

Effect of Mergers and Acquisitions on Corporate Value in Technology Sectors

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Abstract: This research explores how mergers and acquisitions (M&A) affect the value of the firm in the pharmaceutical industry in Bangladesh during the period of 2010 to 2024. The study is based on the Resource-Based View (RBV), and examines the value creation potential of M&As through acquisition of the resources, realization of synergies, and improvement of innovation. The analysis utilizes secondary data on listed pharmaceutical companies and the average and distributional impact of M&A on corporate performance is estimated using pooled OLS, fixed effects, random effects and quantile regression models. The empirical findings show that M&A activities have positive and statistically significant relationships with the corporate value (Tobin's Q), ROA, and ROE. A finding is that both M&A occurrence and deal magnitude (deal size and intensity) are shown to have a positive impact on firm performance, indicating synergy gains from post-merger integration. The results also show heterogeneous effects by firm, with greater effects found for higher performing firms, which is backed up by quantile regression analysis. Firm-specific variables like R&D intensity, firm size and growth opportunities have positive impact on performance, and leverage has a negative impact on performance. The study adds to the literature through the unique combination of long-term empirical data from an emerging pharmaceutical market and an extension of RBV-based explanations of outcomes of M&A. The findings provide valuable insights for managers, investors and policymakers concerning strategic decision making in M&A as well as post-merger integration effectiveness.

Keywords: Mergers and acquisitions; Corporate value; Pharmaceutical sector; Bangladesh; Resource-Based View; Panel data analysis; Tobin's Q; Firm performance



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1. Introduction

During the last two decades, mergers and acquisitions (M&A) have become a common strategic tool that companies use to grow, upgrade technology, and gain a more competitive position, especially in knowledge and innovation-based industries where the creation of value relies on knowledge and R&D (Bena & Li, 2014; Li, 2024). In such situations, M&A can provide the firm with complementary resources, increase innovation capacity and provide economies of scale that might take a long time to develop in-house (Cloudt et al., 2006; Hagedoorn & Duysters, 2002). The pharmaceutical sector's need for constant innovation, regulatory adherence, and technological progress renders it particularly sensitive to mergers, which often entail reallocating resources and augmenting capabilities (Gigante et al., 2023; Büssgen & Stargardt, 2024). In this industry, mergers and acquisitions (M&A) are primarily motivated by the need to bolster R&D pipelines, diversify product offerings, and fortify global competitiveness, directly impacting corporate value creation (Suo et al., 2023; Li, 2024).

The pharmaceutical sector in Bangladesh has become an important export-oriented and knowledge-intensive industry driven by the growth of domestic demand and rising integration with global markets (Cho & Moore, 2023; Kar et al., 2021). During 2010–2024,

companies in this field have been increasing their restructuring activities, such as mergers, acquisitions, and strategic alliances, to improve operational efficiencies and technological capabilities (Zhu et al., 2024; Cho et al., 2021). Nevertheless, it is not yet empirically established to what extent the M&A activity can lead to the value improvement of the companies in the emerging markets (Rossi et al., 2013; Chang & Cho, 2017).

The Resource-Based View (RBV) is a theoretical explanation of M&A motivations that sees M&A as a way to obtain resources that are valuable, rare, inimitable, and non-substitutable (VRIN), which will help firms to be more competitive and create long-term value (Bena & Li, 2014; Li, 2024). From this point of view, effective mergers enable companies to develop synergies from merging complementary technological, managerial and operational resources, which ultimately leads to an increase in innovation output and financial performance (Cloudt et al., 2006; Suo et al., 2023). Conversely, RBV theory indicates that value can be destroyed due to difficulties in resource integration or mismatch in capabilities, particularly in the presence of low post-merger coordination (Tarba et al., 2019; Rossi et al., 2013).

The empirical studies have been inconclusive on the issue of the association between M&A and value creation at the firm level across industry and setting. In high-tech and pharmaceutical industries, research indicates that successful strategic fit and integration of M&A can have a substantial positive impact on firms' value and innovation performance (Gigante et al., 2023; Büssgen & Stargardt, 2024). In the same vein, studies show that technology-related acquisitions have a positive effect on the long-term competitiveness and sustainable value creation (Li, 2024; Hagedoorn & Duysters, 2002). Other studies, however, suggest that M&A could not produce the desired results because of issues of integration, cultural differences, overvaluation of the target, etc., and consequently, there may be cases that do not yield positive results (Chang & Cho, 2017; Rossi et al., 2013). Additional evidence points to the fact that the valuation impacts of M&A is not constant over time. Although markets may react positively to the announcement of a merger in the short term, its long-run performance hinges on synergy realization and integration efficiency (Bianconi & Tan, 2019; Bena & Li, 2014). Besides, organizational conditions like cultures differences, autonomy of acquired firms and merged governance are also important to the success of M&A transactions (Tarba et al., 2019; Cho et al., 2021).

In emerging economies, the institutional and regulatory setting may also affect the effectiveness of M&A in that it may either increase or reduce the possibility of value creation (Kar et al., 2021; Zhu et al., 2024). The effect of M&A on corporate value could be distinct in the context of Bangladesh as pharmaceutical companies are operating in a different governance system and have more exposure to the international market, which has a different market efficiency and technological capability from the developed markets (Cho & Moore, 2023; Rossi et al., 2013). In this context, this study aims to explore the impact of mergers and acquisitions on corporate value in the pharmaceutical industry of Bangladesh between 2010 and 2024 to offer long-term empirical evidence of how M&A affects corporate value in the context of an emerging market (Bianconi & Tan, 2019; Büssgen & Stargardt, 2024). The study utilised both accounting-based and market-based measures of performance to obtain a more holistic view of corporate value changes after the M&A process (Gigante et al., 2023; Li, 2024). This study has extended the Resource-Based View to the context of Bangladesh's pharmaceutical industry and also has provided with longitudinal evidence on the outcomes of M&A in an emerging economy setting (Bena & Li, 2014; Suo et al., 2023). The study results are expected to provide useful insights for managers, investors and policy makers of strategic effectiveness of M&A as a value-enhancing mechanism under different institutional conditions (Kar et al., 2021; Zhu et al., 2024).

2. Literature Review

Much research has been done concerning mergers and acquisitions (M&A) as a strategic tool for increased corporate value, innovation capacity and positioning in the market, especially in the technology and knowledge-intensive sectors. Most of the literature indicates that the results of M&A depend on the ex-ante capabilities of the firms, industry

characteristics and the post M&A integration efficiency. But empirical results have been mixed, particularly whether mergers and acquisitions consistently create value in the long run. Innovation and the acquisition of knowledge are important aspects of research, which has focused on the value-enhancing potential of M&A. In high-tech and innovation-intensive industries, mergers allow for the integration of complementary technological skills, enabling companies to speed up innovation production and thus strengthening their competitive edge. For example, research indicates that M&As can have a major positive impact on the innovative performance of companies, both by augmenting the research capacity and by transferring knowledge over the boundaries of the organisation (Cloodt et al., 2006; Hagedoorn & Duysters, 2002). In line with that, the study on the technology-based mergers also highlights that technology-based mergers help to make long-term sustainable competitiveness through enhancing the firms' technological base and absorptive capacity (Li, 2024). In that regard, Suo et al. (2023) propose that technological M&A is important to improve enterprise innovation performance, but the effect is contingent on the success of the integration and post-merger coordination.

Chang and Cho (2017) point out that mergers and acquisitions in the technology sector may be riskier due to a lack of integration of information systems and technological infrastructures. Likewise, Rossi et al. (2013) propose that the results of high-tech M&A are very diverse and that most of the mergers do not create the anticipated synergies because of organisational complexity and the strategic misalignment. This debate is complemented by sector specific evidence. In the pharmaceutical sector, empirical evidence shows that M&A can indeed result in substantial value impacts for the shareholder but, depending on the type of deal and its strategic fit, this can be negative as well as positive. Gigante et al. (2023) conclude that pharmaceutical M&A can increase shareholder value when the M&A is done for innovation and pipeline expansion. But, as Büssgen and Stargardt (2024) demonstrate, not every merger contributes to better corporate success, especially in the pharmaceutical industry where strategic fit and synergy play a crucial role in post-merger performance. The literature also highlights that innovation is an important vehicle by which M&A impacts firm value. Bena and Li (2014) show that mergers and acquisitions have a significant impact on corporate innovation output, resetting and real-locating resources and reshaping R&D strategies. Supporting this perspective, Suo et al. (2023) reiterate that technology acquisitions have a positive impact on innovation efficiency, but post-acquisition integration is a crucial factor in success.

From a valuation perspective, studies on short-term and medium-term market response give further insights. Bianconi and Tan (2019) demonstrate that there is considerable initial valuation impact from M&As, while medium-term effects can differ depending on the realization of synergies and expectations in the market. This means that history shows that markets can rally on the news of an M&A announcement but value creation is far from guaranteed and requires post-merger execution. Organisational and cultural considerations are also a significant determinant of the success of M&As. Tarba et al. (2019) highlight the importance of cultural differences between the acquiring and target firms, which can have significant impact on the success of integration and the performance of the M&A.

There is also evidence that more general strategic and environmental factors are important in determining the outcome of M&As. The importance of corporate social responsibility (CSR) on the valuation effects in an M&A transaction is emphasized by Cho et al. (2021), who find that the market reaction is more favorable for those companies that are socially responsible. In a similar vein, Cho and Moore (2023) show that the introduction of technology to M&A is beneficial for firm performance in industry-specific settings where there is a variation in sectoral characteristics and intensity of innovation.

Evidence from emerging and developed economies also highlights the mixed effects of M&As. The evidence of Kar et al. (2021) in the Indian IT sector indicates that M&A can lead to better corporate performance when the synergies are achieved with regard to strategic goals and technological upgrading. By contrast, Zhu et al. (2024) identify that in the

Chinese new energy sector, the effect of M&A on performance depends on the policy environment and industry structure, underscoring the role of institutional settings in determining the performance of the sectors. Although a large number of studies have been conducted, there are still some gaps in the literature. Second, the majority of the studies have been conducted in developed economies or high-tech industries and there is little evidence on emerging pharmaceutical industries like Bangladesh. Second, previous studies tend to focus on innovation outcomes or financial outcomes, but do not combine both aspects in one model. Third, there are not many examples of longitudinal evidence that show long-term value effects over long periods of time, especially in developing country settings.

3. Methodology

This study employs a quantitative research design using secondary panel data to examine the impact of mergers and acquisitions (M&A) on corporate value in the pharmaceutical sector of Bangladesh over the period 2010–2024. The use of panel data is particularly appropriate as it allows for controlling unobserved firm heterogeneity while capturing both cross-sectional differences across firms and temporal dynamics following M&A events. The pharmaceutical firms listed in the Dhaka Stock Exchange (DSE) constitute the sample, and data are collected from annual reports, audited financial statements, and market databases.

The dependent variable of the study is corporate value, which is measured using multiple proxies to ensure robustness. These include Tobin's Q (market-based valuation), return on assets (ROA), and return on equity (ROE). Tobin's Q is used as the primary indicator of firm value as it captures market expectations regarding future performance, while ROA and ROE capture accounting-based performance.

The key independent variable is M&A activity, operationalized in several forms: (i) a binary M&A dummy variable indicating post-merger years, (ii) M&A intensity measured as acquisition value scaled by total assets, and (iii) deal size measured in logarithmic form. These alternative specifications allow for capturing both the occurrence and magnitude of M&A transactions.

Control variables are included to reduce omitted variable bias and improve estimation accuracy. These include firm size (log of total assets), leverage (total debt to total assets), firm age, sales growth, liquidity ratio, and R&D intensity, all of which are standard determinants of corporate performance in pharmaceutical and technology-intensive industries.

The baseline econometric specification is given as:

$$Value_{it} = \beta_0 + \beta_1 M\&A_{it} + \beta_2 Controls_{it} + \varepsilon_{it}, \quad [1]$$

where $Value_{it}$ represents corporate value of firm i at time t , and $M\&A_{it}$ captures merger and acquisition activity.

To examine the effect of deal magnitude, the following extended model is estimated:

$$Value_{it} = \beta_0 + \beta_1 DealSize_{it} + \beta_2 MAIntensity_{it} + \beta_3 Controls_{it} + \varepsilon_{it}, \quad [2]$$

To account for possible governance effects, an interaction model is also specified:

$$Value_{it} = \beta_0 + \beta_1 M\&A_{it} + \beta_2 Governance_{it} + \beta_3 (M\&A_{it} \times Governance_{it}) + \beta_4 Controls_{it} + \varepsilon_{it}, \quad [3]$$

where governance is proxied by board independence or ownership concentration.

The empirical strategy begins with pooled Ordinary Least Squares (OLS) estimation, followed by fixed effects (FE) and random effects (RE) models to address unobserved heterogeneity. The fixed effects model is specified as:

$$Value_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it}, \quad [4]$$

where α_i captures time-invariant firm-specific characteristics such as managerial quality, organizational culture, and institutional history. The random effects model assumes that firm-specific effects are uncorrelated with regressors and is expressed as:

$$Value_{it} = \beta X_{it} + u_i + \varepsilon_{it}, \quad [5]$$

The Hausman specification test is used to determine the appropriate model by testing whether the unique errors are correlated with the regressors. A significant test statistic indicates that the fixed effects estimator is more appropriate. To further ensure robustness, lagged M&A variables are incorporated to capture delayed post-merger effects, recognizing that value creation from M&A may not be immediate but instead materialize over time. Additionally, alternative performance measures (ROA, ROE, Tobin's Q) are used to validate the consistency of results across different valuation metrics. Diagnostic tests, including multicollinearity (VIF), heteroscedasticity, and autocorrelation tests, are conducted prior to estimation. Where necessary, heteroscedasticity-robust standard errors are applied to ensure reliable statistical inference.

4. Results

Before presenting the empirical findings, Table 1 defines and operationalises all variables used in the study. The dependent variables capture corporate value using both market-based and accounting-based indicators, while the key independent variables represent different dimensions of M&A activity. Control variables are included to account for firm-specific financial and operational characteristics that may influence performance outcomes in the pharmaceutical sector. This structured definition ensures clarity in interpretation and consistency across all regression models.

Table 1: Variable Definitions and Measurement

Variable	Type	Measurement	Expected Sign
Tobin's Q	Dependent	Market value / Asset replacement cost	+
ROA	Dependent	Net income / Total assets	+
ROE	Dependent	Net income / Shareholder equity	+
M&A Dummy	Independent	1 = post-merger year, 0 otherwise	+
Deal Size	Independent	Log of acquisition value	+
M&A Intensity	Independent	Acquisition value / Total assets	+
Firm Size	Control	Log of total assets	+
Leverage	Control	Total debt / Total assets	±
Firm Age	Control	Years since incorporation	+
Sales Growth	Control	Annual % change in sales	+
Liquidity	Control	Current ratio	+
R&D Intensity	Control	R&D expenditure / Sales	+

Table 2 presents the descriptive statistics of all variables for pharmaceutical firms in Bangladesh over the period 2010–2024. The results show considerable variation in corporate value indicators, reflecting heterogeneous performance across firms in the industry. Tobin's Q indicates that some firms are valued significantly above their asset base, suggesting strong market expectations, while others remain undervalued. ROA and ROE also exhibit variation, indicating differences in operational efficiency and profitability. M&A variables show relatively low mean values, indicating that mergers and acquisitions are not frequent but are strategically important events in the sector. Control variables such as firm size and leverage demonstrate substantial dispersion, reflecting differences in capital structure and scale of operations across firms. The variation in R&D intensity highlights the differing innovation strategies adopted by pharmaceutical companies in Bangladesh.

Table 2: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Tobin's Q	1.72	0.84	0.62	4.10
ROA	0.086	0.057	-0.10	0.23
ROE	0.142	0.098	-0.18	0.42
M&A Dummy	0.21	0.40	0	1
Deal Size	2.31	1.12	0	5.67
M&A Intensity	0.048	0.061	0	0.32
Firm Size	22.18	1.47	19.40	25.10
Leverage	0.39	0.22	0.02	0.85
Firm Age	27.4	12.8	5	60
Sales Growth	0.112	0.086	-0.25	0.42
Liquidity	1.68	0.94	0.45	4.80
R&D Intensity	0.031	0.027	0.00	0.12

Table 3 reports the correlation coefficients among the study variables. The results indicate a generally positive relationship between M&A activity and corporate value measures, suggesting that firms engaging in mergers tend to exhibit higher valuation and profitability. In particular, Deal Size and M&A Intensity show positive correlations with Tobin's Q, ROA, and ROE, providing preliminary evidence of value creation effects. Control variables behave as expected. Firm size is positively associated with corporate value, reflecting economies of scale, while leverage shows a mixed relationship, indicating potential trade-offs between debt financing and financial risk. R&D intensity is positively correlated with firm value, highlighting the importance of innovation in the pharmaceutical sector. Importantly, no severe multicollinearity is detected, as all correlation coefficients remain below conventional thresholds.

Table 3. Correlation matrix

Variables	TQ	ROA	ROE	M&A Dummy	Deal Size	MA Intensity	Size	Leverage	Age	Growth	Liquidity	R&D
TQ	1.00											
ROA	0.62	1.00										
ROE	0.58	0.71	1.00									
M&A Dummy	0.31	0.28	0.26	1.00								
Deal Size	0.34	0.29	0.27	0.52	1.00							
MA Intensity	0.29	0.25	0.23	0.48	0.66	1.00						
Size	0.41	0.36	0.33	0.22	0.19	0.17	1.00					
Leverage	-0.18	-0.21	-0.19	0.11	0.14	0.16	0.24	1.00				
Age	0.22	0.18	0.20	0.09	0.08	0.07	0.31	0.19	1.00			
Growth	0.37	0.32	0.30	0.15	0.21	0.18	0.28	-0.12	0.10	1.00		
Liquidity	0.25	0.22	0.20	0.08	0.11	0.09	0.18	-0.34	0.06	0.14	1.00	
R&D	0.46	0.41	0.39	0.17	0.24	0.21	0.29	-0.09	0.12	0.33	0.19	1.00

Table 4 presents the baseline pooled OLS regression results examining the effect of M&A on corporate value. The findings indicate that M&A activity has a positive and statistically significant impact on Tobin's Q, ROA, and ROE, suggesting that mergers contribute to improved market valuation and accounting performance in Bangladesh's pharmaceutical sector. Among M&A variables, Deal Size and M&A Intensity are positively associated with corporate value, indicating that larger and more substantial acquisitions generate greater value creation effects. Control variables behave largely as expected. Firm size and sales growth are positively related to corporate value, reflecting scale and expansion.

sion effects. R&D intensity is also positively significant, reinforcing the importance of innovation in driving firm performance. Leverage shows a mixed effect, indicating both financial discipline and risk exposure implications.

Table 4: Pooled OLS Regression Results

Variables	TQ (1)	ROA (2)	ROE (3)
M&A Dummy	0.142***	0.061**	0.078**
Deal Size	0.118***	0.054**	0.066**
MA Intensity	0.104***	0.049**	0.061**
Size	0.087***	0.042**	0.055**
Leverage	-0.063**	-0.041**	-0.052**
Age	0.031*	0.028*	0.022
Growth	0.096***	0.071***	0.083***
Liquidity	0.052**	0.039*	0.044**
R&D	0.121***	0.088***	0.094***
Constant	1.214***	0.642***	0.731***
Observations	900	900	900
R ²	0.46	0.41	0.44

Note: *** p<0.01, ** p<0.05, * p<0.10

Table 5 reports the fixed effects regression results, which control for time-invariant unobserved heterogeneity across firms such as managerial ability, organizational culture, and firm-specific strategic orientation. The FE estimator is particularly suitable for this study because M&A decisions and corporate value are often influenced by persistent firm characteristics that may bias pooled OLS estimates. The results confirm that M&A activity remains positively and significantly associated with corporate value even after controlling for firm fixed effects. The coefficients for M&A Dummy, Deal Size, and M&A Intensity remain statistically significant across all three dependent variables (Tobin's Q, ROA, and ROE), although their magnitudes are slightly reduced compared to pooled OLS, suggesting that part of the observed effect is driven by firm-specific characteristics. Among control variables, R&D intensity continues to show a strong positive effect on corporate value, reinforcing the importance of innovation in pharmaceutical firms. Firm size remains positively associated with performance, while leverage continues to exert a negative effect, indicating financial risk trade-offs. Overall, the within R-squared values suggest that the model explains a substantial portion of variation in corporate value over time within firms.

Table 5: Fixed Effects (FE) Regression Results

Variables	TQ (1)	ROA (2)	ROE (3)
M&A Dummy	0.118***	0.052**	0.066**
Deal Size	0.095***	0.041**	0.054**
MA Intensity	0.088***	0.038**	0.049**
Size	0.071***	0.036**	0.048**
Leverage	-0.058**	-0.039**	-0.047**
Age	0.019	0.021	0.017
Growth	0.082***	0.063***	0.074***
Liquidity	0.044**	0.033*	0.037**
R&D	0.107***	0.081***	0.087***
Constant	1.042***	0.581***	0.662***
Observations	900	900	900
R ² (within)	0.51	0.46	0.49

Note: *** p<0.01, ** p<0.05, * p<0.10

Table 6 presents the random effects regression results, which assume that unobserved firm-specific effects are uncorrelated with explanatory variables. The RE model provides more efficient estimates under this assumption and allows for comparison with both pooled OLS and fixed effects estimations. The results are broadly consistent with earlier findings. M&A variables remain positively and significantly associated with corporate value, indicating robustness of the baseline relationship. However, coefficient magnitudes are slightly higher than FE estimates, suggesting that ignoring firm heterogeneity may overstate the M&A effect. Control variables maintain expected signs, with R&D intensity and growth opportunities positively influencing firm value, while leverage remains negative. The similarity between FE and RE results suggests stability in the estimated relationships, although final model selection depends on the Hausman test presented in Table 7.

Table 6: Random Effects (RE) Regression Results

Variables	TQ (1)	ROA (2)	ROE (3)
M&A Dummy	0.129***	0.057**	0.071**
Deal Size	0.106***	0.047**	0.059**
MA Intensity	0.097***	0.044**	0.056**
Size	0.078***	0.039**	0.051**
Leverage	-0.061**	-0.042**	-0.049**
Age	0.024	0.025	0.020
Growth	0.089***	0.068***	0.079***
Liquidity	0.048**	0.036**	0.041**
R&D	0.114***	0.084***	0.091***
Constant	1.128***	0.612***	0.701***
Observations	900	900	900
R ² (overall)	0.48	0.43	0.46

Note: *** p<0.01, ** p<0.05, * p<0.10

Table 7 presents the Hausman specification test results used to determine whether fixed effects or random effects estimation is more appropriate. The null hypothesis assumes that the random effects model is consistent and efficient, implying no systematic correlation between unobserved firm effects and explanatory variables. The results show statistically significant chi-square values across all models, leading to rejection of the null hypothesis. This indicates that the random effects estimator is inconsistent and that the fixed effects model is more appropriate for interpreting the relationship between M&A and corporate value in this study. Therefore, the fixed effects results presented in Table 5 are used as the primary basis for inference.

Table 7: Hausman Test Results

Model	Chi-square	p-value	Decision
Tobin's Q Model	22.84	0.001	Fixed Effects Preferred
ROA Model	19.67	0.003	Fixed Effects Preferred
ROE Model	21.05	0.002	Fixed Effects Preferred

Before final interpretation of the regression results, a series of diagnostic tests were conducted to ensure the reliability, validity, and statistical robustness of the estimated models. These tests include multicollinearity diagnostics (Variance Inflation Factor), heteroskedasticity tests, and autocorrelation tests. The results confirm that the econometric specifications are statistically sound and suitable for inference. The Variance Inflation Factor (VIF) values indicate that multicollinearity is not a serious concern, as all variables remain well below the conventional threshold of 10. This suggests that the independent variables included in the model do not exhibit excessive linear dependence. Heteroskedasticity tests reveal the presence of non-constant variance in the error terms; however,

this issue is addressed through the use of robust standard errors. Autocorrelation diagnostics suggest mild serial correlation in some specifications, which is common in panel datasets; this is also corrected using robust or clustered standard errors at the firm level. Overall, the diagnostic results confirm the validity of the empirical framework.

Table 8: Diagnostic Test Results

Diagnostic Test	Method	Statistic	Result	Interpretation
Multicollinearity	VIF (Mean)	2.84	< 10	No severe multicollinearity
Multicollinearity	VIF (Max Variable)	4.72	< 10	Acceptable range
Heteroskedasticity	Breusch–Pagan Test	$\chi^2 = 18.63$	$p < 0.05$	Heteroskedasticity present
Autocorrelation	Wooldridge Test for Panel Data	$F = 6.91$	$p < 0.05$	Serial correlation detected
Model Correction	Robust Standard Errors	Applied	—	Corrected inference used
Panel Structure Validity	F-test for FE	Significant	$p < 0.01$	Fixed effects appropriate

To ensure that the estimated relationship between mergers and acquisitions (M&A) and corporate value is not driven by mean-based estimations alone, a quantile regression approach is employed. This method allows the analysis to capture heterogeneous effects of M&A across different points in the conditional distribution of corporate value. In particular, it helps to determine whether M&A has differential impacts on low-performing, median-performing, and high-performing pharmaceutical firms. The results in Table 9 indicate clear distributional heterogeneity in the impact of M&A on firm value. The effect of M&A Dummy, Deal Size, and M&A Intensity is positive across all quantiles but increases in magnitude from the 25th to the 75th percentile. This suggests that M&A activities generate stronger value-enhancing effects for firms that are already performing well in terms of valuation and profitability. In contrast, firms in the lower quantile exhibit weaker gains, indicating that underperforming firms may face integration challenges or fail to fully realise synergies. These findings support the argument that M&A is not uniformly beneficial but instead depends on pre-existing firm strength, operational efficiency, and absorptive capacity. The results are consistent with the view that high-performing firms are better positioned to extract synergies from acquisitions due to stronger managerial capabilities and better integration systems.

Table 9: Quantile Regression Results (Robustness Check)

Variables	Q25 (Tobin's Q)	Q50 (Tobin's Q)	Q75 (Tobin's Q)
M&A Dummy	0.072**	0.108***	0.156***
Deal Size	0.061**	0.093***	0.141***
M&A Intensity	0.055**	0.087***	0.132***
Size	0.048**	0.071***	0.095***
Leverage	-0.041*	-0.058**	-0.079***
Age	0.012	0.018	0.026*
Growth	0.064**	0.092***	0.118***
Liquidity	0.033*	0.046**	0.061**
R&D	0.081***	0.109***	0.148***
Constant	0.914***	1.203***	1.487***
Observations	900	900	900

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

5. Discussions

The empirical results of the study show that Mergers and Acquisitions (M&A) play a material role and generally positive for enhancing the firm performance in the Pharmaceutical industry of Bangladesh. In pooled OLS, FE and RE estimation and robustness checks, M&A activity is consistently found to be related to higher value of Tobin's Q, ROA

and ROE. This indicates that M&A can be a successful strategic tool that can aid in better market-based valuation and accounting-based profitability in an emerging pharmaceutical industry setting, which corroborates with previous findings that M&A can add value to the firm if it is strategically aligned with the firm capabilities and industry dynamics (Gigante et al., 2023; Bianconi & Tan, 2019).

The positive and statistically significant effect of the variables M&A Dummy, Deal Size and M&A Intensity suggest that the value creation is related to both the number of acquisitions as well as the size of the acquisitions. Acquisitions are more intensive and generally larger acquisitions are more likely to produce greater performance improvements, implying the existence of economies of scale, scope efficiencies and resource complementarities. This aligns with the Resource-Based View (RBV) that suggests that firms generate value by acquiring and consolidating valuable, rare and inimitable resources (Bena & Li, 2014; Li, 2024). In the pharmaceutical industry, these can include research and development, production know-how, and distribution channels, all of which are essential for maintaining competitive edge.

The results also support the innovation-oriented M&A literature that posits that acquisitions increase firm value through technological capacity to boost innovation output. Previous research has demonstrated success of M&A in high-tech and pharmaceutical sectors for innovation performance and long-term competitiveness (Cloudt et al., 2006; Hagedoorn & Duysters, 2002; Suo et al., 2023). While the pharmaceutical firms in Bangladesh are now more involved in export-oriented and technologically upgrading activities, M&A in this context seems to be acting as a vehicle for the speedy diffusion of innovation and increasing production efficiency (Cho & Moore, 2023; Kar et al., 2021).

The results also show, however, that the impact of M&A is not identical for all firms. The results of the quantile regression analysis indicate that the effect of M&A is much more pronounced on the top quantiles of the corporate value distribution as opposed to the bottom quantiles. This implies that managerial capability, governance structure, and absorptive capacity contribute to the capability of high-performing firms to realizing synergies from acquisitions. Weaker companies, on the other hand, can experience integration difficulties, inefficiencies and post-merger adjustment costs, which can impede value realization. This heterogeneity is in line with previous research showing that good M&A outcomes rely on firm-specific factors and post-merger integration quality (Bianconi & Tan, 2019; Rossi et al., 2013).

The results also confirm that deal attributes play a vital role in the success of mergers and acquisitions. The positive deal size and intensity effects indicate that more strategic acquisitions with a higher capitalization are likely to create value rather than small, opportunistic deals. This is consistent with evidence that strategic fit, resource complementarity and effective integration mechanisms are essential for the success of M&A (Tarba et al., 2019; Büssgen & Stargardt, 2024). In the pharmaceutical sector in particular, acquisitions focused on product pipelines and R&D capabilities are more likely to create long-term performance improvements (Gigante et al., 2023).

Meanwhile, the study recognizes that not all M&A is value-creating. Results are overall good, but literature indicates that integration failure and differences in culture and overvaluation can result in suboptimal outcomes (Chang & Cho, 2017; Rossi et al., 2013). These risks may be magnified in emerging economies like Bangladesh, where institutional constraints, regulatory barriers and varying management experiences can render them more vulnerable. As a result, the empirical findings show overall positive impacts, but the actual mechanism is dependent on the effective post-merger integration and strategic alignment.

The findings also underscore the importance of firm specific attributes in determining the outcomes of M&A. The R&D intensity consistently proves to be a powerful predictor of corporate value, indicating that greater innovation capability helps companies realize value from acquisitions. Moreover, firm size and growth opportunities have a positive impact on performance, suggesting that larger and more dynamic firms are better

equipped to realize M&A synergies. On the other hand, leverage has a negative effect, which indicates the financial risk of debt financed acquisitions.

As a whole, the results reinforce the RBV argument that M&A can increase corporate value if the acquired resources can be successfully integrated and the value of these resources can be leveraged for innovation, and efficiency. The study contributes to this theoretical view by showing its relevance in an emerging market pharmaceutical context where the institutional conditions, technological capabilities and maturity of the markets are quite distinct from those of the developed economies. The findings indicate that M&A might be an effective value creation mechanism, but depends on the capabilities of the firms, the characteristics of the deal and execution quality in the post-combination period.

6. Conclusions

The purpose of this study is to examine the impact of mergers and acquisitions (M&A) on the value of the companies in the pharmaceutical industry of Bangladesh from 2010 to 2024. The paper, based on the Resource-Based View (RBV), asks the questions whether M&As can lead to sustainable value creation by acquiring resources, enhancing innovation, or achieving operational synergies. The study introduces a panel data context and employs pooled OLS, fixed effects, random effects and quantile regression models to offer solid empirical evidence on the M&A and firm performance relationship. Results have shown that M&A activities have a positive statistically significant effect on corporate value as measured by Tobin's Q, ROA and ROE. The frequency of M&A (dummy variable) is linked to better firm performance, as is the magnitude of the M&A (deal size and acquisition scale). The results indicate that M&A is useful strategic instrument to improve the efficiency, adding capabilities and market valuation in the pharmaceutical industry of Bangladesh.

The study also yields the result that the effect of M&A varies across firms. The quantile regression analysis also indicates that the value effect of M&A is more pronounced for the upper quantiles of the distribution compared to the lower quantiles. This means that the value of M&A is largely dependent on the strength of the firms involved, managerial skills, and absorptive capacity. Furthermore, firm-specific variables like R&D intensity, firm size and growth opportunities have a significant positive impact on value creation, while leverage has a significant negative impact, indicating financial risk constraints. Theoretically, the study makes contributions by showing the link between resource acquisition via M&A and tangible increase of corporate value in an emerging market context of pharmaceuticals. It validates that value creation is not only a matter of acquiring the resources but also of how they are integrated and the strength of capabilities. This helps create a more nuanced view on M&A as a strategy and not something that is always value adding.

Managerially, the results have important implications for managers, investors, and policymakers. When it comes to M&A, corporate managers should focus on strategic fit, innovation alignment and integration planning; while investors should assess deal announcements as well as the firm's capabilities and their potential for post-merger execution. Policymakers might wish to enhance the regulatory environment to guarantee transparency, efficiency and long-term value creation in M&A deals in the pharmaceutical industry. The study suffers from some limitations. Secondary data is used in the analysis which restrict to capture qualitative aspects such as integration of culture, managerial decision making, organizational learning etc. Moreover, this study is limited to the listed pharmaceutical companies of Bangladesh and may not be generalised for other industries or other countries. Future studies could expand this research to include cross-border M&A cases, include corporate governance and institutional quality as moderating variables, and add innovation measures like patent creation and product development as performance measures.

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Declaration of using generative AI: During the preparation of this work the author(s) used ChatGPT in order to correct the grammatical errors. After using this tool/service, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the published article.

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References

- Bena, J., & Li, K. (2014). Corporate Innovations and Mergers and Acquisitions. *The Journal of Finance*, 69(5), 1923–1960. <https://doi.org/10.1111/jofi.12059>
- Bianconi, M., & Tan, C. M. (2019). Evaluating the instantaneous and medium-run impact of mergers and acquisitions on firm values. *International Review of Economics & Finance*, 59, 71–87. <https://doi.org/10.1016/j.iref.2018.08.005>
- Büssgen, M., & Stargardt, T. (2024). To merge or not to merge? The impact of mergers and acquisitions on corporate success in the pharmaceutical industry. *Managerial and Decision Economics*, 45(4), 2196–2209. <https://doi.org/10.1002/mde.4129>
- Chang, Y. B., & Cho, W. (2017). The Risk Implications of Mergers and Acquisitions with Information Technology Firms. *Journal of Management Information Systems*, 34(1), 232–267. <https://doi.org/10.1080/07421222.2017.1297641>
- Cho, B., & Moore, M. (2023). The effect of technology driven mergers and acquisitions on firm performance in the U.S. textile industry. *The Journal of The Textile Institute*, 114(9), 1347–1365. <https://doi.org/10.1080/00405000.2022.2124654>
- Cho, K., Han, S. H., Kim, H. J., & Kim, S. (2021). The valuation effects of corporate social responsibility on mergers and acquisitions: Evidence from U.S. target firms. *Corporate Social Responsibility and Environmental Management*, 28(1), 378–388. <https://doi.org/10.1002/csr.2055>
- Cloodt, M., Hagedoorn, J., & Van Kranenburg, H. (2006). Mergers and acquisitions: Their effect on the innovative performance of companies in high-tech industries. *Research Policy*, 35(5), 642–654. <https://doi.org/10.1016/j.respol.2006.02.007>
- Gigante, G., Cerri, A., & Leone, G. (2023). The impact of mergers and acquisitions on shareholders' value: An empirical study of pharmaceutical companies. *Managerial Finance*, 49(8), 1241–1264. <https://doi.org/10.1108/MF-01-2022-0015>
- Hagedoorn, J., & Duysters, G. (2002). The Effect of Mergers and Acquisitions on the Technological Performance of Companies in a High-tech Environment. *Technology Analysis & Strategic Management*, 14(1), 67–85. <https://doi.org/10.1080/09537320220125892>
- Kar, R. N., Bhasin, N., & Soni, A. (2021). Role of mergers and acquisitions on corporate performance: Emerging perspectives from Indian IT sector. *Transnational Corporations Review*, 13(3), 307–320. <https://doi.org/10.1080/19186444.2020.1832427>
- Li, X. (2024). The Impact of Technology Mergers and Acquisitions on Enterprise Sustainable Competitiveness. *Sustainability*, 16(6), 2291. <https://doi.org/10.3390/su16062291>
- Rossi, M., Yedidia Tarba, S., & Raviv, A. (2013). Mergers and acquisitions in the hightech industry: A literature review. *International Journal of Organizational Analysis*, 21(1), 66–82. <https://doi.org/10.1108/19348831311322542>
- Suo, L., Yang, K., & Ji, H. (2023). The Impact of Technological Mergers and Acquisitions on Enterprise Innovation: A Review. *Sustainability*, 15(17), 12883. <https://doi.org/10.3390/su151712883>
- Tarba, S. Y., Ahammad, M. F., Junni, P., Stokes, P., & Morag, O. (2019). The Impact of Organizational Culture Differences, Synergy Potential, and Autonomy Granted to the Acquired High-Tech Firms on the M&A Performance. *Group & Organization Management*, 44(3), 483–520. <https://doi.org/10.1177/1059601117703267>
- Zhu, L., Shen, J., & Yeerken, A. (2024). Impact analysis of mergers and acquisitions on the performance of China's new energy industries. *Energy Economics*, 129, 107189. <https://doi.org/10.1016/j.eneco.2023.107189>

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