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Are Mergers and Acquisitions Boosting Company Performance in the Technology, Media and Telecommunications Sector?

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Abstract

TMT (Technology, Media and Telecommunications) companies account for the largest number of M&A deals worldwide. This stems from their need to constantly evolve due to their high dependence on technological change. Participation in M&As is one of the fastest and most strategically promising ways to accelerate product development, gain access to new technologies, and increase competitive advantage. More than 60% of M&As are unsuccessful and do not contribute to company value creation. Will this conclusion hold for TMT companies, characterized on the one hand by rapid development and high growth rates, and on the other hand by high risks? This paper aims to assess the impact of M&As on the operating performance and value of TMT companies. In contrast to previous literature, it evaluates the M&A performance of TMT companies over the long term by applying an accounting studies logic and an economic profit model. It also contributes to identifying the specific factors that influence the success of TMT M&As. Analyzing a sample of 203 TMT M&As completed between 2003 and 2018, we observe a positive impact on the operating performance (2.2% increase in EBITDA/Sales) and value (+$16.3m in Economic profit) of the combined companies. M&As paid for in stock outperform those paid for in cash, confirming the investment opportunity theory. Domestic M&As are the most efficient due to cultural similarities. We also find a negative impact of the acquirer's R&D intensity on post-M&A performance due to the technology substitution effect. Our findings will be useful to managers and boards for deciding whether to participate in TMT M&As and in understanding the factors that influence the success of these deals.

Keywords: technological deals, operating performance, value creation, economic profit

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Introduction

The TMT sector is of particular interest to investors due to its exceptionally rapid growth, accounting for around 20.86% of global deal values by mid-2024 (Appendix 1). In view of the current uncertainty and the rapid evolution of technologies, TMT companies are striving to capitalize on different innovations, including blockchain, artificial intelligence, cloud technologies and robotic automation processes, integrating them into ecosystems or platforms in order to quickly adapt to changing realities and customer needs. TMT companies must evolve rapidly to maintain a competitive advantage and meet the needs of society. Participation in M&As enables them to accelerate R&D processes and innovation activities, further the acquisition of knowledge and skills, expand their customer base, and develop and implement technologies and innovations [1].

The M&A ambitions of TMT companies tend to be high yet are rarely realized. According to the PWC 2020 M&A Integration Survey[1], only 13% of TMT respondents confirmed that they had achieved their M&A objectives.

The issue of M&A performance is one of the key issues discussed in the current academic literature. However, there is still no consensus among researchers and practitioners on this issue. Companies in developed or emerging markets either experience negative or no gains from acquisitions [2–9] or increase their performance through M&As [10– 13].

Despite the impressive growth trend for acquisitions to be undertaken by companies from the TMT sector, there are no academic empirical papers that examine the performance of such M&As. Most M&A literature tends to focus on the effects of deals, without reference to a specific industry or sector [14; 15]. At the same time, we can observe many studies on the performance of high-tech deals, the results of which also inconsistent [16]. However, we cannot extrapolate results obtained on high-tech samples to the TMT sector as TMT companies focus on a broader spectrum of technologies that enable communications, media and entertainment. In addition, existing studies [17–19] based on high-tech samples typically test the performance of M&As in short-run, based on the event study analysis, suggesting little evidence about the consequence of M&As on firms' operating performance and say nothing about value creation through M&As.

As TMT companies have many specific characteristics that can affect deal performance, investors need to understand the key features of such acquisitions. A separate analysis of the M&As initiated by TMT firms is important because these companies, on the one hand, tend to be 'growth companies', with a high proportion of R&D expenses, specializing in new technologies and constantly engaged in a technological competition with other players, but on the other hand, are usually characterized by a higher level of risk due to the complexity of technology integration and information asymmetry regarding the technologies and innovations being acquired, which makes it difficult to correctly assess the target company.

By addressing an identified gap in the existing M&A literature, this paper has the potential to contribute to the understanding of the performance of M&As in the TMT sector. We also contribute by identifying the specific factors that influence the success of TMT M&As. Our third contribution relates to the M&A performance measurement in the long run. There are two widely used approaches employed by researchers to measure long-term performance of M&As: accounting studies and long-term window event studies [20]. While examining long-term market reactions to M&As is a popular approach, the former allows the measurement of the post-acquisition performance directly. Nevertheless, the analysis of commonly used book value measures (such as ROE, ROA, EBITDA margins, OCF to market value of assets) of merged companies before and after acquisitions shows us how the operating performance has changed but does not provide information about the impact of M&As on company value. There are only a few studies examining the impact of M&As on corporate value over the long run [3; 21–25]. In this paper, we employ two models – economic profit model and standard accounting model – to assess the performance of M&As in the TMT sector and compare the results.

The study is organized as follows. First, we present literature review and formulate the hypotheses. Next, we describe our methodology and data. Fourth section shows the empirical results, while fifth section sets out the conclusions.

Literature review and Hypotheses

Participating in M&As is one of the most important strategic ways for TMT companies to increase their competitive advantages and realize all possible synergies. One of the key M&A objectives is to improve operating performance. This post-M&A improvement can be effectuated through economies of scale, a more efficient allocation of financial resources, and R&D relocation [26]. In terms of value, experts assert that TMT companies generate more economic profit than any other sector of the global economy[2]. We therefore expect post-M&A benefits and opportunities for TMT companies seeking to keep pace with technological developments to outweigh the risks:

H1. M&As initiated by TMT companies have a positive impact on the operating performance of the combined companies.

H2. M&As initiated by TMT companies have a positive impact on the value of the combined companies.

In addition to testing the M&A performance of TMT firms, we put forward several hypotheses to identify the determinants of such performance, taking into account the

[1] PWC's 2020 M&A Integration Survey. URL: http://sc2la.com/ma-integration-survey.html

[2] Resilience in TMT: Winning in downturns. URL: https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/resilience-in-tmt-winning-in-downturns

features of the TMT sector. We then assess the impact of these determinants on post-M&A operating performance and value.

Method of payment

Managers tend to pay cash (shares) when they believe the stock is undervalued (overvalued). Thus, paying cash may indicate managers' expectations that post-transaction performance will be higher. Free cash flow theory argues that deals paid in cash have higher performance because debt financing reduces agency problem and controls managers' efficiency. In competing bids, a cash offer enables faster deal closures, capturing synergies [7]. On the other hand, when deciding on the payment method, a potential buyer considers other investment opportunities. If a company has a sufficient number of profitable investment projects, it will be more inclined to use shares, which will save cash and avoid increasing debt (Investment Opportunity Theory) [27; 28]. Equity transactions allow a company to diversify risks among shareholders and mitigate the problem of asymmetric information, especially in the case of markets with imperfect information and risky transactions.

M&As initiated by TMT companies are associated with high risks due to the complex integration of technologies and information asymmetry regarding the technologies and innovations being acquired. Payment in shares allows the risk to be shared with the acquirer's shareholders. Therefore, we expect TMT stock-financed M&As to be preferred:

H3. Stock-paid M&As initiated by TMT companies have a positive impact on the performance of the combined companies.

Cross-border vs domestic M&As

Entering new markets is one of the key targets of M&As for TMT companies With increasing globalization, the number of cross-border M&As in all sectors has grown significantly [29]. Participation in such M&As is driven by the desire to increase competitiveness by acquiring new customers and expanding resources [30]. Entering new markets also enhances R&D capabilities [31], which is particularly important for TMT firms. Acquiring foreign firms can generate different tax and exchange rate benefits as well [32]. However, the expected synergies may not be realized due to institutional and cultural characteristics. For the TMT sector, talent retention and cultural alignment are particularly important. Focusing on the acquired assets and talent after the deal helps to improve the performance of the combined companies. However, cultural differences can lead to the complexity of post-M&A management due to a high degree of information asymmetry. As a result, we expect the costs and risks associated with cross-border M&As to outweigh the expected synergy benefits for TMT companies:

H4. Domestic M&As initiated by TMT companies have a positive impact on the performance of the combined companies.

Industry relatedness of M&A participants

More effective integration is also facilitated by a similarity of business models. The greater the similarities between how people involved in the deal work and make money, the higher the likelihood of synergy and value creation. As the TMT sector includes a broad variety of industries, the industry relatedness of M&A participants is important. A diversified M&A can potentially engender high information asymmetry, creating potential agency conflicts for managers and shareholders [33]. Such deals may also lead to problems within the firm [34] and incite department heads to try to obtain rent [35]. Managers also have to study the business processes of another company [1]. All of this can have a negative impact on post-M&A performance.

H5. Focused deals initiated by TMT companies have a positive impact on the performance of the combined companies.

Acquirer's pre-M&A cash reserves

Researchers and practitioners argue that TMT companies usually have sufficient cash reserves that can be used to finance mergers and acquisitions. In a period of rising interest rates, borrowing becomes less profitable. As a result, investors may divert funds away from riskier investment opportunities, making it more difficult to finance M&As. At the same time, it has been argued that the presence of large cash reserves leads companies to engage in value-destroying M&As [36], leading agency costs to increase and M&A performance to decrease [7].

H6. The acquirer's cash reserves before an M&A initiated by TMT companies have a negative impact on the performance of the combined companies.

Acquirer's pre-M&A R&D intensity

For technology companies, R&D investment is a key driver of development [37]. TMT acquirers are typically interested in strengthening their research capabilities [38]. However, high R&D costs are associated with a higher degree of uncertainty [19]. Several studies have emphasized their negative impact on post-M&A performance [39; 40]. Some authors point to a substitution effect, whereby the acquirer's R&D costs negatively affect overall performance [1; 41; 42].

H7. The acquirer's R&D intensity before an M&A initiated by TMT companies has a negative impact on the performance of the combined companies.

Acquirer's pre-M&A CAPEX intensity

Capital expenditure is considered a proxy for technological development [10; 19]. CAPEX is used to measure changes in the performance and competitiveness of technology companies upgrading their technological assets [19; 43]. CAPEX intensity also serves as an indirect indicator of innovation activity [44].

H8. The acquirer's CAPEX intensity before an M&A initiated by TMT companies has a positive impact on the performance of the combined companies.

Methodology

This section details the methodology used in this study. First, we present the methodology of accounting studies. Then we explain the concept of economic profit. Lastly, we present our regression analysis on cross-sectional data, including the description of dependent, independent and control variables.

Operating performance: change and intercept models

In the first step, we apply the change model based on previous research [2; 10; 24; 37]. The essence of this model is to compare the medians of operating performance measures before and after the deal. The TMT sector includes a broad range of industries. Therefore, we make industry adjustments [2–4; 10; 45] based on the industry median benchmark. The Wilcoxon signed rank test is used to verify the significance of the results obtained. We use *EBITDA/Sales*, *(EBITDA-ΔWC)/Sales* and *EBITDA/Total assets* to measure operating performance. For *EBITDA/Total Assets* we consider the book value of assets [4]. We use these expressions insofar as cash-flow-based measures of operating performance are preferable.

We analyze the following time window: three years before and three years after the deal is closed [–3; +3]. Acquirers need several years to fully integrate targets. A three-year period increases the likelihood that post-M&A returns and synergies will be reflected in the combined company's financials [46]. Similarly, McKinsey and PWC experts assert that, for TMT M&As, it is necessary to analyze the impact at least two years after the deal[3]. Existing research also suggests that potential synergies, if any, are realized within three years of the deal.

The intercept model is used to check the robustness of the results [2–4; 10; 24; 45].

We use the following regression:

$$Median\ performance\ indicator_{post,i} = \\ = \alpha + \beta \times Median\ performance\ indicator_{pre,i} + \varepsilon_i, \quad (1)$$

where $Median\ performance\ indicator_{post/pre,i}$ is the median of the post/pre-deal performance measure (pre-deal includes both acquirer and target results).

The intercept (α) reflects the impact of M&As. For the M&A to have an impact, α must be greater than zero. The slope (β) indicates the relationship between the pre- and post-deal performance measures.

Value-based performance: economic profit

In the second step, we assess the impact of M&As on the *Economic profit* (*EP*) measure. In line with previous research, we calculate the combined *Economic profit* (*EP*) before the deal as follows:

$$EP_{combined,t} = EP_{target,t} + EP_{acquirer,t}, \quad (2)$$

where $EP_{(acquirers/target,t)}$ is the target's/acquirer's *EP* during period *t*;

$$EP_{acquirer/target,t} = CE_{t-1} \times (ROCE_t - WACC_t), \quad (3)$$

where CE_{t-1} is the target's/acquirer's *Capital Employed* during period *t-1*;

$ROCE_t$ is the target's/acquirer's *Return on Capital Employed* during period *t*;

$WACC_t$ is the target's/acquirer's *Weighted Average Cost of Capital* during period *t* [3; 24].

We also adjust this indicator for the industry to exclude industry trends:

$$EP_{i,t}^{ind} = EP_{i,t} - \left(\frac{Industry\ EP_t}{Industry\ CE_{t-1}}\right) \times CE_{i,t-1}, \quad (4)$$

where $EP_{i,t}$ is the acquirer's/target's *EP* during period *t*;

$CE_{i,t-1}$ is the acquirer's/target's *Capital Employed* during period *t-1*;

$Industry\ EP_t$ is the industry average *Economic profit* during period *t*;

$$\frac{Industry\ EP_t}{Industry\ CE_{t-1}}$$

is the industry average economic profit per dollar of capital in a specific industry during period *t*;

$$\left(\frac{Industry\ EP_t}{Industry\ CE_{t-1}}\right) \times CE_{i,t-1}$$

is the industry average *EP* for a company of the same size during period *t-1* [3].

Cross-sectional regression analysis of post-M&A performance

In the last step, we apply a multivariate OLS regression to cross-sectional data to assess the impact of the identified determinants on post-M&A performance:

$$Median\ (Performance\ indicator)_{i,t}^{after} = \\ = \alpha + \beta_1 \times Median\left(Performance\ indicator\right)_{combined\ i,t}^{before} + \\ + \beta_2 \times MOP_i + \beta_3 \times DealNature_i + \beta_4 \times INDR_i + \\ + \beta_5 \times RDIntA_i + \beta_6 \times CashResA_i + \beta_7 \times CountryA_i + \\ + \beta_8 \times Relative\ sizeT_i + \beta_9 \times LevA_i + \varepsilon_i, \quad (5)$$

where $Median\left(Performance\ indicator\right)_{combined\ i,t}^{before}$

is the combined performance indicator of deal participants during period *t*;

MOP_i is the method of payment (1 – if the M&A deal was paid in stock, 0 – if the M&As was paid in cash or (cash + stock));

$DealNature_i$ is the nature of the deal (1 – if the deal is cross-border, 0 – if the deal is domestic);

[3] How can TMT companies supercharge go-to-market payoff from acquisitions? URL: https://www.pwc.com/us/en/industries/tmt/library/ma-integration.html

$INDR_i$ is the industry relatedness of the deal participants (1 – if acquirer and target belong to the sameindustry in TMT sector, 0 – if acquirer and target belong to different industries);

$RDIntA_i$ is the acquirer's R&D intensity (*R&D expenditures/Sales A* one year before the M&A [19];

$CashResA_i$ is the acquirer's cash reserves ((*Cash and cash equivalents A*)/*Total assets A* one year before deal completion [47]);

$CountryA_i$ is the nature of the acquirer's country of incorporation (1 – if the acquirer's country of incorporation is developed, 0 – if the acquirer's country of incorporation is emerging);

$Relative\,sizeT_i$ is the target's relative size (Ln (*Total assets T/Total assets A*));

$LevA_i$ is the acquirer's leverage (*Total debt A/Total asset A* one year before the M&A [46; 47]).

Data

We collected M&A data from the Thomson Reuters Eikon dataset, covering the period from January 2003 to December 2018 (global markets). This period is explained by the fact that we analyzed the companies 3 years before and 3 years after the deal. The period 2003–2018 for M&As and 2000–2021 for financials is the widest and most accessible. We applied the following criteria:

- Only completed M&As;
- Deal value: at least USD 10 million;
- Only public acquirers and targets;
- Serial deals excluded;
- Acquired stake:
  ≥ 50% +1 share [4; 10; 24; 47];
- Available financial data for both the acquirer and the target.

We obtained 203 M&As for a total amount of USD 142 898.9 million. Such a sample size is typical for this type of study due to the unavailability of pre-deal financial data for the target company [4; 10; 24; 47]. For the financial data needed to calculate the *Economic profit* (*EP*), we used the Bloomberg database.

The distribution of TMT acquirers by industry is shown in Table 1.

Table 1. Distribution of TMT acquirers by industry

	Number of deals	Percentage in TMT, %	Deal value (USD million)
Technology group			
Computers & Peripherals	22	10.84	7037.5
E-commerce / B2B	3	1.48	553.04
Electronics	10	4.93	4647.25
Internet Software & Services	12	5.91	8405.69
IT Consulting & Services	29	14.29	9799.29
Semiconductors	36	17.73	23 294.84
Software	40	19.70	6665.06
Other high technology	1	4.92	541.82
Total	153	75.37	62 944.49
Media group			
Broadcasting	11	5.42	5166.5
Cable	7	3.45	24 623.5
Advertising & Marketing	2	0.99	1607
Total	20	9.85	31 397
Telecommunications			
Telecommunications Equipment	10	4.93	7631.8
Telecommunications Services	11	5.42	32 736.3
Space and Satellites	1	0.49	731
Wireless	7	3.45	7271.4
Other telecom	1	4.92%	186.9
Total	30	14.78	48 557.4
Number of deals with acquirers from TMT	**203**		**142 898.9**

Most acquirers in our sample belong to the Technology group (153, or 75.37%). We excluded many serial deals with media companies. As a result, the number of M&As involving acquirers from the Media group was only 20, or 9.85%. The number of M&As involving acquirers from the Telecommunications group was 30, or 14.78%.

Table 2 shows the distribution of acquirers by country.

Table 2. Sample description: distribution by the acquirer's country of incorporation

Country	Number of deals	Percentage in total sample, %	Deal value (USD million)	Percentage in total value, %
Argentina	1	0.49	–	–
Australia	8	3.94	2 514.6	1.76
Austria	1	0.49	29.6	0.02
Brazil	3	1.48	5 972.4	4.18
Canada	8	3.94	3 942	2.76%
China (Mainland)	4	1.97	3 674.9	2.57
France	5	2.46	7 572.8	5.30
Germany	6	2.96	263	0.18
Hong Kong	4	1.97	25 697.4	17.98
India	2	0.99	1 035.4	0.72
Indonesia	1	0.49	1 155.6	0.81
Israel	3	1.48	521.3	0.36
Japan	17	8.37	5 659.6	3.96
Kazakhstan	1	0.49	445.9	0.31
Luxembourg	1	0.49	731	0.51
Malaysia	1	0.49	26	0.02
Netherlands	1	0.49	754.5	0.53
Norway	1	0.49	63.1	0.04
Poland	1	0.49	20.9	0.01
Singapore	2	0.99	1 483.6	1.04
South Africa	1	0.49	248.7	0.17
South Korea	7	3.45	5 379.6	3.76
Spain	1	0.49	337.9	0.24
Sweden	4	1.97	126.4	0.09
Switzerland	2	0.99	378.2	0.26
Taiwan	14	6.90	4116.9	2.88
Thailand	2	0.99	1 451.4	1.02
United Kingdom	15	7.39	9 634.1	6.74
United States	86	42.36	60 108.1	42.06
Total	**203**	**100**	**142 898.9**	**100**

In our sample, the greatest number of acquirers in M&As came from the United States (86, or 42.36%). In comparison, relatively few M&As were initiated by Japanese acquirers (17, or 8.37%). The United States was also the largest player in terms of value (USD 60 108.1 million).

Empirical Results

In this section we examine the impact of M&As on the performance of TMT companies. First, we represent the impact of a TMT M&A on the operating performance of the combined company. Next, we assess the changes in the post-M&A value of the company, as measured by the economic profit indicator. Finally, we test the identified determinants of post-M&A performance.

Post-M&A operating performance and company value

Analyzing the raw operating performance indicators, we find positive changes in the medians of *EBITDA/Sales* (+1.91%), (*EBITDA-ΔWC*)*/Sales* (+2.05%) and *EBITDA/Total assets* (+0.8%) three years after deal completion. As we assume that these changes may be related to industry trends, we proceed to analyze industry-adjusted measures.

Appendix 3 shows the results of the changes in the industry-adjusted post-M&A operating performance of TMT companies and their value as measured by the economic profit indicator.

We found statistically significant improvements in the median of operating performance measures: +1.93 and +2.20% for *EBITDA/Sales* and +1.59 and +2.02% for (*EBITDA-ΔWC*)*/Sales* two and three years after the deal, respectively, and +0.80% for *EBITDA/Total assets* three years after the deal. A robustness check performed using an *intercept model* showed positive changes in the *EBITDA/Sales* indicator three years after the deal. We can therefore conclude that changes in cash-flow-based operating indicators are not driven by industry trends, confirming the positive impact of TMT-initiated M&As on the performance of the combined companies. On average, TMT acquirers are able to realize planned synergies from M&As. This result supports our initial arguments, showing that participation in M&As is one of the best ways for TMT companies to achieve cost synergies. This result is in line with Lok et al. [18], who find an improvement in post-M&A operating performance for high-tech firms (+0.86%), yet inconsistent with Lys and Vincent [17].

In terms of value, we see negative median values for the *Economic profit* (*EP*) indicator before M&As. This shows that not all companies in our sample are effective in terms of value. However, most of them are able to generate a profit based on their operating activities. At the same time, the economic profit is positive for 63.86% of the TMT companies in our sample three years after the deal. Based on industry-adjusted results, we find a positive difference in *Economic profit* (*EP*) for our sample (+$16.3 million). This supports our findings based on the examination of changes in the selected operating performance indicators in the previous step of our analysis. The results obtained are inconsistent with most existing studies [3; 21; 22; 24; 25; 48]. This can be explained by the lack of similar studies at the sector and industry levels. There are no studies in the literature which examine the impact of M&As on the value of the combined companies, as measured by the *Economic profit* (*EP*) indicator, for a sample of M&As involving technology companies. Our results support our first and second hypotheses.

Next, we divided our sample into subsamples according to the factors set forth in the hypotheses.

Method of payment

We observe statistically significant positive changes in the industry-adjusted medians of the *EBITDA/Sales* (+1.57%), *EBITDA/Total assets* (+0.74%) and *Economic profit* (+USD 38.5 million) three years after stock-paid M&As (Appendix 4).

Our results are consistent with the argument that paying in stock allows the acquirer's shareholders to share the risk, supporting our hypothesis about the positive impact of M&As paid in stock on the performance of the combined companies. This is in line with the "Theory of Investment Opportunities" and the findings of Grigorieva and Petrunina [24] yet inconsistent with Martynova et al. [4]. Thus, we confirm our third hypothesis.

Cross-border vs domestic M&As

Our results show statistically significant positive changes in the industry-adjusted median of the *EBITDA/Sales* (+2.33%), *EBITDA/Total assets* (+0.93%) and the *Economic profit* (+USD 17.8 million) of domestic M&As initiated by TMT companies (Appendix 5).

We confirm our fourth hypothesis that domestic M&As for TMT companies have a positive impact on the performance of the combined companies. Our results are consistent with Moeller *et al.* [49; 50], Gomes *et al.* [51], and Grigorieva and Petrunina [24] yet inconsistent with Kang [32]. The costs and risks associated with cross-border M&As for TMT acquirers exceed the benefits from synergies.

Determinants of post-M&A performance

In the third step of our analysis, we identify the determinants of post-M&A performance for combined companies. We construct multivariate regressions for all selected operating performance indicators for the periods [−1; +1], [−2; +2], and [−3; +3] (Table 3).

Table 3. Determinants of post-M&A operating performance (industry-adjusted)

	EBITDA/Sales			(EBITDA-ΔWC)/Sales			EBITDA/Total assets		
	(3)	(2)	(1)	(3)	(2)	(1)	(3)	(2)	(1)
Slope	0.195***	0.065***	0.028***	0.226***	–0.135*	–0.059***	0.368***	0.298***	0.14*
	(0.066)	(0.022)	(0.008)	(0.057)	(0.069)	(0.021)	(0.104)	(0.096)	(0.084)
MOP	0.061**	0.097***	0.097**	0.116***	0.099**	0.045	0.031**	0.042**	0.07**
	(0.026)	(0.032)	(0.048)	(0.041)	(0.040)	(0.058)	(0.014)	(0.019)	(0.029)
Country	0.029	0.001	–0.014	0.006	–0.092	–0.139*	0.01	-0.009	-0.011
	(0.066)	(0.078)	(0.062)	(0.100)	(0.098)	(0.081)	(0.048)	(0.044)	(0.044)
DealNature	–0.049	–0.049	–0.029	–0.101**	–0.048	–0.01	-0.029	-0.033	-0.029
	(0.033)	(0.035)	(0.048)	(0.044)	(0.044)	(0.078)	(0.018)	(0.020)	(0.027)
INDRel	0.107***	0.137***	0.122**	0.122**	0.134**	0.066	0.039*	0.052*	0.043
	(0.034)	(0.039)	(0.059)	(0.051)	(0.055)	(0.070)	(0.021)	(0.029)	(0.044)
LevA	–0.12	–0.12	–0.215	–0.086	–0.03	–0.009	-0.077	-0.03	-0.097
	(0.112)	(0.109)	(0.193)	(0.139)	(0.157)	(0.238)	(0.056)	(0.077)	(0.113)
CashResA	0.018	–0.033	–0.075	–0.016	–0.1	–0.129	-0.008	-0.045	-0.075
	(0.081)	(0.102)	(0.125)	(0.130)	(0.150)	(0.219)	(0.056)	(0.090)	(0.077)
RelSizeT	–0.006	–0.001	0.005	–0.008	–0.006	–0.013	0.002	0.002	0.005
	(0.004)	(0.009)	(0.005)	(0.012)	(0.008)	(0.009)	(0.002)	(0.002)	(0.004)
R&DintA	–0.251	–0.36***	–0.46***	–0.082	–0.867**	–0.62**	-0.12**	-0.075	-0.167**
	(0.199)	(0.111)	(0.102)	(0.187)	(0.374)	(0.279)	(0.047)	(0.057)	(0.066)
CAPEXIntA	0.376***	0.457***	0.631***	0.369*	0.26	0.199	0.12	0.126	0.228**
	(0.140)	(0.173)	(0.202)	(0.221)	(0.208)	(0.263)	(0.084)	(0.086)	(0.114)
Constant	–0.09	–0.102	–0.079	–0.112	0.041	0.116	-0.026	-0.035	-0.034
	(0.077)	(0.090)	(0.113)	(0.116)	(0.128)	(0.140)	(0.058)	(0.062)	(0.079)
R^2	0.598	0.454	0.296	0.463	0.372	0.187	0.481	0.328	0.194
F-statistics	13.356***	8.747***	18.884***	8.951***	3.892***	3.940***	7.236***	5.592***	5.029***
VIF	1.42	1.392	1.313	1.300	1.375	1.299	1.320	1.337	1.324

*** P<0.01, ** P<0.05, * P<0.1(Wilcoxon signed rank test is used).

Source: authors' calculations.

From Table 3, we see that 8 out of 9 regressions demonstrate a positive and statistically significant impact of payment method on post-M&A performance. We have already demonstrated this for M&As paid by stock, and so the results are in line both with our initial hypothesis and with our findings in the previous two steps of the analysis.

In 7 out of 9 models, we find a positive and statistically significant impact of industry relatedness on post-M&A performance. These results support our initial arguments about the effectiveness of M&As involving participants with similar business models. Such M&As facilitate the process of integration and the realization of future synergies and value. Our results are consistent with Yook [3], Grigorieva and Petrunina [24] and Lim and Lee [52], yet inconsistent with Ghosh [2], Powell and Stark [11] and Martynova et al. [4].

In 6 out of 9 models, we see a statistically significant negative impact of the acquirer's R&D intensity on the performance of the combined company. These results support our initial argument that high R&D expenditures are associated with a higher degree of uncertainty and that the substitution effect leads to a negative influence of the acquirer's R&D costs on overall performance. Thus, for a company that actively implements R&D on its own, it is more difficult to integrate and use the target company's technologies, while acquired knowledge can potentially substitute for existing knowledge. These results are consistent with Hitt et al. [1], Blonigen and Taylor [41], Cassiman et al. [42], Dranev and Ochirova [19], and inconsistent with Chan et al. [39] and Lin and Lee [40].

In 5 out of 9 models, we see a positive statistically significant influence of the acquirer's CAPEX intensity on the performance of the combined company. Our results are consistent with our initial arguments and previous studies that identified CAPEX as an indirect indicator of technological development [10; 19]. We did not find any statistically significant impact of the control variables on performance during the post-M&A period. Thus, our initial arguments that companies with a high proportion of debt are usually controlled by financial institutions and insured against unprofitable M&As are not supported by our sample. These results are in line with [42; 45].

The relative size of the target also has no impact on the performance of the combined companies. This can be explained by the specifics of M&As with TMT companies and their pre-deal strategic plans. TMT companies have different integration processes than other sectors. The initiation of M&As is meticulously planned by TMT acquirers. The focus on success leads to a careful selection of the target company, whose size would guarantee a win-out in any case. These results contradict Alexandridis et al. [53] and Lok et al. [18], who find a negative impact of the relative target size on post-M&A performance.

Conclusion

The high level of activity in the TMT sector is driven by the rapid development of digital technologies and innovation, inciting companies to maintain their competitive advantage and increase their influence and relevance in global markets. Investor interest in TMT transactions remains strong, as widespread digitalization, the shift to remote work, new technologies, digital transformation, cloud computing, and data-driven capabilities constitute an integral part of successful company growth strategies.

In this study, we analyzed the impact of M&As initiated by TMT companies on their operating performance and value, as well as identifying the determinants of post-M&A performance. Based on a sample of 203 M&As initiated by TMT companies and completed between 2003 and 2018, we found a positive impact of TMT M&As on the operating performance of the combined companies. Industry-adjusted results showed statistically significant improvements in the median values of *EBITDA/Sales* (+2.20) and *EBITDA/Total assets* (+0.80). We found robust results for *EBITDA/Sales*, which increased by 2.20% using the *change model* and by 3.1% using the *intercept model* three years after the deal. We therefore concluded that TMT-initiated M&As have a positive impact on the operating performance of the combined companies. On average, TMT acquirers are able to realize planned synergies from M&As.

We found that M&As initiated by TMT companies paid by stock have a positive impact on the performance of the combined companies. Our results are in line with our initial argument that paying in stock allows acquirers to share risks with their shareholders. We also proved that the costs and risks associated with cross-border M&As for TMT acquirers exceed the benefits from synergies. We found similar results based on an examination of changes in the company value measured by the *Economic profit* (*EP*) indicator. We discovered a positive statistically significant change in the median *Economic profit* (*EP*) indicator for the domestic subsample (+USD 17.8 million) and companies involved in M&As paid by stock (+USD 38.5 million).

In the final part of our analysis, we examined the influence of the identified determinants on post-M&A performance and found similar results, confirming our initial findings. We also showed a statistically significant impact of the industry relatedness (+), the acquirer's R&D intensity before the deal (–), and the acquirer's CAPEX intensity before the deal (+) on the performance of the combined company.

Our research has practical implications for managers of TMT companies, motivating them to participate in M&As to achieve operational synergies with economies of scale and a more efficient allocation of financial resources. In addition, our results suggest that companies with higher R&D expenditures may experience lower M&A returns due to difficulties in integration processes and the use of the target's technologies. Our findings can also be used by investors and shareholders for forecasting the future performance of TMT companies.

One of the limitations of this study is its use of industry adjustments based on the industry median benchmark but not on the median values of comparable companies' indicators. Our sample also includes a limited number of companies with suitable financial data for the Economic profit (EP) calculation.

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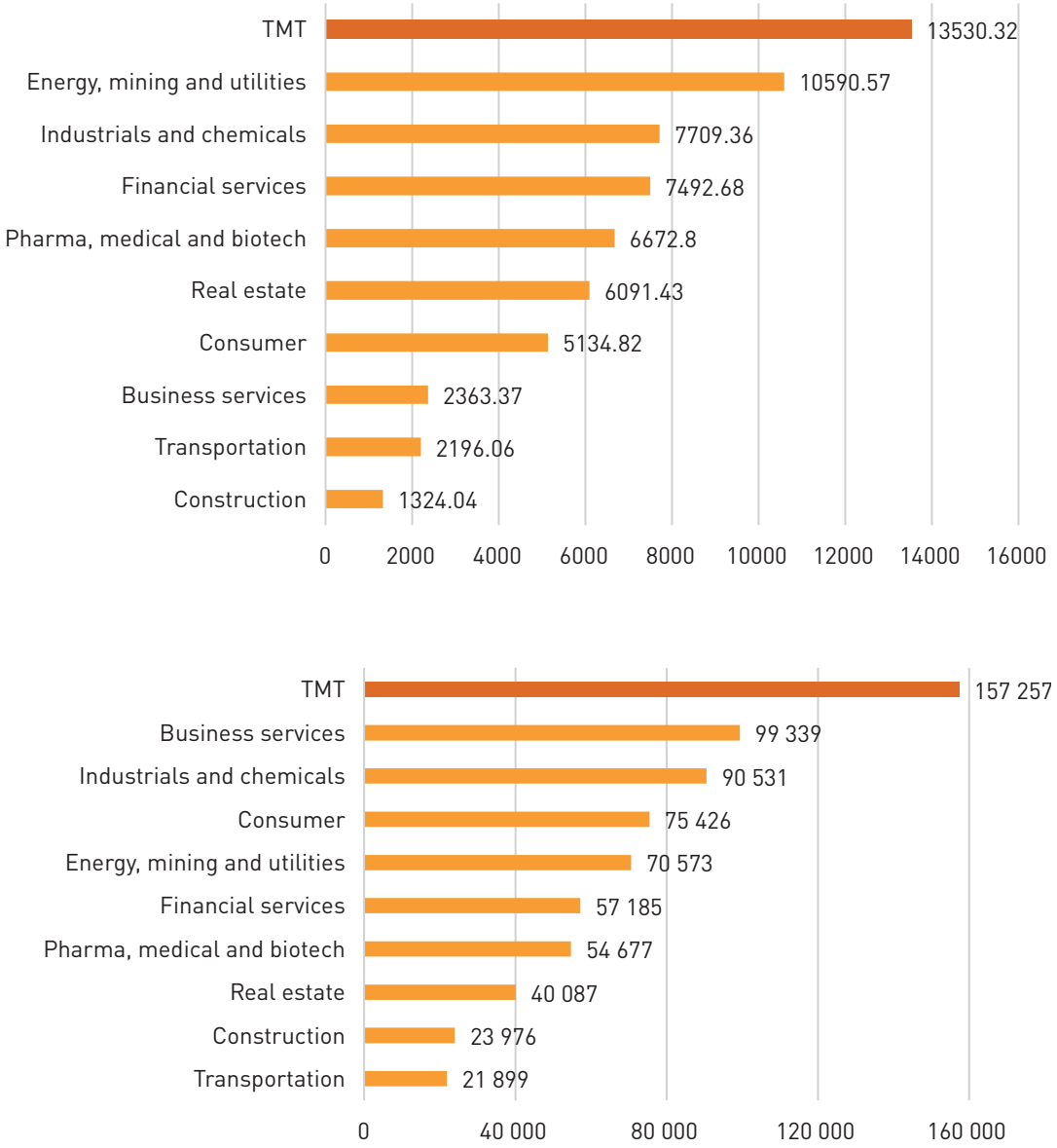
Appendices

Appendix 1. Place of TMT M&As on the global stage



Source: Data presented by White & Case. URL: https://mergers.whitecase.com/#!

Appendix 2. Value-based performance measures of post-M&A results

Author	Period and country, sector or industry	Sample	Performance indicator	Adjustments	Results
Sirower & O'Byrne (1998) [21]	1979–1990, US	41 M&As	Economic Value Added (EVA)	Pre-M&A performance	Deterioration
Yook (2004) [3]	1989–1993, US	75 largest M&As	Economic Value Added (EVA)	IMP	Deterioration
Guest et al. (2010) [22]	1985–1996, UK	303 M&As	ROE, Residual Income Value (RIV)	IMP, size	Enhancement (ROE), no significant results (RIV)
Singh et al. (2012) [48]	2005–2008, India	17 M&As	Economic Value Added (EVA), ROCE, EPS	-	Deterioration
Kan & Ohno (2012) [54]	1989–2008, largest banks in Japan	13 M&As	Economic Value Added (EVA)	Pre-M&A performance	Not all M&As contributed to the increase in EVA
Leepsa & Mishra (2013) [23]	2003–2004; 2006–2007, Manufacturing sector in India	29 M&As	Economic Value Added (EVA)	Industry average, size	No significant results
Grigorieva & Petrunina (2015) [24]	2002–2009, Emerging capital market	80 M&As	EBITDA/BVA, EBITDA/Sales, (EBITDA-ΔWC)/BVA, (EBITDA-ΔWC)/Sales, Economic profit (EP)	IMP	Deterioration in EBITDA/Sales and Economic profit (EP)
Hassan & Giouvris (2020) [25]	1992–2018, financial institutions	1485 mergers	ROE, ROIC, Economic Value Added (EVA)	Pre-M&A performance	Improvement in ROE and ROIC; deterioration in EVA

Source: created by the authors.

Appendix 3. Impact of TMT-initiated M&As on the combined company's operating performance measured by EBITDA/Sales, (EBITDA-ΔWC)/Sales, EBITDA/Total assets, (EBITDA-ΔWC)/Total assets, and value measured by Economic profit (EP)

	EBITDA/ Sales	(EBITDA-ΔWC)/ Sales	EBITDA/ Total assets	(EBITDA-ΔWC)/ Total assets
Industry-adjusted medians				
Median post-M&A performance (-3; +3)	2.46%	–0.96%	0.54%	–2.12%
Differences – industry-adjusted medians				
[–3;+3]	2.20%***	2.02%***	0.80%**	0.76%
[–2;+2]	1.93%***	1.59%*	1.12%	0.52%
[–1;+1]	1.07%	–0.87%	0.23%	–1.05%

	Economic profit – RAW			Economic profit – ADJ		
Median post-M&A performance (–3; +3)	-3.3			–2.9		
	Change	Z-score	N	Change	Z-score	N
[–3;+3]	15.3**	2.316	85	16.3***	2.592	83
[–2;+2]	5.4	1.431	85	6.5	1.505	82
[–1;+1]	3.6	1.109	70	3.6	1.057	68

*** P<0.01, ** P<0.05, * P<0.1(Wilcoxon signed rank test is used).
*Economic profit values are in USD million.

Source: authors' calculations.

Appendix 4. Impact of TMT-initiated M&As on the combined company's operating performance measured by EBITDA/Sales, (EBITDA-ΔWC)/Sales, EBITDA/Total assets, (EBITDA-ΔWC)/Total assets, and value measured by Economic profit (EP) based on the method of payment (cash, stock and mix)

	EBITDA/Sales			EBITDA/Total assets		
	Cash	Stock	Mix	Cash	Stock	Mix
	Differences between pre- and post-M&A performance					
[–3; +3]	0.67%	1.57%*	5.71%***	0.76%	0.74%*	2.04%
[–2; +2]	0.64%	1.55%**	4.50%	0.97%	1.36%	1.68%
[–1; +1]	1.10%	1.07%	0.98%	0.36%	0.27%	-0.80%
Economic profit		Cash			Stock	Mix
Median pre-M&A performance		–16.9			–32.7	–8.1
Median post-M&A performance		–5			–4.4	3.3
Change						
[–3;+3]		5.2			38.5**	9.7
[–2;+2]		–0.9			36.7**	2.3
[–1;+1]		0.4			9.1	1.3

*** P<0.01, ** P<0.05, * P<0.1(Wilcoxon signed rank test is used).

*Economic profit values are in USD million.

Source: authors' calculations.

Appendix 5. Impact of TMT-initiated M&As on the combined company's operating performance measured by EBITDA/Sales, (EBITDA-ΔWC)/Sales, EBITDA/Total assets, (EBITDA-ΔWC)/Total assets, and value measured by Economic profit (EP) based on the nature of the deal (cross-border vs domestic)

	EBITDA/Sales		EBITDA/Total assets	
	Cross-border	Domestic	Cross-border	Domestic
	Differences between pre- and post-M&A performance			
[–3;+3]	–0.12%	2.33%***	0.71%	0.93%**
[–2;+2]	–0.54%	2.48%***	–1.52%	1.57%**
[–1;+1]	0.67%	1.14%*	–0.49%	0.41%
Economic Profit				
		Domestic		Cross-border
Median post-M&A performance	–14,0		–25,5	
Median post-M&A performance	2.5		–27.5	
Change				
[–3;+3]	17.8***		–1.5	
[–2;+2]	12.2**		–9.6	
[–1;+1]	7.1		–14.2	

*** P<0.01, ** P<0.05, * P<0.1(Wilcoxon signed rank test is used).

*Economic profit values are in USD million.

Source: authors' calculations.

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