



Do Technology-Driven Mergers and Acquisitions Enhance Firm Performance in the Digital Economy?

Bo Yi, Ziyuan Wang*

School of Accounting, Jilin University of Finance and Economics, Changchun, Jilin, China

*Corresponding author. Email: 3511223697@qq.com

Abstract. Mergers and acquisitions(M&A) are a pivotal strategy for enterprises to realize internationalization and enhance core competitiveness in today's highly competitive environment. This paper takes the high-premium acquisition deal of Activision Blizzard by Microsoft Corporation as a case study, adopts the event study method to analyze the impact of Microsoft's acquisition behavior in the gaming industry on the company's short-term performance from the perspective of stock price changes. At the same time, it explores the motivation of Microsoft's huge acquisition of Activision Blizzard, with the intention of breaking through the limitations of M&A performance research and constructing a framework for analyzing technological mergers and acquisitions in the era of digital economy. By summarizing the experience from this large-scale acquisition case and proposing corresponding optimization suggestions, it helps other enterprises gain beneficial inspirations when conducting mergers and acquisitions in related fields.

Keywords: Technology-Driven Mergers and Acquisitions; Event Study Method; Short-term Performance Exploration

1 Introduction

In the era of the digital economy, technology-based entrepreneurial firms are often pioneers in introducing new products or technologies to the market, the internal R&D of enterprises requires significant resources and capabilities, including not only development investment but also a high degree of uncertainty (Zahra, 1996)^[1]. In contrast, technology-driven M&A has emerged as a strategic tool for enterprises to rapidly acquire core resources and seize market opportunities (Cohen, 2012^[2]; Rossi et al., 2013^[3]). However, it is still controversial whether M&A can really improve corporate performance. Some studies have pointed out that technology M&A can improve corporate performance and innovation ability through resource complementarity and synergy (Meglio, 2009^[4]; Zhou et al., 2018^[5]). Entzarkheir and Moshiri(2021)^[6] conducted a study of mergers and acquisitions of US manufacturing firms between 1980 and 2003 and found that when firms' market share increased after an M&A, they also experienced a significant increase in their innovation capabilities. Lyu et al (2022)^[7] studied 378 sample firms and showed that cross-border technological knowledge search and cross-

border market knowledge search can effectively promote embedded knowledge co-creation and alliance knowledge creation in manufacturing firms, which directly or indirectly promotes the enhancement of firms' innovation performance. Hanif et al (2023)^[8] By quantifying the data of mergers and acquisitions initiated by 542 master merging firms from 1995 to 2015, it is found that the level of merger and acquisition ownership improves the innovation performance of merging and acquiring firms. But some scholars have found that the integration risk, cultural conflict, and insufficient technological absorption ability after M&A may lead to "technology traps". Entezarkheir and Moshiri (2018)^[9] after selecting the data of US firms to conduct an empirical study, it is concluded that technology mergers and acquisitions play a positive role in the enterprise only exists in a specific environment, and its impact on R & D investment and patent output is negative. Seru (2014)^[10] also pointed out that the R&D efficiency of the company's core technical staff declined instead of improving after the merger and acquisition, thus indirectly affecting the performance of the merged company.

We take Microsoft's \$68.7 billion acquisition of Activision Blizzard as a case, use the event study method to analyze short-term performance, and conduct a motivation analysis of this technology merger and acquisition to explore the impact of technology mergers and acquisitions on enterprise performance. The innovativeness of this study is reflected in, firstly, choosing the cutting-edge case of Microsoft's merger and acquisition of Activision Blizzard, focusing on the technological integration of the metaverse and the gaming industry, providing empirical references for the emerging fields in the digital economy. Second, it combines the social credit system and digital infrastructure environment to reveal the moderating effect of external institutional environment on the performance of technology M&A and expand the theory of "system-technology" synergy. Through the above analysis, this paper aims to provide both theoretical and practical insights into technology M&A in the era of digital economy, to answer the core proposition of "whether high-premium M&A creates value", and hopefully to provide new ideas for the strategic decision-making of global technology enterprises.

2 Empirical Results and Analyzation

2.1 Data Sources and Evaluation Indicators

This paper applies the event study method to explore the impact of Microsoft's merger and acquisition of Activision Blizzard's performance. The premise of the event study is that the market is efficient. Microsoft Corporation was listed on the NASDAQ stock exchange in the United States in March 1986 under the ticker symbol NASDAQ: MSFT. Meanwhile This article conducts a comparison and analysis based on the Nasdaq 100 index. The return of Microsoft's acquisition of Activision Blizzard is analyzed by analyzing the relationship between Microsoft's abnormal return and cumulative abnormal return.

2.2 Defining Events and Event Windows

The event window includes the specific event day, window period. The event date is the announcement date of Microsoft's acquisition of Activision Blizzard, which is January 18, 2022. This article defines the window period as ten days before and after January 18, 2022, recorded as [-10, 10], excluding the suspension day and holidays and it's from January 3 to February 1, totaling 20 trading periods (not including the the day of the time day). In this paper, the interval from 111 days before the event date to the first 11 days is used as the assessment period, the first 100 days of January 3, 2022 are selected, denoted as [-111, -11], with a total of 100 trading days in the interval.

2.3 Obtaining and Counting Research Samples

Based on Fig. 1, it can be visualized that over the 100-day estimation period, the trends of Microsoft stock return and the Nasdaq 100 Index return are basically consistent.

Given that the market model can link stock prices to market indices and thus measure the impact of a specific event more effectively, this paper decides to use the model as a valuation benchmark. The market model formula is shown below.

$$R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon \tag{1}$$

Through linear regression analysis, a market model describing the relationship between Microsoft's individual stock returns and the Nasdaq 100 Index returns can be obtained, which is $R_{it} = 0.0008 + 1.0186R_{mt}$, $R^2 = 0.6659$.

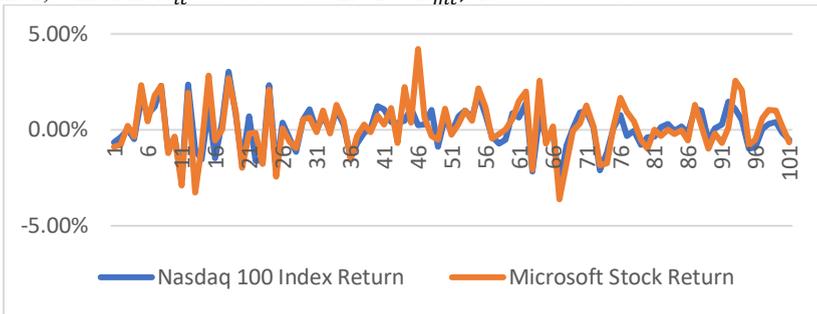


Fig. 1. Trends for the Estimated Period

2.4 Calculation of Abnormal Returns and Cumulative Abnormal Returns

Table 1. Window Period AR and CAR

Window Period	AR	CAR	Window Period	AR	CAR
t=10	-1.40%	-1.40%	t=-1	0.93%	3.45%
t=9	-2.55%	-3.95%	t=-2	-1.69%	1.76%
t=8	-0.55%	-4.50%	t=-3	0.57%	2.33%

t=7	2.19%	-2.31%	t=-4	-1.35%	0.99%
t=6	2.60%	0.29%	t=-5	-0.15%	0.83%
t=5	-0.21%	0.07%	t=-6	1.09%	1.93%
t=4	-0.47%	-0.40%	t=-7	-0.83%	1.10%
t=3	0.87%	0.48%	t=-8	-0.74%	0.35%
t=2	0.71%	1.19%	t=-9	-0.41%	-0.06%
t=1	1.23%	2.42%	t=-10	-1.68%	-1.74%
t=0	0.11%	2.53%			

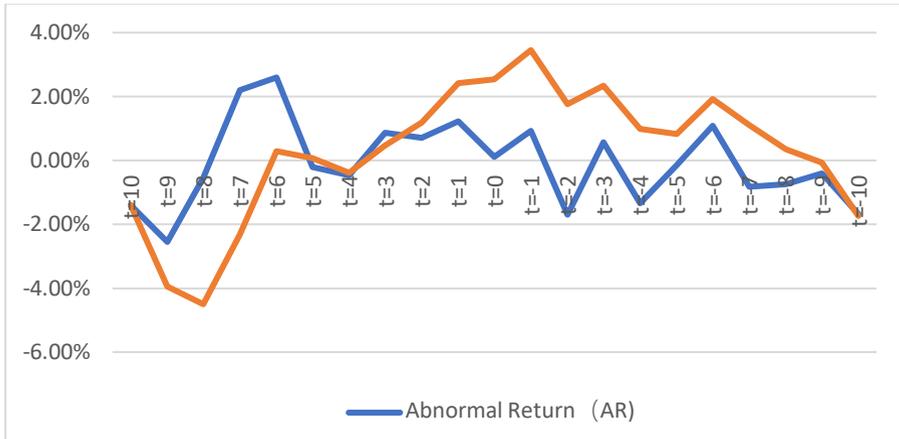


Fig. 2. Changes in AR and CAR During the Window Period

From Table 1 and Fig. 2, it can be seen that the fluctuation of the abnormal return rate generally remained around the zero value in the first 10 days of trading, while the cumulative excess return basically shows a slow upward trend. Cumulative excess return is negative for 2 of the first 10 days, namely the first two days, and the slow upward trend may be due to some investors receiving insider information about the M&A in advance, which shows that some optimists dominate in the market at this time. After the announcement date, the excess return and cumulative excess return turned negative on the fourth day. By the tenth day after the announcement, both showed an overall decreasing trend. For the cumulative excess return, there are five negative days and five positive days. The lowest point is at t=8, reaching -4.50%. This might be due to regulatory risks and strict anti-monopoly mechanisms. In the market view this merger is risky, some people think that the merger will not be successful, the reason may be because of the huge amount of the second merger.

According to the theory of risk arbitrage, it is also possible to analyze whether the market is bullish on the merger from Activision Blizzard's point of view, as shown in Fig. 3.

As you can see prior to January 18th, 2022, Activision Blizzard's stock price was basically around 65. And on January 18th, after Microsoft announced the acquisition of Activision Blizzard, the share price went straight up to \$8,231, averaging around \$80 dollars. Compared to \$65 it went up \$15, which is still \$15 short of Microsoft's closing

price of \$95. Due to Sony's opposition to the merger and acquisition, some people also did not support the merger. The ratio of those who support Microsoft and those who have a negative attitude towards Microsoft in the market was about 1:1.

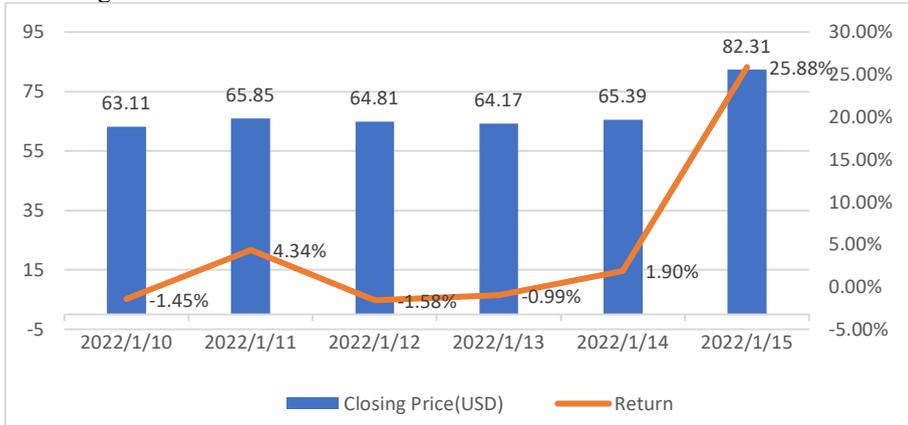


Fig. 3. Activision Blizzard Share Price Per Share on the Eve of Acquisition

3 Conclusion

Therefore, this paper analyzes this significant merger and acquisition. We introduce the background of the merger and acquisition of Microsoft and Activision Blizzard as well as the motivation of Microsoft's merger and acquisition, analyze the short-term performance of the case through the event study method. It is found that the cumulative excess return fluctuates up and down during the window period. The cumulative excess return continues to go down after the announcement date, reflecting investors' doubts and pessimistic expectations of the merger. The announcement of Microsoft's acquisition of Activision Blizzard triggers negative short-term reactions in the market and suggests that the market considers this merger to be risky. On the other hand, according to the risk arbitrage theory, the market's expectations for this merger and acquisition event are in a balanced state, and Activision Blizzard's share price jumped 5% in July 2023 after the US court rejected the FTC's request, and further approached \$95 after the UK CMA's compromise in September of the same year, which indicated that the market was getting more and more optimistic about the deal. The essence of the phenomenon of Activision Blizzard's stock price is the market's combined pricing of the probability of M&A success, risk premium and information asymmetry. Supporters bet on the completion of the transaction and synergies, while opponents are wary of regulatory and integration risks. The two sides' game forms an equilibrium price.

After the acquisition, Microsoft also has the following problems, such as internal management and cultural conflict, insufficient IP development and innovation, as well as regulatory risks and market competition intensifying. Currently, the most critical and urgent problems are related to information asymmetry between the two companies involved in the merger and the low efficiency of technology integration.

At the same time, Microsoft must take effective measures to solve the problems that still exist after the acquisition to realize the win-win goal. The solution is as follows. For example, set up an independent Entrepreneurship Committee to reduce Microsoft headquarters' intervention, or set up an innovation fund to support project development. It can also proactively divest non-core assets to prevent antitrust investigations. Meanwhile, in response to the information asymmetry between the two parties involved in the merger and acquisition, and the low efficiency of technology integration, the social credit system can be adjusted, or the digital infrastructure environment can be adjusted. A perfect social credit system can collect and share enterprise credit information, including technical strength, intellectual property status, contract performance records, etc. So that the M&A parties can more comprehensively and accurately understand the target enterprise's information and reduce the degree of information asymmetry. Secondly, it can regulate the digital infrastructure environment, such as smart grids and other digital infrastructures can enable M&A enterprises to realize the rapid digestion, absorption and re-innovation of acquired technologies with the help of advanced information technologies in the digital infrastructure environment.

Despite this merger and acquisition event may carry some risks in the short term, Microsoft's Q4 2024 financial report indicates that Xbox's content and service revenue increased by 61%, with the majority of this growth (58 percentage points) coming from Activision Blizzard. Microsoft's gaming business revenue increased by 44% year-on-year. Among the overall 44% growth, Activision contributed 48 percentage points of the increase. The completion of this transaction enables Microsoft to possess rich and high-quality IP resources, integrating games, new technologies, communities and business models. It can also promote the development of the metaverse. Regarding 2025, Newzoo and IDC predict that the global game market size will grow to \$250 billion. Microsoft's gaming business (including Activision Blizzard) is expected to maintain double-digit growth in 2025. Goldman Sachs and Morgan Stanley predict that Microsoft's gaming business revenue will increase by approximately 0% - 25% in 2025, with Activision Blizzard contributing more than 60% of the growth.

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