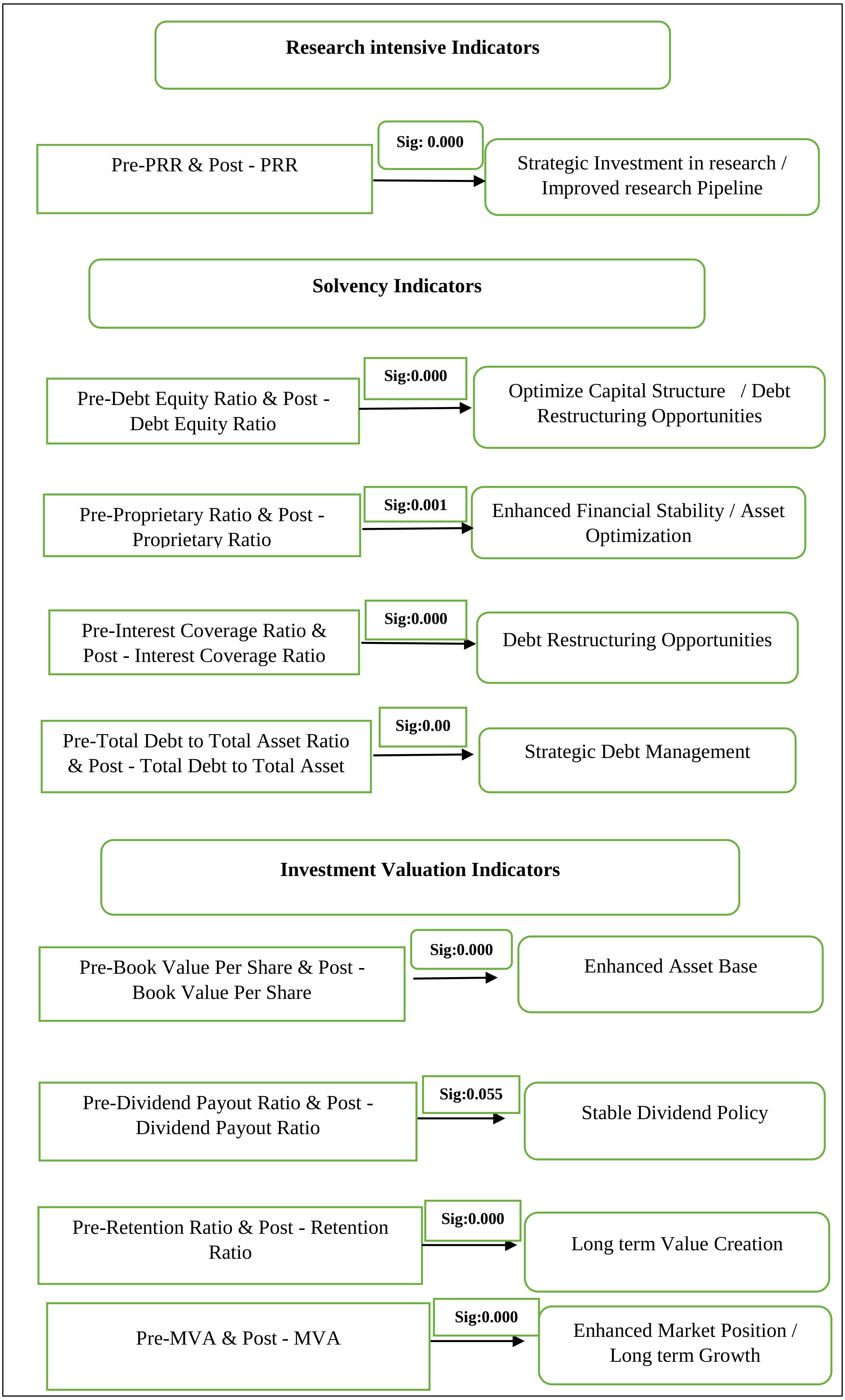
Conversely, certain indicators like Price Earning (P/E), Retention Ratio, and Dividend Per Share show no statistically significant changes in the financial performance after M&A.

The increase in Market Value Added (MVA) post-merger among Indian pharmaceutical companies indicates that the entities are effectively generating value for their shareholders through strategic initiatives, operational efficiencies, and opportunities for revenue growth. This increase suggests that the companies are focusing on sustainable growth, innovation, and efficient capital allocation, all of which contribute to the creation of long-term value for shareholders within the pharmaceutical sector.

5.1.2. Paired Sample Correlation

Flow Chart 5.1.2: Paired sample correlation between variables - pre and post mergers and acquisition




Research intensive Indicators
Pre-PRR & Post - PRR
Sig: 0.000
Strategic Investment in research / Improved research Pipeline
Solvency Indicators
Pre-Debt Equity Ratio & Post - Debt Equity Ratio
Sig:0.000
Optimize Capital Structure / Debt Restructuring Opportunities
Pre-Proprietary Ratio & Post - Proprietary Ratio
Sig:0.001
Enhanced Financial Stability / Asset Optimization
Pre-Interest Coverage Ratio & Post - Interest Coverage Ratio
Sig:0.000
Debt Restructuring Opportunities
Pre-Total Debt to Total Asset Ratio & Post - Total Debt to Total Asset
Sig:0.00
Strategic Debt Management
Investment Valuation Indicators
Pre-Book Value Per Share & Post - Book Value Per Share
Sig:0.000
Enhanced Asset Base
Pre-Dividend Payout Ratio & Post - Dividend Payout Ratio
Sig:0.055
Stable Dividend Policy
Pre-Retention Ratio & Post - Retention Ratio
Sig:0.000
Long term Value Creation
Pre-MVA & Post - MVA
Sig:0.000
Enhanced Market Position / Long term Growth

5.1.3. Event Study for Selected Indian Pharmaceutical Companies during Pre-Merger Period and Post -Merger Period

The research findings indicate that post- merger announcement abnormal returns are not achieved. The findings clearly shows that the t-statistics of Abnormal Returns on the Event Day ('0' day) specifically pertaining to the announcement of mergers and acquisitions, had a significant impact on the Event Day '0' for Pfizer Ltd and Lupin Limited. This significance is indicated by the calculated t-value are greater than the corresponding t-table value. However, for the remaining 28 Pharmaceutical companies the event did not create a significant impact on the Event Day, as the calculated t-value did not exceed the t-table value.

The results reveal 42 instances of stock market reactions during the Pre-Merger announcement Period (from 0 to -30), and 47 instances during stock market reactions have been found in Post-Merger announcement Period (0 to + 30), which indicates an impact on stock prices in response to Merger and Acquisition.

The t-statistics reveal that fourteen CAR values evaluated prior to the merger announcement are found to be significant. Subsequently, nine values after the merger announcement are found to be significant, except this, no significant reaction exists before and after the merger announcement, the finding indicate lack of favourable market reactions to merger activity among selected pharmaceutical companies in India.

The t-statistics derived from the Cumulative Abnormal return (CAR) for combined number of days indicate that only eleven values, both before and after the merger announcement are found to be significant. The results suggest a limited number of noteworthy reactions during the period, leading to the inference that merger announcements do not significantly impact stock price.

Based on the results, it is observed that there not many instances of significant reactions exist during this period, suggesting that merger announcements do not exert a significant influence on stock price.

The Cumulative Average Abnormal returns values and t-statistics of CAAR before and after the merger remain non-significant over the entire period, consequently it can be concluded that merger announcements lack a considerable impact on stock prices.

The Overall results indicate that Mergers and Acquisitions represent a corporate restructuring strategy, and the success of a merger is contingent upon the underlying motives and their realisation in the future, as reflected in financial statements. This study contributes to the existing literature by employing event study methodology in the analysis of the effect of Mergers and Acquisitions within the Indian Pharmaceutical sector, a method widely employed for such evaluations.

5.2. SUGGESTIONS

The Indian corporate sector has the potential to improve its competitive advantage on the global and domestic fronts by expanding its core competencies through strategic merger decisions and formulating business strategies to capitalize on these decisions. Corporate restructuring is another approach to enhance capacity, value, market share, operating efficiency, economies of scale and the overall product portfolio of an enterprise through mergers and acquisitions.

Based on the analysis and findings of the study, the suggestions drawn are:

1. The Indian Pharmaceutical industry has been experiencing notable mergers and acquisitions, primarily motivated by objectives such as expansion into new markets, adding specialty products to portfolios, and cost efficiencies. For

Indian pharmaceutical companies, understanding the relationship between operational, financial, and regulatory factors post-M&A provides immersed understandings into changes in liquidity ratios. Therefore, continuous monitoring and strategic management of assets and liabilities post-merger are necessary to maintain or improve liquidity positions. Monitoring factors closely and adjusting strategies accordingly is fundamental for maintaining healthy liquidity post-M&A.

Improving liquidity post-merger and acquisition (M&A) in the pharmaceutical industry can be challenging but is crucial for sustaining operations and growth. Here are some strategies that pharmaceutical companies can employ to enhance their liquidity position after M&A.

Better managed inventories, optimized supply chains, and elimination of redundant stock can improve liquidity. Effective debt management or restructuring also improved liquidity ratios. M&A's could lead to a more extensive inventory, due to combined product lines and managing inventory efficiently is necessary as excessive stock can tie up liquid assets, adversely affecting the Quick Ratio. Conversely, better managed inventories, optimized supply chains, and elimination of redundant stock can improve liquidity. Also, streamlining manufacturing processes, supply chain management, and administrative functions can enhance efficiency and liquidity.

For Indian pharmaceutical firms with significant international operations post-M&A, currency fluctuations can impact the valuation of international sales and receivables, affecting liquidity. Effective management of currency fluctuations is essential to mitigate risks and maintain liquidity.

Post-M&A, the companies can sell off non-core or underperforming assets and improve cash flow and liquidity, allowing companies to focus on more profitable areas of operation.

Forming strategic partnerships or alliances with other pharmaceutical companies, biotech firms, or research institutions to share resources and collaborative R&D projects can reduce costs and improve liquidity.

Communicating effectively with investors and stakeholders to maintain confidence in the company's financial health post-merger and transparency and timely reporting of financial performance can help reduce concerns and support liquidity.

An increase in liquidity ratios post-M&A can be a positive indicator of a company's health and the success of the merger, hence by implementing these strategies, pharmaceutical companies can enhance their liquidity position post-M&A, ensuring financial stability and supporting future growth initiatives.

2. Decrease in the Turnover ratio post merger and acquisition within Indian pharmaceutical companies needs a thorough analysis to identify specific causes and implement strategies to enhance efficiency.

   Understanding factors, implications of such a decrease is vital for the management to guide the companies towards efficient cash flow management and stronger financial health.

   Implementing advanced inventory management systems or technologies like ERP (Enterprise Resource Planning) can help manage larger, more complex inventory systems effectively leading to improved turnover rates.

   Strengthening Credit Control Systems, revaluating and standardization of the credit policy by establishing dedicated collection teams on receivables management, improving communication with customers regarding their credit terms and conditions to ensure clarity and compliance. Supplier relation management, open and transparent communication with suppliers regarding payment schedules, continuous reviewing and streamlining accounts payable processes can improve the cash flow, minimize delays, and improve efficiency.

Optimal utilization of existing fixed assets by implementing strategies, conducting rigorous return on investment analysis for capital expenditure to ensure that investment in fixed assets generate required revenue, prioritizing strategic investments, and enhancing operational efficiency, can mitigate the impact of decreased total asset turnover and initiate long-term growth and profitability post-merger.

Addressing these challenges effectively would help the merged entity's financial operations and enhance overall efficiency in the long term.

3. A comprehensive examination of the reasons behind and possible solutions for the decline in Return on Capital Employed, Return on Assets, Net Profit Ratio, Operating Cost Ratio, and Earnings per Share (EPS) following mergers and acquisitions within the Indian pharmaceutical sector is essential to enhance profitability. Identifying and eliminating inefficiencies in operations and supply chain management can reduce costs and improve profitability. Prioritizing capital allocation, expanding into new geographic markets or therapeutic areas with the maximum potential returns and divesting underperforming assets can improve ROCE. Regular monitoring of financial performance metrics like gross profit ratio, net profit ratio, operating cost ratio, operating profit ratio is required to determine profitability trends and

identifying areas of improvement can enhance profitability and also ensuring transparent reporting of financial performance to stakeholders to maintain confidence and support strategic decision-making.

4. Pharmaceutical companies continuously invest heavily in research and development and innovation, so regularly monitoring RORC ratio and other R&D performance metrics is required to assess the effectiveness of R&D investments. Also, strategic allocation of resources to Research and Development projects is required to sustain revenue growth and maintain competitive advantage post-merger. The companies can effectively communicate the Research and Development strategy, progress and potential milestones to investors to justify the increased valuation of research activities and create long term value for shareholders in the pharmaceutical sector.
5. An increase in the Debt-to-Equity Ratio (D/E) post-merger in Indian pharmaceutical companies may be determined by financing the merger and a decreased in Interest coverage ratio indicates higher financial risk. Pharmaceutical companies can implement strategies to manage and optimize debt by refinancing existing debt at lower interest rates, extending debt maturity, negotiating favourable terms with creditors and by striking a proper balance between debt and equity to maintain an optimum capital structure to minimise cost of capital and maximise shareholders value.

   Also, streamlining operations and cost management can improve EBIT and enhance the companies' ability to cover interest expenses. Regular monitoring of ICR is required to assess the company's financial health and take required actions.

6. There is a decrease in Dividend per share post merger in Indian Pharmaceutical companies which reflects management’s decision to prioritize reinvestment of profits or for debt reduction. By Transparent communication with shareholders regarding changes in the dividend policy, capital allocation priorities, and long-term growth strategy post-merger can help manage expectations and minimize negative reactions. Keeping shareholders informed about the rationale behind strategic decisions and providing clear insights into how the merger will contribute to the company’s overall growth track can encourage trust and confidence among investors. Additionally, proactive engagement with shareholders through investor presentations and regular updates can address concerns and ensure alignment between shareholder interests and corporate objectives post-merger.
7. Regular monitoring of key financial metrics is crucial for Indian pharmaceutical companies to assess the success of the integration process post-merger. This ensures the evaluation of whether synergies are being realized as planned, cost-saving measures are effective, and if the combined entity is performing better than the individual entities pre-merger. Additionally, it provides valuable insights into areas for improvement, facilitates compliance with regulations, supports strategic decision-making, benchmarks performance against industry standards, and enables effective communication with stakeholders.

8. Based to the results of the Event Study, it is suggested that investors should monitor stock market reactions during both the periods, pre-merger announcement period and the post-merger announcement period to evaluate whether merger delivers sustained value creation and increase shareholders

value in the long term. The study's window period reveals 42 positive stock market reactions, during the Pre-Merger announcement Period. Furthermost the post – merger announcement period exhibited 45 positive stock market reactions indicating a favourable market response to merger and acquisitions activities. Investors can interpret these reactions as confirmation that the projected cost savings, revenue enhancements, or other financial benefits are credible, thereby enabling them to make more informed investment decisions.

5.3.CONCLUSION

The study examined the impact of mergers and acquisitions on the financial Performance of Indian Pharmaceutical Sector from 2010-2020, employing both Financial and Operating performance models and Event Study methodology. Thirty prominent pharmaceutical mergers were scrutinized, analysing Pre three years and post three years data. Paired sample t-tests were conducted on six parameters to assess the significance of financial performance, examining 32 financial Indicators of acquiring companies.

The findings revealed statistically significant changes in financial performance rejecting the null hypothesis for parameters such as Payable Turnover Ratio, Total Asset Turnover Ratio, Return on Capital Employed, Gross Profit Ratio, Earnings Yield Ratio, Dividend Yield Ratio, Book Value Per Share, Dividend Payout Ratio (NP) (%), Enterprise Value and Market Value Added. However, there was no substantial change in the financial position of the selected companies in the pre-merger and post-merger periods. Most financial indicators studied failed to enhance company performance and achieve strategic objectives.

The research conducted concludes that there have been no significant impact or substantial alternations in the financial performance of merged entities.

The Event Study concludes that abnormal returns post-merger announcement are not realised for the selected companies in Indian Pharmaceutical companies. The t-statistics of abnormal returns on the Event Day (Day 0), particularly concerning Pfizer Ltd and Lupin Limited, show a significant impact on the Event Day '0' as examined by calculated t-values exceeding the corresponding t-table values. However, for the remaining 28 pharmaceutical companies the event did not generate significant impact on the Event Day, as the calculated t-values did not surpass the t-table values. The results highlight 42 instances of stock market reactions during the Pre-Merger announcement Period (from Day 0 to -30) and 45 instances during the Pre-Merge announcement Period (from Day 0 to +30) indicating an impact on stock prices in response to mergers and acquisitions. The examining of t-statistics indicates fourteen CAR values assessed before the merger announcement are deemed significant. Subsequently nine values after the merger announcement are found to be significant, apart from these instances no significant reactions are observed before or after the merger announcement, suggesting a lack of favourable market responses to merger activity among the selected pharmaceutical companies in India. Examining the Cumulative Average Abnormal returns values and t-statistics of CAAR before and after the merger the study concludes that merger announcement lack a considerable impact on stock prices.

Overall, the results indicate that Mergers and Acquisition represent a corporate restructuring strategy. The success of a merger is contingent upon the underlying motives and their realization in the future as reflected in financial statements. This study contributes to existing literature by employing event study methodology to analyse the effects of mergers and acquisitions within the Indian Pharmaceutical sector a widely utilized method for such evaluation.

5.4. LIMITATIONS OF THE STUDY

1. The Study is confined to Indian Pharmaceutical sector only. Hence no comparison with other sector has been attempted. Moreover, the study could not be done on universe, on all sectors of mergers and acquisitions for the selected time period, which could give in depth results.
2. The study ignores other variables like Government policies, market movements, consumer preferences & demand, economic condition etc. It is carried out to analyze the impact of M&A based on certain factors of financial performance only.
3. The study has isolated the effect of an event from the effects of other events. It is assumed that there are no confounding events from other events in event study.
4. The study does not consider the reasons or a particular behaviour of taking the decision of the merger or acquisition.

5.5. SCOPE FOR FURTHER STUDY

Further research can include:

1. Researchers can further examine the effect of confounding events like declaration of dividend, announcement of a new product, announcement of unexpected earnings and the identify the impact of these events on the share prices.

2. Future research can be the study of impact of the macroeconomic variables like inflation, interest, GDP, exchange rate on the financial performance and stock prices of merged entities.
3. Future research can be the study to assess the impact of volatility of stock price on mergers and acquisitions on Indian Pharmaceutical Companies in India.

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APPENDICES

APPENDICES A:

LIQUIDITY ANALYSIS OF SELECTED PHARMACEUTICAL COMPANIES IN INDIA

PAIRED SAMPLE TEST OF CURRENT RATIO

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre-Merger	2.6844	30	.9769	.1784
	Post-Merger	2.9653	30	1.1939	.2180

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre-Merger & Post -Merger	30	.410	.025

Summary of Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	**Std. Deviation**	**Std. Error Mean**	**Lower**	**Upper**	**t**	**df**	**Sig. (2-tailed)**
Pair 1	Pre Merger - Post Merger	-.2809	1.1932	.2178	-.7264	.1646	-1.289	29	.207

PAIRED SAMPLE TEST OF QUICK RATIO

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre - Merger	1.8119	30	.8777	.1602
	Post - Merger	2.0637	30	1.0303	.1881

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre Merger - Post Merger	30	.324	.080

Summary of Paired Samples Test									
Pair 1	**Pre Merger - Post Merger**	**Paired Differences**							
					95% Confidence Interval of the Difference				
		Mean	**Std. Deviation**	**Std. Error Mean**	**Lower**	**Upper**	**t**	**df**	**Sig. (2-tailed)**
		-.2517	1.1158	.2037	-.6684	.1649	-1.236	29	.227

APPENDICES B:

TURNOVER ANALYSIS OF SELECTED INDIAN PHARMACEUTICAL COMPANIES

PAIRED SAMPLE TEST OF INVENTORY TURNOVER RATIO

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre - Merger	2.7278	30	1.6514	.3015
	Post - Merger	2.2625	30	1.3046	.2382

Showing Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre – Merger & Post – Merger	30	.654	.000

Showing Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference: Lower	95% Confidence Interval of the Difference: Upper			
Pair 1	Pre Merger - Post Merger	.4653	1.2693	.2318	-.0087	.9393	2.008	29	.054

PAIRED SAMPLE TEST OF RECEIVABLES TURNOVER RATIO

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre – Merger	5.8424	30	3.0254	.5524
	Post – Merger	5.4868	30	3.0763	.5617

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.702	.000

Summary Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre Merger – Post Merger	.3557	2.3565	.4302	-.5243	1.2356	.827	29	.415

PAIRED SAMPLE TEST OF PAYABLES TURNOVER RATIO

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre – Merger	3.3679	30	1.5461	.2823
	Post – Merger	2.7935	30	1.2229	.2233

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre – Merger & Post – Merger	30	.713	.000

Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	**Std. Deviation**	**Std. Error Mean**	Lower	Upper	**t**	**df**	**Sig. (2-tailed)**
Pair 1	Pre Merger - Post - Merger	.5744	1.0901	.1991	.1674	.9814	2.886	29	.007

PAIRED SAMPLE TEST OF FIXED ASSET TURNOVER RATIO

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre -Merger	3.6678	30	5.22757	.95442
	Post – Merger	2.5289	30	2.35405	.42979

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre - Merger & Post – Merger	30	.242	.198

Showing Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre - Merger - Post Merger	1.1390	5.1881	.9472	-.7983	3.0762	1.202	29	.239

PAIRED SAMPLE TEST OF TOTAL ASSET TURNOVER RATIO

Table 4.1.2.5.1: Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre – Merger	1.1400	30	.6007	.1097
	Post – Merger	.9565	30	.5476	.0999

Table 4.1.2.5.2: Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre – Merger & Post Merger	30	.824	.000

Table 4.1.2.5.3: Showing Paired Samples Test									
		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Pair 1	Pre Merger – Post Merger	.1835	.3448	.0630	.0547	.3123	2.915	29	.007

PAIRED SAMPLE TEST OF WORKING CAPITAL TURNOVER RATIO

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre -Merger	3.6254	30	2.7890	.5092
	Post – Merger	6.8716	30	20.9891	3.8321

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre – Merger & Post – Merger	30	.275	.142

Paired Samples Test									
		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Pair 1	Pre – Merger - Post Merger	-3.2461	20.4003	3.7246	-10.8637	4.3715	-.872	29	.391

APPENDICES C:

PROFITABILITY ANALYSIS OF SELECTED INDIAN PHARMACEUTICAL COMPANIES

PAIRED SAMPLE TEST OF RETURN ON CAPITAL EMPLOYED (ROCE)

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre - Merger	20.6605	30	11.4778	2.0956
	Post - Merger	15.1254	30	10.3209	1.8843

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre Merger & Post Merger	30	.116	.540

Paired Samples Test									
		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
					95% Confidence Interval of the Difference				
		Mean	**Std. Deviation**	**Std. Error Mean**	**Lower**	**Upper**			
Pair 1	Pre Merger - Post Merger	5.5351	14.5152	2.6501	.1150	10.9551	2.089	29	.046

PAIRED SAMPLE TEST OF RETURN ON ASSET

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Merger	12.2565	30	9.7397	1.7782
	Post Merger	8.7449	30	8.4748	1.5473

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.306	.100

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger - Post Merger	3.5116	10.7798	1.9681	-.5136	7.5369	1.784	29	.085

PAIRED SAMPLE TEST OF GROSS PROFIT RATIO

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre Merger	54.4033	30	15.2424	2.7829
	Post Merger	58.7099	30	14.5807	2.6621

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.801	.000

Paired Samples Test									
		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Pair 1	Pre Merger - Post Merger	-4.3066	9.4202	1.7199	-7.8241	-.7890	-2.504	29	.018

PAIRED SAMPLE TEST OF NET PROFIT RATIO

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre Merger	13.6732	30	16.29516	2.97507
	Post Merger	9.0574	30	11.18407	2.04192

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre Merger & Post Merger	30	.232	.217

Paired Samples Test									
		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Pair 1	Pre Merger - Post Merger	4.61585	17.49100	3.19340	-1.91540	11.14709	1.445	29	.159

PAIRED SAMPLE TEST OF OPERATING COST RATIO

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Merger	78.0138	30	16.8773	3.0814
	Post Merger	75.8718	30	17.7463	3.2400

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.243	.196

Paired Samples Test

		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
					95% Confidence Interval of the Difference				
		Mean	**Std. Deviation**	**Std. Error Mean**	**Lower**	**Upper**			
Pair 1	Pre Merger - Post Merger	2.1420	21.3113	3.8909	-5.8158	10.0998	.551	29	.586

PAIRED SAMPLE TEST OF OPERATING PROFIT RATIO

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Merger	21.9862	30	16.8773	3.0814
	Post Merger	24.1282	30	17.7463	3.2400

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre Merger & Pre Merger	30	.243	.196

Paired Samples Test

		Paired Differences				**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**			
					Lower			
Pair 1	Pre Merger – Post Merger	-2.1420	21.3113	3.8909	-10.0998	-.551	29	.586

PAIRED SAMPLE TEST OF EARNINGS PER SHARE

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Merger	29.4936	30	37.5989	6.8646
	Post Merger	25.7352	30	27.4250	5.0071

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.257	.170

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger - Post Merger	3.7583	40.4425	7.3838	-11.3431	18.8598	.509	29	.615

PAIRED SAMPLE TEST OF DUPONT ANALYSIS (ROE)

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Merger	14.2580	30	27.6797	5.0536
	Post - Merger	15.0580	30	16.0856	2.9368

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre-Merger & Post - Merger	30	.217	.250

Showing Paired Samples Test Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger – Post Merger	-.8000	28.8437	5.2661	-11.5704	9.9704	-.152	29	.880

APPENDICES D:

RESEARCH-INTENSIVE INDICATORS OF SELECTED PHARMACEUTICAL COMPANIES IN INDIA

PAIRED SAMPLE TEST OF RETURN ON RESEARCH CAPITAL RATIO

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Merger	19.8929	30	18.9105	3.4526
	Post-Merger	24.6067	30	29.1067	5.3141

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre – merger & Post Merger	30	.204	.281

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre Merger – Post Merger	-4.7138	31.3158	5.7175	-16.4073	6.9797	-.824	29	.416

PAIRED SAMPLE TEST OF PRICE TO RESEARCH RATIO

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Merger	81.2146	30	142.0688	25.9381
	Post Merger	96.1327	30	145.7708	26.6140

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.819	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Merger - Post Merger	-14.9181	86.5706	15.8056	-47.2441	17.4079	-.944	29	.353

APPENDICES E:

SOLVENCY INDICATORS OF SELECTED INDIAN PHARMACEUTICAL COMPANIES

PAIRED SAMPLE TEST OF DEBT - EQUITY RATIO

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre-Merger	24.0962	30	128.8452	23.5238
	Post-Merger	30.1541	30	162.2762	29.6274

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre Merger & Post Merger	30	1.000	.000

Paired Samples Test									
		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Pair 1	Pre Merger - Post Merger	-6.0579	33.4653	6.1099	-18.5540	6.4383	- .991	29	.330

PAIRED SAMPLE TEST OF PROPRIETARY RATIO

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre-Merger	.6072	30	.2108	.0385
	Post-Merger	.6270	30	.2227	.0407

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre Merger & Post Merger	30	.591	.001

: Showing the summary of Paired Samples of Pre - Merger and Post Merger of Selected Pharmaceutical Companies in India

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	**Std. Deviation**	**Std. Error Mean**	**Lower**	**Upper**	**t**	**df**	**Sig. (2-tailed)**
Pair 1	Pre Merger - Post Merger	-.0198	.1962	.0358	-.0930	.0535	-.552	29	.585

PAIRED SAMPLE TEST OF INTEREST COVERAGE RATIO

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Merger	29.7847	30	54.0877	9.8750
	Post – Merger	27.7957	30	52.3301	9.5541

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.714	.000

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger - Post Merger	1.9889	40.3096	7.3595	-13.0629	17.0408	.270	29	.789

PAIRED SAMPLE TEST OF DIVIDEND COVERAGE RATIO

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Merger	8.1031	30	8.0715	1.4737
	Post-Merger	4.0651	30	9.6461	1.7611

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-Merger & Post - Merger	30	.054	.776

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Merger - Post Merger	4.0380	12.2369	2.2341	-.5314	8.6073	1.807	29	.081

PAIRED SAMPLE TEST OF TOTAL DEBT TO TOTAL ASSET RATIO

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre – Merger	.6648	30	.3356	.0613
	Post - Merger	.5871	30	.2871	.0524

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.692	.000

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger - Post Merger	.0777	.2483	.0453	-.0150	.1705	1.714	29	.097

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APPENDICES F:

INVESTMENT VALUATION ANALYSIS OF SELECTED INDIAN PHARMACEUTICAL COMPANIES

PAIRED SAMPLE TEST OF PRICE TO EARNINGS (P/E) RATIO

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Merger	31.3157	30	75.6847	13.8181
	Post Merger	52.7846	30	94.6494	17.2806

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	-.089	.640

: Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger - Post Merger	-21.4689	126.3392	23.0663	-68.6448	25.7069	-.931	29	.360

PAIRED SAMPLE TEST OF BOOK VALUE PER SHARE

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Merger	140.6686	30	146.0295	26.6612
	Post Merger	205.4974	30	219.6206	40.0971

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.865	.000

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger – Post Merger	-64.8289	118.5646	21.6468	-109.1017	-20.5561	-2.995	29	0.0056

PAIRED SAMPLE TEST OF DIVIDEND PER SHARE

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre Merger	11.7226	30	30.9338	5.6477
	Post Merger	5.0128	30	6.3258	1.1549

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre Merger & Post Merger	30	.147	.438

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Merger - Post Merger	6.7098	30.6480	5.5955	-4.7344	18.1539	1.199	29	.240

PAIRED SAMPLE TEST OF DIVIDEND PAY OUT RATIO

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre Merger	14.5964	30	15.4439	2.8197
	Post Merger	7.3446	30	11.6717	2.1309

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.354	.055

Paired Samples Test									
		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Pair 1	Pre Merger - Post Merger	7.2518	15.7190	2.8699	1.3822	13.1214	2.527	29	.017

PAIRED SAMPLE TEST OF RETENTION RATIO

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Merger	72.0264	30	30.2171	5.5169
	Post Merger	77.9361	30	33.7334	6.1588

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.785	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger - Post Merger	-5.9097	21.2440	3.8786	-13.8424	2.0229	-1.524	29	.138

PAIRED SAMPLE TEST OF ENTERPRISE VALUE

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre Merger	10716.6959	30	19841.7616	3622.5935
	Post Merger	18927.2847	30	32333.9809	5903.3502

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	Pre Merger & Post Merger	30	.914	.000

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger - Post Merger	-8210.5888	16306.3581	2977.1201	-14299.4829	-2121.6946	-2.758	29	.010

PAIRED SAMPLE TEST DIVIDEND YIELD RATIO

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Merger	.0455	30	.0950	.0173
	Post Merger	.0087	30	.0155	.0028

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.102	.592

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Merger - Post Merger	.0368	.0947	.0173	.0015	.0722	2.130	29	.042

PAIRED SAMPLE TEST EARNINGS YIELD RATIO

Paired Samples Statistics

		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre- Merger	.1094	30	.1230	.0225
	Post – Merger	.0472	30	.0389	.0071

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.194	.305

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger - Post Merger	.0622	.1216	.0222	.0168	.1076	2.801	29	.009

PAIRED SAMPLE TEST MARKET VALUE ADDED

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Merger	9994.0726	30	20014.64326	3654.15720
	Post – Merger	16685.6089	30	31192.07084	5694.86694

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre Merger & Post Merger	30	.916	.000

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Merger - Post Merger	-6691.53625	15168.35	2769.35068	-12355.49	31192.07	-2.416	29	.022

APPENDICES G:

FINANCIAL INDICATORS USED IN THE STUDY

I.	**Liquidity Indicators:** Liquidity analysis is examined to determine whether Pharmaceutical Companies maintain sufficient funds to pay current liabilities by converting their current assets into cash. Maintaining Liquidity is essential for organizations to pay off short term debts as and when they arise and to have sufficient working capital in the organization.
1.	Current Ratio = Current Assets/ Current Liability
2.	Quick Ratio = Quick Assets / Current Liability
II.	**Operating Performance Indicators / Turnover Ratios:** Turnover ratios are analyzed to indicate how productivity the assets and resources of the acquirer's firm are being utilized and the amount of revenue generated by utilizing the assets.
1.	Inventory Turnover Ratio = Cost of Goods Sold / Average Stock
2.	Receivables Turnover Ratio = Net Credit Sales / Average Receivables
3.	Payable Turnover Ratio = Net Credit Purchases / Average Accounts Payables
4.	Fixed Asset Turnover Ratio = Net Sales / Average Fixed Asset
5.	Total Asset Turnover Ratio = Net Sales / Average Total Assets
6.	Working Capital Turnover ratio = Net Sales / Average Working Capital
III.	**Profitability Indicators:** is examined to evaluate the acquirer's companies' profits post merger, ascertain the impact of mergers and acquisitions on the profitability ratios and provide financial information to investors, shareholders, debenture holders, financial institutions, creditors, government and others for better understanding and decision making.
1.	Return on Capital Employed = EBIT / Average Capital Employed
2.	Return on Assets = Net Income / Average Total Assets
3.	Gross Profit Ratio = Gross Profit / Net Sales x 100
4.	Net Profit Ratio = Net Profit / Net Sales x 100
5.	Operating Cost Ratio = Operating Cost / Net Sales x 100
6.	Operating Profit Ratio = Operating Profit / Net Sales x 100
7.	Earnings per Share = Net Income – Preferred Dividend / Weighted Average Shares Outstanding x 100
8.	DuPont Analysis (Return on Equity Ratio) = Net Profit Margin × Asset Turnover

	× Equity Multiplier ROE = Net Profit / Profit Before Tax X Profit Before Tax / EBIT X EBIT / Sales X Sales / Assets X Assets / Equity
IV.	**Research Intensive Indicators:** Research Intensive Indicators reflects the effectiveness of a company in utilizing its R&D efforts to generate returns and the research and development process holds significance in the pharmaceutical industry for drug development.
1.	Return on Research Capital Ratio = Current Year Gross Profit / Previous Year R&D Expenditures
3.	Price to research ratio = Company's Market capitalization / R&D expenditures
V	**Solvency ratios:** Effectively managing debt is a crucial determinant for sustaining viability and profitability of pharmaceutical firms in long run and hence Pharmaceutical companies need to manage their debts.
1.	Debt – Equity Ratio = Debt / Equity
2.	Proprietary Ratio = Proprietors Funds / Total Assets
3.	Interest Coverage Ratio = EBIT /Interest
4.	Dividend Coverage Ratio = Net Income / Dividend Declared
5.	Total Debt to Total Asset Ratio = Total Debt / Total Asset
VI	**Investment Valuation Indicators:** Investment valuation ratios help in evaluating companies' investment potential and improve efficiency and creates value to shareholders
1.	Price to Earnings ratio (P/E) = Market Value Per Share / Earnings Per Share
2.	Earnings Yield Ratio = Earnings Per Share / Market Price Per Share
3.	Dividend Yield Ratio = Dividend Per Share / Market Value per Share
4.	Retention Ratio = Net Income− Dividends Distributed / Net Income x 100
5.	Dividend Per share = Total Dividends Paid / Shares Outstanding
6.	Book value per share = Stockholder's Equity – Preferred Stock / Average Shares Outstanding
7.	Dividend Pay out Ratio = Dividend Paid / Net Income
8.	Enterprise Value = Market Capitalization + Total Debt – Cash and Cash Equivalent
9.	Market Value Added = Market Value of the firm – Book Value of the firm

A STUDY ON THE IMPACT OF MERGERS AND ACQUISITIONS ON FINANCIAL PERFORMANCE AND SHAREHOLDERS WEALTH WITH RESPECT TO PHARMACEUTICAL INDUSTRY IN INDIA

Thesis submitted to Alliance University

for award of the degree of

DOCTOR OF PHILOSOPHY

In

Alliance School of Business

By

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RECOMMENDATION

The Indian corporate sector has the potential to improve its competitive advantage on the global and domestic fronts by expanding its core competencies through strategic merger decisions and formulating business strategies to capitalize on these decisions. Corporate restructuring is another approach to enhance capacity, value, market share, operating efficiency, economies of scale and the overall product portfolio of an enterprise through mergers and acquisitions.

Based on the analysis and findings of the study, the suggestions drawn are:

1. The Indian Pharmaceutical industry has been experiencing notable mergers and acquisitions, primarily motivated by objectives such as expansion into new markets, adding specialty products to portfolios, and cost efficiencies. For Indian pharmaceutical companies, understanding the relationship between operational, financial, and regulatory factors post-M&A provides immersed understandings into changes in liquidity ratios. Therefore, continuous monitoring and strategic management of assets and liabilities post-merger are necessary to maintain or improve liquidity positions. Monitoring factors closely and adjusting strategies accordingly is fundamental for maintaining healthy liquidity post-M&A.

   Improving liquidity post-merger and acquisition (M&A) in the pharmaceutical industry can be challenging but is crucial for sustaining operations and growth. Here are some strategies that pharmaceutical companies can employ to enhance their liquidity position after M&A.

   Better managed inventories, optimized supply chains, and elimination of redundant stock can improve liquidity. Effective debt management or restructuring also improved liquidity ratios. M&A’s could lead to a more extensive inventory, due to combined product lines and managing inventory efficiently is necessary as excessive stock can tie up liquid assets, adversely affecting the Quick Ratio. Conversely, better managed inventories, optimized supply chains, and elimination of redundant stock can improve liquidity. Also, streamlining manufacturing processes, supply chain management, and administrative functions can enhance efficiency and liquidity.

For Indian pharmaceutical firms with significant international operations post-M&A, currency fluctuations can impact the valuation of international sales and receivables, affecting liquidity. Effective management of currency fluctuations is essential to mitigate risks and maintain liquidity.

Post-M&A, the companies can sell off non-core or underperforming assets and improve cash flow and liquidity, allowing companies to focus on more profitable areas of operation.

Forming strategic partnerships or alliances with other pharmaceutical companies, biotech firms, or research institutions to share resources and collaborative R&D projects can reduce costs and improve liquidity.

Communicating effectively with investors and stakeholders to maintain confidence in the company's financial health post-merger and transparency and timely reporting of financial performance can help reduce concerns and support liquidity.

An increase in liquidity ratios post-M&A can be a positive indicator of a company’s health and the success of the merger, hence by implementing these strategies, pharmaceutical companies can enhance their liquidity position post-M&A, ensuring financial stability and supporting future growth initiatives.

2. Decrease in the Turnover ratio post merger and acquisition within Indian pharmaceutical companies needs a thorough analysis to identify specific causes and implement strategies to enhance efficiency.

Understanding factors, implications of such a decrease is vital for the management to guide the companies towards efficient cash flow management and stronger financial health.

Implementing advanced inventory management systems or technologies like ERP (Enterprise Resource Planning) can help manage larger, more complex inventory systems effectively leading to improved turnover rates.

Strengthening Credit Control Systems, revaluating and standardization of the credit policy by establishing dedicated collection teams on receivables management, improving communication with customers regarding their credit terms and conditions to ensure clarity and compliance. Supplier relation management, open and transparent communication with suppliers regarding payment schedules, continuous reviewing and streamlining accounts payable processes can improve the cash flow, minimize delays, and improve efficiency.

Optimal utilization of existing fixed assets by implementing strategies, conducting rigorous return on investment analysis for capital expenditure to ensure that investment in fixed assets generate required revenue, prioritizing strategic investments, and enhancing operational efficiency, can mitigate the impact of decreased total asset turnover and initiate long-term growth and profitability post-merger.

Addressing these challenges effectively would help the merged entity's financial operations and enhance overall efficiency in the long term.

3. A comprehensive examination of the reasons behind and possible solutions for the decline in Return on Capital Employed, Return on Assets, Net Profit Ratio, Operating Cost Ratio, and Earnings per Share (EPS) following mergers and acquisitions within the Indian pharmaceutical sector is essential to enhance profitability. Identifying and

eliminating inefficiencies in operations and supply chain management can reduce costs and improve profitability. Prioritizing capital allocation, expanding into new geographic markets or therapeutic areas with the maximum potential returns and divesting underperforming assets can improve ROCE. Regular monitoring of financial performance metrics like gross profit ratio, net profit ratio, operating cost ratio, operating profit ratio is required to determine profitability trends and identifying areas of improvement can enhance profitability and also ensuring transparent reporting of financial performance to stakeholders to maintain confidence and support strategic decision-making.

4. Pharmaceutical companies continuously invest heavily in research and development and innovation, so regularly monitoring RORC ratio and other R&D performance metrics is required to assess the effectiveness of R&D investments. Also, strategic allocation of resources to Research and Development projects is required to sustain revenue growth and maintain competitive advantage post-merger. The companies can effectively communicate the Research and Development strategy, progress and potential milestones to investors to justify the increased valuation of research activities and create long term value for shareholders in the pharmaceutical sector.
5. An increase in the Debt-to-Equity Ratio (D/E) post-merger in Indian pharmaceutical companies may be determined by financing the merger and a decreased in Interest coverage ratio indicates higher financial risk. Pharmaceutical companies can implement strategies to manage and optimize debt by refinancing existing debt at lower interest rates, extending debt maturity, negotiating favourable terms with creditors and by striking a proper balance between debt and equity to maintain an optimum capital structure to minimise cost of capital and maximise shareholders value.

Also, streamlining operations and cost management can improve EBIT and enhance the companies' ability to cover interest expenses. Regular monitoring of ICR is required to assess the company's financial health and take required actions.

6. There is a decrease in Dividend per share post merger in Indian Pharmaceutical companies which reflects management's decision to prioritize reinvestment of profits or for debt reduction. By Transparent communication with shareholders regarding changes in the dividend policy, capital allocation priorities, and long-term growth strategy post-merger can help manage expectations and minimize negative reactions. Keeping shareholders informed about the rationale behind strategic decisions and providing clear insights into how the merger will contribute to the company's overall growth track can encourage trust and confidence among investors. Additionally, proactive engagement with shareholders through investor presentations and regular updates can address concerns and ensure alignment between shareholder interests and corporate objectives post-merger.
7. Regular monitoring of key financial metrics is crucial for Indian pharmaceutical companies to assess the success of the integration process post-merger. This ensures the evaluation of whether synergies are being realized as planned, cost-saving measures are effective, and if the combined entity is performing better than the individual entities pre-merger. Additionally, it provides valuable insights into areas for improvement, facilitates compliance with regulations, supports strategic decision-making, benchmarks performance against industry standards, and enables effective communication with stakeholders.

8. Based to the results of the Event Study, it is suggested that investors should monitor stock market reactions during both the periods, pre-merger announcement period and the post-merger announcement period to evaluate whether merger delivers sustained

value creation and increase shareholders value in the long term. The study's window period reveals 42 positive stock market reactions, during the Pre-Merger announcement Period. Furthermost the post – merger announcement period exhibited 45 positive stock market reactions indicating a favourable market response to merger and acquisitions activities. Investors can interpret these reactions as confirmation that the projected cost savings, revenue enhancements, or other financial benefits are credible, thereby enabling them to make more informed investment decisions.

CONCLUSION

The study examined the impact of mergers and acquisitions on the financial Performance of Indian Pharmaceutical Sector from 2010-2020, employing both Financial and Operating performance models and Event Study methodology. Thirty prominent pharmaceutical mergers were scrutinized, analysing Pre three years and post three years data. Paired sample t-tests were conducted on six parameters to assess the significance of financial performance, examining 32 financial Indicators of acquiring companies.

The findings revealed statistically significant changes in financial performance rejecting the null hypothesis for parameters such as Payable Turnover Ratio, Total Asset Turnover Ratio, Return on Capital Employed, Gross Profit Ratio, Earnings Yield Ratio, Dividend Yield Ratio, Book Value Per Share, Dividend Payout Ratio (NP) (%), Enterprise Value and Market Value Added. However, there was no substantial change in the financial position of the selected companies in the pre-merger and post-merger periods. Most financial indicators studied failed to enhance company performance and achieve strategic objectives.

The research conducted concludes that there have been no significant impact or substantial alternations in the financial performance of merged entities.

The Event Study concludes that abnormal returns post-merger announcement are not realised for the selected companies in Indian Pharmaceutical companies. The t-statistics of abnormal returns on the Event Day (Day 0), particularly concerning Pfizer Ltd and Lupin Limited, show a significant impact on the Event Day ‘0’ as examined by calculated t-values exceeding the corresponding t-table values. However, for the remaining 28 pharmaceutical companies the event did not generate significant impact on the Event Day, as the calculated t-values did not surpass the t-table values. The results highlight 42 instances of stock market reactions during the Pre-Merger announcement Period (from Day 0 to -30) and 45 instances during the Pre-Merge announcement Period (from Day 0 to +30) indicating an impact on stock prices in response to mergers and acquisitions. The examining of t-statistics indicates fourteen CAR values assessed before the merger announcement are deemed significant. Subsequently nine values after the merger announcement are found to be significant, apart from these instances no significant reactions are observed before or after the merger announcement, suggesting a lack of favourable market responses to merger activity among the selected pharmaceutical companies in India. Examining the Cumulative Average Abnormal returns values and t-statistics of CAAR before and after the merger the study concludes that merger announcement lack a considerable impact on stock prices.

Overall, the results indicate that Mergers and Acquisition represent a corporate restructuring strategy. The success of a merger is contingent upon the underlying motives and their realization in the future as reflected in financial statements. This study contributes to existing literature by employing event study methodology to analyse the effects of mergers and acquisitions within the Indian Pharmaceutical sector a widely utilized method for such evaluation.

LIMITATIONS OF THE STUDY

1. The Study is confined to Indian Pharmaceutical sector only. Hence no comparison with other sector has been attempted. Moreover, the study could not be done on universe, on all sectors of mergers and acquisitions for the selected time period, which could give in depth results.
2. The study ignores other variables like Government policies, market movements, consumer preferences & demand, economic condition etc. It is carried out to analyze the impact of M&A based on certain factors of financial performance only.
3. The study has isolated the effect of an event from the effects of other events. It is assumed that there are no confounding events from other events in event study.
4. The study does not consider the reasons or a particular behaviour of taking the decision of the merger or acquisition.

SCOPE FOR FURTHER STUDY

Further research can include:

1. Researchers can further examine the effect of confounding events like declaration of dividend, announcement of a new product, announcement of unexpected earnings and the identify the impact of these events on the share prices.
2. Future research can be the study of impact of the macroeconomic variables like inflation, interest, GDP, exchange rate on the financial performance and stock prices of merged entities.

Future research can be the study to assess the impact of volatility of stock price on mergers and acquisitions on Indian Pharmaceutical Companies in India.