**Project Dissertation**

**“Merger & Acquisition in Pharmaceutical Industry:**

**A case study of Dr. Reddy’s & Biocon Ltd”**

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**CERTIFICATE FROM THE INSTITUTE**

This is to certify that the Project Report titled “Merger & Acquisition in Pharmaceutical Industry”, is a bonafide work carried out by Mr. Kashish Kakkar of MBA 2013-2015 and submitted to Delhi School of Management, Delhi Technological University, Bawana Road, Delhi - 42 in partial fulfillment of the requirement for the award of the Degree of the Masters of Business Administration.

Signature of Guide Signature of Head (DSM)

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**DECLARATION**

I, Kashish Kakkar, student of MBA 2013-2015 of Delhi School Of Management, Delhi Technological University, Bawana Road, Delhi-42 declare that Project dissertation report on “Merger & Acquisition in Pharmaceutical Industry” submitted in partial fulfillment of Degree of Masters of Business Administration is the original work conducted by me.

The information and data given in the report is authentic to the best of my knowledge.

This report is not being submitted to any other university for award of any other Degree, diploma and Fellowship

Place: Kashish Kakkar

Date:

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1. **Introduction**

**1.1 Merger & Acquisition**

Business combinations come in different forms. A distinction can be made between acquisitions and mergers. In the context of M&A, an acquisition is the purchase of some portion of one company by another. An acquisition might refer to the purchase of assets from another company, the purchase of a definable segment of another entity, such as a subsidiary, or the purchase of an entire company, in which case the acquisition would be known as a merger.

A merger represents the absorption of one company by another. That is, one of the companies remains and the other ceases to exist as a separate entity. Typically, the smaller of the two entities is merged into the larger, but that is not always the case.

Mergers can be classified by the form of integration. In a statutory merger, one of the companies ceases to exist as an identifiable entity and all its assets and liabilities become part of the purchasing company. In a subsidiary merger, the company being purchased becomes a subsidiary of the purchaser, which is often done in cases where the company being purchased has a strong brand or good image among consumers that the acquiring company wants to retain.

A consolidation is similar to a statutory merger except that in a consolidation, *both* companies terminate their previous legal existence and become part of a newly formed company. A consolidation is common in mergers where both companies are approximately the same size.

The parties to a merger are often identified as the target company and the acquiring company. The company that is being acquired is the target company, or simply the target. The company acquiring the target is called the acquiring company, or the acquirer. We will use this terminology throughout the reading.

In practice, many of the terms used to describe various types of transactions are used loosely such that the distinctions between them are blurred. For example, the term “consolidation” is often applied to transactions where the entities are about the same size, even if the transaction is technically a statutory merger. Similarly, mergers are often described more generally as takeovers, although that term is often reserved to describe hostile transactions, which are attempts to acquire a company against the wishes of its managers and board of directors. A friendly transaction, in contrast, describes a potential business combination that is endorsed by the managers of both companies, although that is certainly no guarantee that the merger will ultimately occur.

An additional way that mergers are classified is based on the relatedness of the merging companies’ business activities. Considered this way, there are three basic types of mergers: horizontal, vertical, and conglomerate.

A horizontal merger is one in which the merging companies are in the same kind of business, usually as competitors. One of the great motivators behind horizontal mergers is the pursuit of economies of scale, which are savings achieved through the consolidation of operations and elimination of duplicate resources. Another common reason for horizontal mergers is to increase market power, because the merger results in a reduction of the number of industry competitors and an increase in the size of the acquiring company.

In a vertical merger, the acquirer buys another company in the same production chain, for example, a supplier or a distributor. In addition to cost savings, a vertical merger may provide greater control over the production process in terms of quality or procurement of resources or greater control over the distribution of the acquirer’s finished goods. If the acquirer purchases a target that is ahead of it in the value chain (a supplier), it is called backward integration. An example of backward integration is if a steel manufacturer purchases an iron ore mining company. When an acquirer purchases a company that is further down the value chain (a distributor), it is called forward integration. An example of forward integration is Merck & Co.’s 1993 acquisition of Medco Containment Services, a marketer of discount prescription medicines. The merger brought together the production and distribution of pharmaceuticals into one integrated company.

When an acquirer purchases another company that is unrelated to its core business, it may be called a conglomerate merger. General Electric is an example of a conglomerate, having purchased companies in a wide range of industries, including media, finance, home appliances, aircraft parts, and medical equipment. Conglomerate mergers were particularly popular from the 1960s through the 1980s. The concept of company-level diversification was commonly used as a rationale for inter-industry mergers during this period. By investing in companies from a variety of industries, companies hoped to reduce the volatility of the conglomerate’s total cash flows.

* 1. **Motives for Merger**

There are various motives behind merger & acquisition between two companies. Investors and analysts need to carefully evaluate the rationale behind the merger. Does the stated rationale make sense? Is the merger likely to create value? What is the probability that each of the stated goals for the merger will be attained? Keep in mind that many motives are interrelated and that there are typically several motives, both acknowledged and tacit, behind any given merger.

## Synergy

One of the common motives behind any M & A activities is the creation of synergy. This synergy is in form of reduction of cost or increase in revenue. Revenue synergy as well as cost synergy is created through cross selling or through economic of scale.

## Growth

Sometimes, internal management of an organization is under constant pressure for increasing the companies’ revenues. For this reason, they try for M & A activities. It’s the perception that a company can grow faster through M & A activity.

## Increasing Market Power

There are some industries where there are few competitors or there is less competition. In that case companies try to dominate in the market through horizontal merger which could increase their market share in the market.

## Acquiring Unique Capabilities and Resources

When companies realizes that it cannot sustain its business for a long time, then they start seeking to acquire other companies that have different resources & capabilities, that could give them advantage in their market.

## Diversification

One of the basic reasons given by any company for their M & A activity is diversification. Sometimes companies want to diversify their business by entering into different domain of their core business. Sometimes this step gives them global presence for their product variety.

## Bootstrapping Earnings

Some companies have a target to achieve & maintain their earnings in an attractive way. They search for some companies whose earnings are better as well as low liabilities. So such a merger give a boost to earnings of acquirer company without giving them any real synergy.

## Tax Considerations

It is possible for a profitable acquirer to benefit from merging with a target that has accumulated a large amount of tax losses. Instead of carrying the tax losses forward, the merged company would use the tax losses to immediately lower its tax liability.

### Exploiting Market Imperfections

Cross-border transactions can enable companies to more fully exploit market imperfections. For example, to take advantage of differences in the relative cost of labor, a manufacturer may purchase a company in a country where the relative cost of labor is lower.

### Overcoming Adverse Government Policy

Cross-border mergers can be a means by which to overcome disadvantageous government policy, for example, to circumvent protective tariffs, quotas, or other barriers to free trade.

### Technology Transfer

Companies that possess a new or superior technology may make acquisitions abroad in order to open new markets or otherwise more fully exploit their business advantage. Conversely, it is common for a company to purchase a foreign company that possesses a new or superior technology in order to enhance the acquirer’s competitive position both at home and abroad.

### Product Differentiation

Companies often purchase foreign companies to exploit the advantages of having a highly differentiated line of products. Similarly, buying certain intangibles, such as a good reputation, helps to ensure success in the global market. Lenovo’s (China) acquisition of IBM’s (United States) personal computer line is one example of this strategy.

* 1. **Industry Profile**

India is among the top six global pharmaceutical producers in the world.The Indian pharmaceuticals market is third largest in terms of volume and thirteen largest in terms of value, as per a pharmaceuticals sector analysis report by equity master. The market is dominated majorly by branded generics which constitute nearly 70 to 80 per cent of the market. Considered to be a highly fragmented industry, consolidation has increasingly become an important feature of the Indian pharmaceutical market.

India has achieved an eminent global position in pharma sector. The country also has a huge pool of scientists and engineers who have the potential to take the industry to a very high level.

Presently there are 10,500 manufacturing units and over 3,000 pharma companies in India, growing at an exceptional rate. India has about 1,400 WHO GMP approved manufacturing units. India has been accredited with approximately 1,105 CEPs, more than 950 TGA approvals and 584 sites approved by the USFDA. Globally more than 90 per cent of formulations approvals for Anti-retroviral (ARVs), Anti-tubercular & Anti-malarial (WHO pre-qualified) have been granted to India

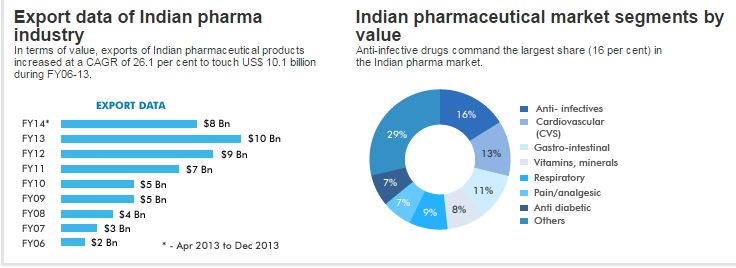
**Market Size**

The Indian pharmaceutical industry is estimated to grow at 20 per cent compound annual growth rate (CAGR) over the next five years, as per India Ratings, a Fitch Group company. Indian pharmaceutical manufacturing facilities registered with US Food and Drug Administration (FDA) as on March 2014 was the highest at 523 for any country outside the US.

It is expected that the domestic pharma market to grow at 10-12 per cent in FY15 as compared to 9 per cent in FY14, as per a recent report from Centrum Broking. The domestic pharma growth rate was 11.9 per cent in October 2014, highlighted the report.

Gujarat clocked the highest growth rate in pharmaceuticals market at 22.4 per cent during November 2014, surpassing the industry growth rate, which grew by 10.9 per cent, as per data from the market research firm AIOCD Pharma softtech AWACS.

Also, growing at an average rate of about 20 per cent, India's biotechnology industry comprising bio-pharmaceuticals, bio-services, bio-agriculture, bio-industry and bioinformatics may reach the US$ 7 billion mark by the end of FY15, according to an industry body. Biopharma is the largest sector contributing about 62 per cent of the total revenue, with revenue generation to the tune of over Rs 12,600 crore (US$ 2.03 billion). The bio-pharma sector comprises vaccines, therapeutics and diagnostics.



**1.4** **Merger & Acquisition in Pharmaceutical industry**

The pharmaceutical industry seems besieged on all sides, with declining R&D productivity, expiring patents on blockbuster products and relentless downward pricing pressure forcing companies to look closely at the bottom line. One affect of this onslaught has been an upsurge in the level of M&A activity as players within the industry consolidate to cut costs, expand research pipelines and lengthen.

## Unlike deals in many industries, big mergers and acquisitions among pharmaceutical companies generally have resulted in positive returns to shareholders.

M&A are becoming an important strategy of corporate functioning. This phenomenon existed and was well studied since long in developed countries like the US and those of Europe. A significant amount of literature is dedicated for understanding the post merger performance and consequences. But before finding the impact of M&A it is required to study the motives behind M&A and the factors which facilitate this corporate activity. M&A are driven by different and complex pattern of motives and no single approach can explain them completely.

The motives of M&A could depend upon shareholder’s interest as well as on manager’s interest and their deviation from shareholders’ value maximization approach. The first motive behind M&A activity could be explained under efficiency theory which supports that M&A are undertaken in order to achieve synergies which includes financial synergies, operational synergies, and managerial synergies. Financial synergies are the one which lowers the cost of the capital for merged entities. They lower the systematic risk of a company’s investment portfolio. Such synergies are generally achieved through unrelated M&A. M&A could lead to increase in the size of a firm giving it a better access to capital in comparison to small separate entities. Operational synergies develop by combining operation of two entities leading to economies of scale and scope. Economies of scale can be achieved by having a joint sales force or decrease in production cost or enable firm to offer unique products and services in the market by technology and knowledge transfers but operational synergies are better achieved by the firm which functions in related market i.e. horizontal and vertical deals.

Another form of efficiency gains in M&A is managerial synergies which can be realized if acquirer’s managers possess superior managerial capabilities to monitor and plan which improvise target’s performance. But it was argued that managers undertake M&A activity to waste cash in order to avoid shareholders’ value maximization. This allows them to increase their control on the firm in comparison to shareholders.

Synergies exist in an acquisition when the value of the combined entity exceeds the sum of the values of the two combining firm’s synergies and confirmed that related acquisition of firms will provide higher returns and assessed that the market recognizes synergistic combinations and values them.

One more motive of M&A could be the strategy of a firm to achieve market power. Though largely, increase in market power is related to horizontal acquisitions but it could be achieved in conglomerate acquisitions as well. Firms can limit competition simultaneously in more than one market by tacit collusion with competitors or by reciprocal dealing and combining business functions.

After assessing in brief the motives of M&A this would be an interesting aspect to look for the factors that determine M&A activity in a particular industry or in the entire economy as a whole. The firm’s environment evolves over time and firm tries to adapt to this changing environment by modifying its characteristics. The change in firm’s characteristics is determined by the strategy chosen by the firm which in turn depends on the capabilities acquired by firm over time. The decision to undertake M&A depends on the various firm’s characteristics. Following subsections give an insight of several studies that explain how different firm characteristics affect decision to make M&A investments.

Effect of firm Size: The size of the firm affects firm’s decision to invest as well as its performance in many ways. Large firms possess diverse capabilities which provide them the opportunity to exploit economies of scale as well as scope.

Indian pharmaceutical industry is highly competitive and has regulated product pricing therefore, efficiency gains generated from large size help firm to increase profit margins which in turn can induce M&A investment. Higher export intensity could initially generate profit to the firm which provides funds to undertake M&A activity.

Large firms also receive negative synergy even by paying larger acquisition premium which is consistent with managerial hubris hypothesis.

Effect of Age: Age of the firm represents the experience which firm gained over the period of time. Capacities generated and capabilities gained over a period of time enable firm with the decision making power enabling it to take appropriate investment decision and compete in the market effectively. Older firms have a benefit of learning and can therefore, enjoy superior performance. But at the same time, younger firms are far from inertia and prevented from bureaucratic practices therefore more flexible and responsive to adjust changing economic circumstances.

Effect of Tobin’s q: Andrade and Strafford (2004) postulated that mergers and non merger investments should be increasing in estimates of growth opportunities such Determinants of Mergers and Acquisitions in Indian Pharmaceutical Industry as Tobin’s q. Accordingly, whenever the rate of return on a firm’s current capital stock exceeds its cost of capital, the value of Tobin’s q exceeds unity and firm decides to invest. Duflos and Pfister (2008) got the results of their study asserting that acquiring firms have lower Tobin’s q and therefore, such firms lack promising growth prospects. They divided data on the basis of high q and low q and found positive relationship between high q value and merger as well as non merger investment and negative relationship between low q and investment activities. Therefore, it could be said that M&A play an expansionary roles and Tobin’s q is an important determinant of this corporate activity.

Effect of R&D Intensity: R&D intensity can have both negative and positive impact on firm’s probability to undertake M&A decision. Product innovation increases market orientation and process innovation reduces production cost. This is feasible if firms undertake in-house R&D expenditure as well as technology acquisition.

Effect of Multinational Affiliation: Globalization promotes the presence of MNEs in various industries. Foreign equity participation has become an important factor determining investment in Indian industries especially like those of telecommunication and pharmaceutical where 100 percent FDI is allowed. MNE affiliation provides firms with the advantages concerning technology, brand names and other intangible assets and thus firms invest more and grow faster. R&D intensity and Export intensity performance was slightly better for domestic industry as compared to those of MNE affiliated.

Effect of Capacity Utilization: Firm and industry level forces motivate firms to undertake M&A activity. Mergers play expansionary as well as contractionary roles and incentives to expand increase when firm’s present capacity is close to exhaustion. Therefore, there is a possibility that both merger and non merger investment are positively related to capacity utilization and if M&A play contractionary role M&A decision should be negatively related to capacity utilization.

Effect of Leverage: Capital structure plays a significant role on firm’s decision to undertake investment activity. Firms having high leverage will cause under investment or over investment will be dampened in firms having excess free cash flow.

Effect of Advertisement Intensity: Advertisement intensity is considered as proxy for product differentiation. Firms undertake M&A activity to realize economies of scope and enhance their product portfolio. Diversified product portfolio along with marketing skills enhances firm’s competitiveness in global and domestic markets.

Effect of Profitability: Firms investing higher amounts can replace older capital stock and technologies with superior ones. A firm that saves and reinvest its earning can remain market leader. A firm may either get finance from banks in the form of loan or it can reinvest its profit. But theory of internal financing suggests that taking loan requires firm’s long term commitment and can be risky. Therefore firm’s generating sufficient cash flow will be able to finance their new investments.

**1.5 Objective of the study**

1. The objective of my study was to study thoroughly the reasons behind merger & acquisition between two pharmaceutical companies.
2. To understand the process behind M&A activities through financial model that includes analysis of balance sheet, income statement, cash flow statement of Target Company & their projections for next five years.
3. To analyze the financial ratios of Target Company and comparing it with their peer groups in order to compute its true Market value.
4. To calculate the fair value through two different techniques – Free Cash Flow Discounting Model & Comparable company analysis.
5. **Theoretical Background and Review of Literature**

The empirical evidences in support of or against efficiency argument of M&A are provided by several studies.

Ravenscraft and Scherer (1987) emphasized that stock market values mergers as positive event but Seth (1990) analyzed that financial synergies do not create any value in related and unrelated M&A. She also supported the size effect in related acquisition as a source of value and synergy creation. Singh (1987) in his event study analysis distinguish whether related or unrelated acquisitions create value.

Jensen (1986) argues that all M&A do not occur with the motive of promoting efficiency.

Literature also specifies the motives of M&A under the empire building theory. This motive specifies that managers try to maximize their utility instead of those of shareholder’s. This theory has been widely explained by managerial theories of firm (Baumol, 1959; Marris 1964, Williamson, 1969). Black (1989) postulates that managers are highly optimistic about targets and they overpay for targets as their interest differ from that of stockholders. Ravenscraft and Scherer (1987) also supported the argument of manager’s empire building as a motive for M&A. Roll (1986) also asserted the managerial over optimism in hubris hypothesis of M&A.

According to Penrose (1959) size specific characteristics of firms allow larger firms to perform better as compared to smaller ones. But Shepherd (1986) suggested that size is directly correlated with market power which could develop inefficiencies causing poor performance; therefore size could affect in both positive and negative direction concerning firm’s decision to grow. Mishra and Chandra (2010) examined the impact of M&A on financial performance of pharmaceutical firms of India and found that profitability of firm is directly and significantly related to size. Kumar and Siddharthan (1994) proved a non linear relationship between firm size and export intensity.

Danzon et al. (2007) while studying the determinants of M&A in pharmaceuticals and biotechnological firms assumed that if the motive of firm is to achieve economies of scale then smaller firms should actively participate in M&A activity but as against the expectation larger firms measured by enterprise value are actively involved in M&A deals.

Moeller et al. (2004) tried to find relation between firm size and gains from acquisitions and found that small firms perform significantly better when they make acquisition announcement and at the same time large firms have substantial wealth lose when they announce acquisition. They also did not confirm any nonlinear shaped relationship between size and gains of acquisition.

Duflos and Pfister (2008) studied the technological determinants of acquisitions in pharmaceutical industry and argued that motives for acquisitions would differ in relation to acquirer’s and target’s size. They found that smaller and larger acquirers use acquisitions to enhance their growth prospects. Dessyllas and Hughes (2005) examined the factors which induce firms to acquire in high technology industry and found that acquiring firms tend to be relatively larger as compared to non acquiring firms having large stock of accumulated knowledge. Lubatkin (1986) also asserted that larger size increases market power and could reduce operating uncertainty and foreign debt costs. The empirical studies of literature suggests that firm size exhibits certain influence on firm’s decision to merge and acquire but the relationship has to be determined as it can be linear or non linear.

(Marshall, 1920). Duflos and Pfister (2008) find in their result that acquiring and target firms in pharmaceutical industry are younger than sample average. Young firms want to grow faster and M&A provide this opportunity to them. Lin et al. (2010) find in the study that patent stock of the firm is associated to business age and more the patent therefore lower incentives to innovate and M&A fill in this void.

Danzon et al. (2007) also provided evidences that acquiring firms have lower Tobin’s q in pharmaceutical and biotechnology industry. On the other hand Jovanovic and Rousseau (2004) explained that firms with high q should acquire lower q firms. Their finding was also confirmed by the studies of Blonigen and Taylor (2000) and Dessyllas and Hughes (2005) who found a significantly positive relationship between firm’s probability to merge and Tobin’s q. Andrade and Stafford (2004) found that there is no clear relationship between Tobin’s q and merger intensity.

According to Blonigen and Taylor (2000) high-tech firms choose either between investing in in-house R&D or sourcing technology externally by acquiring innovative firms. But Cohen and Levinthal (1989) developed a concept of absorptive capacity which states that in-house R&D enables the firm to develop capabilities which help firm to assimilate and exploit knowledge from the external environment. At the same time accumulated knowledge from in-house R&D enhances firm’s ability to identify suitable targets. Siddharthan (1992) in his study on determinants of in-house R&D found technology import and in-house R&D complementary. Dessyllas and Hughes (2005) in their study find that high-tech industries which are probable of making acquisitions have large accumulated knowledge and low R&D intensity. Danzon et al. (2007) also concluded that firms with high propensity of merging have lower R&D expenditure than those not participating in M&A activity. Duflos and Pfister (2008), Blonigen and Taylor (2000) also confirmed that R&D intensity of firms is negatively associated with propensity to acquire.

Narayanan (2004) found in his study of automobile sector that the differences in technological sources adopted by the firms determined the growth rate and firms with foreign equity participation grew faster. At the same time Zelenyuk and Zheka (2006) provide the evidence that there is inverse relationship between firm’s efficiency level and foreign ownership. Danzon et al. (2007) explained in the case of pharmaceutical industries that firms with foreign affiliation are more likely to merge in order to access foreign markets and these firms are less likely to be acquired than domestic firms. Beena (2008) argued that foreign affiliation of firms also impact their M&A decision as well as performance.

Andrade and Stafford (2004) at firm level analysis found negative and significant signs on capacity utilization variable thereby confirming that M&A is a tool for restructuring and consolidating firms having excess capacity. But later splitting their sample by decades they found the result that in post liberalization era (1990) the relation between M&A and capacity utilization is positive and sometime significant as well.

According to Danzon et al. (2007) in large pharmaceutical and biotech firms, mergers are motivated by excess capacity as patent expiration and gap in the pipeline drugs make current human and physical capital excessive. M&A provide firms to restructure their asset base. The effect of the variable drug age (measured by percentage of firm’s drug that are old and at risk of losing patent protection) in their study is positive and significant which confirms that forthcoming patent expiration and its impact on revenue and labor productivity is a significant motive for firms undertaking M&A. Pandit and Siddharthan (1998) also found that investment decision and expansion of capacity is directly related to firm’s technology acquisition.

Andrade and Stafford (2004) found significant and negative relationship between M&A activity and book leverage. Dessyllas and Hughes (2005) also found negative but insignificant relationship between leverage and M&A probability as high leverage restricts managers to undertake investment activity. Hall (1988) in her study observed that leverage is negatively related to R&D Expansionary means mergers are done with a motive of investment which adds to the capital stock of a firm or industry. Contractionary merger facilitates consolidation and reduction of the asset base investment even if no merger is involved. Bopkin and Onumah (2009) in their study of determinants of corporate investment decisions found leverage to be negatively and insignificantly related to firm’s investment decision.

Siddharthan and Pandit (1998) found positive and significant impact of advertisement intensity on investment behavior of MNEs and large corporate firms in India.

Danzon et al. (2007) while studying determinants of M&A in pharmaceutical industry expected positive relationship between cash to sales and acquisitions but later found this relation to be insignificant. Thus, they argued that financing is no constraint on M&A activity. Dessyllas and Hughes (2005) also studying determinants of M&A in high tech industry find profitability to be positively and significantly related to firm’s decision to acquire. In Indian context Narayanan (2004) also asserted that in post deregulation period firms reinvest their profits on technological acquisitions. Andrade and Stafford (2004) also noted that profitability doesn’t play a significant role in firm’s decision on merger investment but it does impact non-merger investment positively.

1. **Research Methodology**

This project involves studying the possible merger between Biocon Ltd & Dr. Reddy’s. In our case study analysis, we began with preparation of financial Model of Biocon in which analysis of balance sheet, income statement, cash flow statement of Target Company ( Biocon Ltd) is done. We began with their annual reports of 2012-2013 & 2013-2014 & then some projections were done for next 5 years. Firm specific data on net sales, gross profits, incorporation year, R&D expenditure, advertisement expenditure, market capitalization, secured and unsecured borrowings and MNE affiliation have been collected for the analysis.

After projections, we calculated some of the important financial ratios of Target Company as well as for some peer group companies. A comparison analysis is done by comparing its ratios with industry average in order to determine its true fair value.

**3.1** **Need of the study**

In the last few years, we have seen different activities in the form of Merger & acquisition in pharmaceutical industry like Strides Arcolab selling its specialties division Agila Specialties Pvt Ltd to US-based Mylan Inc for $1.43 billion and Torrent Pharma acquiring domestic formulation business of Mumbai-based Elder Pharma for Rs 2,004 crore.

Pharmaceutical companies are tying up with their peer groups for various reasons in order to improve their profitability as well as to increase their global presence. Many companies undertake a merger or an acquisition either to pursue competitive advantages or to shore up lacking resources. When a company cannot cost-effectively create internally the capabilities needed to sustain its future success, it may seek to acquire them elsewhere.

Recent acquisition of Ranbaxy by Sunpharma in Indian Pharmaceutical Industry has raised the eyebrows of other competitive companies. The deal comes at a time when domestic and international pharmaceutical space is seeing heavy consolidation.

Acquiring companies emerged from these mergers with a larger revenue base and leaner cost structure, increasing economic profit by an average of more than 50 percent in the two years following the transaction. Consolidation deals have historically generated the greatest economic profit for acquirers (more than 60 percent growth), while growth-platform deals have on average generated negative economic-profit growth with marginal improvements in ROIC . However, much of the excess return from growth deals has been generated from multiple expansion and improvement in long-term expectations rather than changes in fundamental operating performance.

This research report is prepared for the analysis of possible merger between Dr. Reddy’s & Biocon. Here, the target company is Biocon & acquiring company is Dr. Reddy’s. The purpose of this study is to analyse the reasons behind the possible merger between these two companies with analysis of target’s financial statements.

This report is prepared in perspective of Dr. Reddy’s analysis of opportunity, which could support this report for their decision if they plan a joint venture with Biocon. This report can act as a suggestion to them for their future plan to increase their presence in India as well as in abroad.

* 1. **Data Collection**

This section presents the data and the methodology used in the analysis. The firm characteristics, their definition and the analytical technique used for the study are also highlighted. The source of data for the firm characteristics is taken from their websites. . Firm specific data on net sales, gross profits, incorporation year, R&D expenditure, advertisement expenditure, market capitalization, secured and unsecured borrowings and MNE affiliation have been collected for the analysis. The factors considered in the study are capacity utilization, MNE affiliation, R&D intensity, Advertisement intensity, Tobin’s q, leverage, size, profitability and age of the firm. The methodology adopted is empirical analysis using financial modelling of Target Company.

Financial Model was prepared with the help of annual report of Target Company. Data analysed for year 2012, 2013, & 2014. With the help of Ms –excel, some projections were made for next 5 years in order to determine the fair value of the company.

**Income Statement Modelling:**

**Revenue:**

In a growth relative to GDP growth approach, we first forecasted the growth rate of nominal gross domestic product. We then consider how the growth rate of the target company being examined will compare with nominal GDP growth. We then forecasted for real GDP growth to project volumes and a forecast for inflation to project prices

**Operating Cost:**

Disclosure about operating costs is frequently less detailed than disclosure about revenue. If relevant information is available, we may consider matching the cost analysis to the revenue analysis. For example, they might model costs separately for different geographic regions, business segments, or product lines. We consider costs at a more aggregated level than the level used to analyze revenue. It is important to keep in mind their revenue analysis when deriving cost assumptions. For instance, if a relatively low-margin product is expected to grow faster than a relatively high-margin product, analysts should project some level of overall margin deterioration, even if they are not certain about the precise margins earned on each product.

**Cost of goods Sold (COGS)**

Because COGS has a direct link with sales, forecasting this item as a percentage of sales is usually a good approach. Historical data on a company’s COGS as a percentage of sales usually provides a useful starting point for estimates. For example, if a company is losing market share in a market in which the emergence of new substitute products are also putting the overall sector under pricing pressure, gross margins are likely to decline. But if the company is gaining market share because it has introduced new competitive and innovative products, especially if it has done so in combination with achieving cost advantages, gross margins are likely to improve.

**Selling, general, and administrative expenses (SG&A)**

Selling, general, and administrative expenses (SG&A) are the other main type of operating costs. In contrast to COGS, SG&A expenses have less of a direct relationship with the revenue of a company.

In addition to analyzing the historical relationship between companies’s operating expenses and sales, benchmarking a company against its competitors can also be useful. By analyzing the cost structure of a company’s competitors, the efficiency potential and margin potential of a specific company can be estimated.

**Non-operating Costs**

The two most significant non-operating expenses in income statement modelling are financing expenses (i.e., interest) and taxes

When forecasting financing expenses, the capital structure of a company is a key determinant. For practical purposes the debt level in combination with the interest rate are the main drivers in forecasting debt financing expenses. Usually the notes to the financial statements provide detail about the maturity structure of the company’s debt and the corresponding interest rates.

The final large non-operating item is the tax expense. This is often a large amount that affects profit substantially. Differences in tax rates can be an important driver of value. The effective tax rate, which is calculated as the reported tax amount on the income statement divided by the pre-tax income.

Often, a good starting point for estimating future tax expense is a tax rate based on normalized operating income, before the results from associates and special items. This normalized tax rate should be a good indication of the future tax expense, adjusted for special items, in an analyst’s earnings model.

**Balance Sheet and Cash Flow Statement Modeling**

Income statement modeling is the starting point for balance sheet and cash flow statement modeling. We had a choice of whether to focus on the balance sheet or cash flow statement; the third financial statement will naturally result from the construction of the other two. Here, we focus on the balance sheet.

Some balance sheet line items—such as retained earnings—flow directly from the income statement whereas other lines—such as accounts receivable, accounts payable, and inventory—are very closely linked to income statement projections.

A common way to model working capital accounts is through the use of efficiency ratios. For example, analysts may project future accounts receivable by assuming a number of days sales outstanding and combining that assumption with a sales projection. Days sales outstanding is a measure of the number of days, on average, it takes a company to collect revenue from its customers. For example, if annual revenue (assumed to be all credit sales) is $25 billion and it normally takes 60 days to collect revenue from customers, accounts receivable would be estimated at $4.1 billion (≈ $25 billion × 60/365). Analysts can project future inventory by assuming an inventory turnover rate and combining that assumption with a cost of goods sold projection. Inventory turnover is a measure of how much inventory a company keeps on hand, or alternatively how quickly a company sells through its inventory. In general, if efficiency ratios are held constant, working capital accounts will grow in line with the related income statement accounts.

Working capital projections can be modified by both top-down and bottom-up considerations. In the absence of a specific opinion about working capital, analysts can look at historical efficiency ratios and project recent performance or a historical average to persist in the future, which would be a bottom-up approach. Conversely, analysts may have a specific view of future working capital. For example, if they project economy-wide retail sales to decline unexpectedly, that could result in slower inventory turnover across the retail sector. Because the analysts began with a forecast for a large sector of the economy, this would be considered a top-down approach.

Projections for long-term assets such as property, plant, and equipment (PP&E) are less directly tied to the income statement for most companies. Net PP&E primarily changes as a result of capital expenditures and depreciation, both of which are important components of the cash flow statement. Depreciation forecasts are usually based on historical depreciation and disclosure about depreciation schedules, whereas capital expenditure forecasts depend on the analysts’ judgment of the future need for new PP&E. Capital expenditures can be thought of as including both [maintenance capital expenditures](http://e.pub/9781939515629.vbk/OEBPS/glossary.xhtml#CFA1434-R-g005), which are necessary to sustain the current business, and [growth capital expenditures](http://e.pub/9781939515629.vbk/OEBPS/glossary.xhtml#CFA1434-R-g003), which are needed to expand the business. All else being equal, maintenance capital expenditure forecasts should normally be higher than depreciation because of inflation.

Finally, we made assumptions about a company’s future capital structure. Leverage ratios—such as debt-to-capital, debt-to-equity, and debt-to-EBITDA—can be useful for projecting future debt and equity levels. It is important to consider historical company practice, management’s financial strategy, and the capital requirements implied by other model assumptions when projecting the future capital structure.

Once future income statements and balance sheets are constructed, analysts can use them to determine the rate of [return on invested capital](http://e.pub/9781939515629.vbk/OEBPS/glossary.xhtml#CFA1434-R-g008) (ROIC) implied by their assumptions. ROIC measures the profitability of the capital invested by the company’s shareholders and debt holders. The numerator for ROIC is usually net operating profit less adjusted taxes (NOPLAT). NOPLAT is basically earnings before interest expense (i.e., earnings available to provide a return to both equity holders and debt holders). The denominator for ROIC is invested capital, which is calculated as operating assets less operating liabilities.  Invested capital can be measured at the beginning of an accounting period or as an average of the beginning and end of the accounting period. ROIC is a better measure of profitability than return on equity because it is not affected by a company’s degree of financial leverage. In general, sustainably high ROIC is a sign of a competitive advantage. To increase ROIC, a company must either increase earnings, reduce invested capital, or both. A closely related measure to ROIC, but focusing on pre-tax operating profit, is [return on capital employed](http://e.pub/9781939515629.vbk/OEBPS/glossary.xhtml#CFA1434-R-g007) (ROCE), which is essentially ROIC before tax.This measure is defined as operating profit divided by capital employed (debt and equity capital). As a pre-tax measure, ROCE can be useful in several contexts, such as peer comparisons of companies in countries with different tax structures, because comparison of underlying profitability would not be biased in favour of companies benefitting from low tax rate regimes.

1. **Case Study of possible Merger between Dr. Reddy’s & Biocon**

Acquirer: Dr. Reddy's Laboratories, is a multinational pharmaceutical company based in [Hyderabad](http://en.wikipedia.org/wiki/Hyderabad_(India)), [Telangana](http://en.wikipedia.org/wiki/Telangana), India. Dr. Reddy's manufactures and markets a wide range of pharmaceuticals in India and overseas. The company has over 190 medications, 60 [active pharmaceutical ingredients](http://en.wikipedia.org/wiki/Active_pharmaceutical_ingredient) (APIs) for drug manufacture, diagnostic kits, [critical care](http://en.wikipedia.org/wiki/Intensive_care_medicine), and [biotechnology](http://en.wikipedia.org/wiki/Biotechnology) products.

Dr. Reddy's began as a supplier to Indian drug manufacturers, but it soon started exporting to other less-regulated markets that had the advantage of not having to spend time and money on a [manufacturing plant](http://en.wikipedia.org/wiki/Factory) that would gain approval from a drug licensing body such as the [U.S. Food and Drug Administration](http://en.wikipedia.org/wiki/Food_and_Drug_Administration_(United_States)) (FDA). By the early 1990s, the expanded scale and profitability from these unregulated markets enabled the company to begin focusing on getting approval from drug regulators for their formulations and bulk drug manufacturing plants in more-developed economies. This allowed their movement into regulated markets such as the US and [Europe](http://en.wikipedia.org/wiki/Europe). In 2014, Dr. Reddy Laboratories was listed among 1200 of India's most trusted brands according to the [Brand Trust Report](http://en.wikipedia.org/wiki/The_Brand_Trust_Report) 2014, a study conducted by Trust Research Advisory, a brand analytics company.

By 2007, Dr. Reddy's had six FDA plants producing active pharmaceutical ingredients in India and seven FDA-inspected and [ISO 9001](http://en.wikipedia.org/wiki/ISO_9001) (quality) and [ISO 14001](http://en.wikipedia.org/wiki/ISO_14001) (environmental management) certified plants making patient-ready medications – five of them in India and two in the UK.

In 2010, the family-controlled Dr Reddy's denied that it was in talks to sell its generics business in India to US pharmaceutical giant [Pfizer](http://en.wikipedia.org/wiki/Pfizer), which had been suing the company for alleged patent infringement after Dr Reddy's announced that it intended to produce a generic version of [atorvastatin](http://en.wikipedia.org/wiki/Atorvastatin), marketed by Pfizer as [Lipitor](http://en.wikipedia.org/wiki/Lipitor), an anti-[cholesterol](http://en.wikipedia.org/wiki/Cholesterol) medication. Reddy's was already linked to UK pharmaceuticals multinational [Glaxo Smithkline](http://en.wikipedia.org/wiki/Glaxo_Smithkline)

Reddy's path into new drug discovery involved targeting speciality generics products in western markets to create a foundation for drug discovery. Development of speciality generics was an important step for the company's growing interest in the development of new chemical entities. The elements involved in creating a speciality generic, such as innovation in the laboratory, developing the compound, and sending the sales team to the market, are also stages in the development of a new specialty drug. Starting with speciality generics allowed the company to gain experience with those steps before moving on to creating brand-new drugs.

Reddy's also invested heavily in establishing R&D labs and is the only Indian company to have significant R&D being undertaken overseas. Dr. Reddy's Research Foundation was established in 1992 and in order to do research in the area of new drug discovery. At first, the foundation's drug research strategy revolved around searching for analogues. Focus has since changed to innovative R&D, hiring new scientists, especially Indian students studying abroad on doctoral and post-doctoral courses. In 2000, the Foundation set up an American laboratory in [Atlanta](http://en.wikipedia.org/wiki/Atlanta), dedicated to discovery and design of novel therapeutics. The laboratory is called Reddy US Therapeutics Inc (RUSTI) and its main aim is the discovery of next-generation drugs using [genomics](http://en.wikipedia.org/wiki/Genomics) and [proteomics](http://en.wikipedia.org/wiki/Proteomics). Reddy's research thrust focused on large niche areas in western markets – anti-[cancer](http://en.wikipedia.org/wiki/Cancer), anti-[diabetes](http://en.wikipedia.org/wiki/Diabetes), [cardiovascular](http://en.wikipedia.org/wiki/Cardiovascular) and anti-infection drugs

Target: Biocon is India's largest and fully-integrated, innovation-led biopharmaceutical company. As an emerging global biopharmaceutical enterprise we serve our customers and partners in over 85 countries. We are committed to reduce therapy costs of chronic diseases like autoimmune, diabetes, and cancer.

Through innovative products and research services, biocon is constantly enabling access to affordable healthcare for patients, partners and healthcare systems across the globe. We have successfully developed and taken a range of novel biologics, biosimilars, differentiated small molecules and affordable recombinant human insulin and analogs from 'Lab to Market'.  Some of our key brands are INSUGEN®(rh-insulin),BASALOG® (Glargine), CANMAb™ (Trastuzumab), BIOMAb-EGFR™ (Nimotuzumab) and ALZUMAb™(Itolizumab), a 'first in class' anti-CD6 monoclonal antibody.   
  
Biocon has a rich pipeline of biosimilars and novel biologics at various stages of development including a high potential oral insulin.

It has gained critical mass with a strong product portfolio of 70 brands and many of its products are in the top 5 in their respective categories. The Company is committed to achieving market leadership in its chosen therapeutic areas through a carefully orchestrated strategy of product differentiation and personalized medical support.

Biocon has also built a remarkable Research Services business through Syngene and Clinigene that offers integrated discovery and development solutions for both small and large molecules. It has partnered with over 100 global life sciences companies and has enabled them to address some of their innovation and productivity challenges through its services across discovery and development.

Merger: From the above analysis, it can be concluded that a merger, in the form of Joint Venture, is possible between Dr Reddy’s & Biocon. Reddy's invested heavily in establishing R&D labs and is the only Indian company to have significant R&D being undertaken overseas. But Biocon has invested heavily in India for R & D activities. A merger between these two companies can boost their R & D activity. It will give access to Biocon to enter overseas R & D whereas Dr. Reddy’s can access to home grown R & D activities.

As the largest Indian Insulin’s Company, Biocon can make a huge difference to millions of diabetic patients in India. A merger Between Biocon & Dr Reddy’s will give access to Dr. Reddy’s to enter into large segment of Indian insulin market.

Over the years Biocon has also emerged as a leading Indian oncology company making cancer-care 'affordable' and 'accessible' to patients in India. A merger can help Dr. Reddy’s to enter into affordable oncology segment.

Post transaction, the combined entity will have operations in 65 countries, 47 manufacturing facilities across five continents and a significant platform of specialty and generic products marketed globally, including 629 ANDAs. Its pro-forma revenues are estimated at $4.2 billion with EBITDA of $1.2 billion based on numbers of the two firms during the 12 months ended December 31, 2014.

The deal also faces another hurdle given the dominance of the combined entity in several products. Although the highly fragmented nature of the local drug market means it may not cause an issue by virtue of the size of the combined business (post-merger the combined business will have less than 10 per cent market share of the drugs sold in India), the dominance of the resulting company in several therapeutic areas may ring alarm bells when Competition Commission of India (CCI) scans the proposed transaction.

1. **Conclusion**

From the financial model, we came out with various projections that helped us in calculating the fair value of companies. We calculated fair value through two techniques: discounted free cash flow & comparable company analysis.

**Discounted free cash Flow Analysis:**

From discounted free cash flow analysis, our estimated fair value is Rs 209.5621 per share.

But Market price of a Biocon share is Rs 447 per share. As the Market price is greater than the fair value. We can say that company is overvalued. So a merger is not possible.

**Comparable company analysis:**

From comparable company analysis, our estimated fair value is Rs. 801.93 per share. But Market price of a Biocon share is Rs 447 per share. As the Market price is lower than the fair value. We can say that company is undervalued. So a merger is possible. This deal has been evaluated on sales multiple and not EBITDA multiple

The EBITDA multiple for this transaction looks higher so, If the margins are normalised, the multiple will go down drastically.

Post transaction, the combined entity will have operations in 65 countries, 47 manufacturing facilities across five continents and a significant platform of specialty and generic products marketed globally, including 629 ANDAs. Its pro-forma revenues are estimated at $4.2 billion with EBITDA of $1.2 billion based on numbers of the two firms.

1. **Limitations of the study**

As mentioned previously, mergers and acquisitions are extremely difficult. Expected synergy values may not be realized and therefore, the merger is considered a failure.

Some of the reasons behind failed mergers are:

* Poor strategic fit - The two companies have strategies and objectives that are too different and they conflict with one another.
* Cultural and Social Differences - It has been said that most problems can be traced to "people problems." If the two companies have wide differences in cultures, then synergy values can be very elusive.
* Incomplete and Inadequate Due Diligence - Due diligence is the "watchdog" within the M & A Process. If you fail to let the watchdog do his job, you are in for some serious problems within the M & A Process.
* Poorly Managed Integration - The integration of two companies requires a very high level of quality management. In the words of one CEO, "give me some people who know the drill." Integration is often poorly managed with little planning and design. As a result, implementation fails.
* Paying too Much - In today's merger frenzy world, it is not unusual for the acquiring company to pay a premium for the Target Company. Premiums are paid based on expectations of synergies. However, if synergies are not realized, then the premium paid to acquire the target is never recouped.
* Overly Optimistic - If the acquiring company is too optimistic in its projections about the Target Company, then bad decisions will be made within the M & A Process. An overly optimistic forecast or conclusion about a critical issue can lead to a failed merger.

Perhaps most important among the limitations of modelling techniques is the inability to effectively capture change or the unexpected. Models can pose serious risks to those who rely too heavily on them. The future direction of markets is highly uncertain. In short, no single model can contain all the necessary information to capture the uncertain path of outcomes.

Compounding this challenge, markets jump, sometimes abruptly producing fat tails (unexpected bumps) in the distribution of returns. Such shocks in financial markets severely hamper the effectiveness of model-driven decision making.

For example, risk models such as Gaussian VaR (value at risk), often fail to predict the duration and magnitude of extreme losses because they are ill suited to that task. They do not admit the extreme outcomes during periods of turmoil.

Financial models were ineffective during the financial crisis, resulting in portfolio underperformance and unexpected losses to investors. For instance, various innovative products found to fuel the crisis, such as those introduced by certain banks, were largely made possible through modeling techniques. Recent events thus highlight the need for a close look at the role and effectiveness of financial models and the expertise of modelers.

it is not possible for models to incorporate all the variables affecting the outcome into the analysis. Failure to take all the variables into consideration renders the models ineffective.

Given that they are numerous variables to be taken into consideration, it is a challenge to the modeler to decide which of the variables are important, and which is less. In fact, financial modelers face a dilemma in terms of the size of the models to be constructed. It is not easy to decide on the right size of the models.

The users of the financial models may end up relying too heavily on the financial models in making the final decisions. This problem is particularly serious in cases where the models considered are too simple.

Financial models tend to over-rely on accounting data as a source of input. Accounting data are constructed on an accrual basis. Cash flows are ignored. The proper method in the evaluation of projects therefore is the use of expected cash flows generated from them, rather than the use of accounting information. Despite these problems, the use of accounting data in financial modeling is still common.

 The use of accounting data forces the modelers to deal with average costs and average revenues in the decision-making. This tends to mitigate the effectiveness of the financial models for decision-making is better made with marginal costs and revenues instead.

 While the use of spreadsheets has been extensive over the years and more and more functions have also been added into the software, problems exist. One of the problems faced is the difficulty of transferring the models from one user to another. The transfers may be required when there is a change in the modeler. Taking over the spreadsheet and updating them could lie in the hands of another person. Wastage of time and repetition of work may be resulted. To minimize repetition of work and time, it is essential that the person taking over is capable of interpreting the models in the spreadsheets.

1. **References**

http://www.ibef.org/industry/pharmaceutical-india.aspx

Institute, CFA. *2015 CFA Level II Volume 3 Corporate Finance*. Wiley Global Finance, 2014-07-14. VitalBook file.

<http://www.vccircle.com/news/pharmaceuticals/2014/05/01/deal-month-sun-pharma-acquire-ranbaxy>

<http://businesstoday.intoday.in/story/ranbaxy-acquisition-good-for-sun-pharma-shareholders-experts/1/205526.html>

<http://www.exinfm.com/training/course07-1.doc>

<http://www.mergersandacquisitions.in/process-of-merger-and-acquisition.htm>

<http://en.wikipedia.org/wiki/Dr._Reddy's_Laboratories>

1. **Annexure**

**Biocon Balance Sheet**



**Profit & loss statement**



**Cash Flow Statement**

**Comparable Analysis Technique**





