Managing the Integration of the Combined Entity: Analyzing the PMI Process as a Driver of Corporate Efficiency

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***Abstract*— The article aims to analyze the management of the integration phase and the post-merger integration process (PMI) as determinants of the efficiency in mergers and acquisitions (M&A). The authors assume that achieving the expected outcomes depends not only on the strategic alignment but also on the quality of integration management. The literature indicates that executing the transaction does not guarantee achieving the expected outcomes, and that proper management of the integration is a key step in determining the success. The study utilizes an analysis of sample M&A transactions from 2018–2022 and an econometric model to assess the impact of integration quality on selected enterprise performance. The article presents the importance of PMI as a process encompassing the integration of resources, processes, management, and cultural aspects. Particular attention is paid to factors influencing integration effectiveness and their importance for value creation following M&A transactions. The empirical section analyzes the relationship between the quality of integration management and the economic efficiency after completed M&A transactions. The research indicates that the PMI is not only an operational stage of the M&A, but also a strategic mechanism influencing the ability of companies to exploit the potential benefits resulting from the transactions.**

Keywords— mergers and acquisitions, post-merger integration, corporate efficiency, M&A drivers, synergy, value creation.

I. INTRODUCTION

This article discusses the management of the integration phase in mergers and acquisitions. It is most often considered the last stage in the multi-stage transaction process. Because it occurs after the actual merger, understood as a legal act (signing the agreement), the literature sometimes refers to it as the post-merger integration phase and typically considers it the most difficult phase of the entire process. This stems from the fact that integration encompasses all functional domains of the enterprise, from the organizational structures at various levels, through the systems and cultures of the merging organizations, to the internal policies, legal regulations, and economic conditions that are intended to lead to consolidation into a single, coherent entity. The main problem with the integration phase is that, unlike the transaction itself, it requires significant effort, and the achieved results do not appear immediately, but rather over time, and are not subject to clear evaluation. This leads to differences in the economic assessment of the merger's potential, which impacts the financial condition of the newly formed entity. Even if favorable circumstances arise from the company's perspective, they may be deemed insufficient (relative to the initial assumptions) or may even undermine the economic viability of the merger. This is particularly true when the process reveals difficulties that were not identified in previous stages. A discrepancy between the expected and actual goals emerges, which is not a positive development, as it may indicate poor development, misrepresentation, or insufficient knowledge about the acquired company (Toborek-Mazur, Partacz, Surówka, 2022). Therefore, it is argued that the process of developing a strategy, the measurable implementation of which is the integration of the merged companies, plays a unique role in mergers and acquisitions. Strategy correlates with risk, as a well-developed strategy mitigates it, while a poorly executed one can yield unexpected (often unfavorable) results.

The issue of analyzing the integration stage of enterprises within mergers and acquisitions is known in the literature and has been addressed by, among others, H. Chwistecka-Dudek

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(2003), A. Papathanassis (2004), J. Carleton and C. Lineberry (2004), B. Kowalska (2009), M. Oziębło (2013), A. Freitag (2014), J. Korpus (2014), Cz. Zając (2014), S. Whitaker (2016), K. Meyneerts-Stiller and Ch. Rohloff (2019), K. Świetla and J. Toborek-Mazur (2020), Felker Y., Bauer F., Friesl M. and King D. (2023) and Abravanel, Biron and Brueller (2025).

The aim of the article is to examine the impact of post-merger integration (PMI) process management on the economic efficiency of enterprises. Specifically, the study aims to determine whether the level of preparation and effective implementation of integration activities influence the ability of enterprises to achieve sustainable financial performance improvement after the completion of the M&A process. From the perspective of M&A transaction management, this approach is justified, as integration processes are not uniform and follow different patterns within enterprises. This is particularly evident in the economic uncertainty of the 2020s, resulting from, among other things, the adverse effects of the COVID-19 pandemic, high inflation in many countries around the world, changes in climate protection policies, the conflict in Ukraine, and disruptions to the supply chain and global economic order. To achieve the main objective, an econometric analysis based on a multiple linear regression model was conducted, using the change in the enterprise's return on assets (ΔROA) over the three-year period following integration as a measure of economic efficiency. Therefore, the authors propose the following research hypothesis:

H1: Higher quality of integration process management after a mergers and acquisitions (M&A) transaction has a positive impact on the economic efficiency of the enterprise measured by the change in return on assets (ΔROA) after the integration process is completed.

he article also aims to identify key determinants of the integration process in merged companies, highlighting potential practical threats and difficulties, as well as the interdependencies within internal processes following the transaction. o this end, the authors reviewed the relevant literature and conducted a qualitative analysis of selected companies to identify the key factors driving M&A decisions and the subsequent integration process.

II. PMI AS A MECHANISM FOR REALIZING SYNERGIES AND CREATING VALUE IN M&A TRANSACTIONS

Mergers and acquisitions are complex processes, consisting of many different elements that interact, with each preceding action influencing each subsequent event. Although the procedure is not strictly defined, and its individual elements vary depending on the specific nature and type of merger, there are certain common features. The literature on the subject is flexible regarding the number of procedures and steps used. However, in each case, the phases of a business merger are arranged in a logical order, respecting the dependencies resulting from the level of advancement of the adopted procedures, which are primarily organizational and managerial in nature. In this sense, the merger process can be divided into four phases: preparatory (related to activities preceding the merger or acquisition), conversion (covering the material, technical, and formal legal activities aimed at completing the merger), implementation (in which the joint entity commences operations with the strategic partner), and post-implementation (taking into account activities carried out after the actual merger) (Szczepankiewicz, 2000, p. 140). A component of the final phase is integration, which is usually the responsibility of dedicated teams responsible for consolidating procedures and avoiding conflicts of interest within the new entity. Such teams (integration steering groups), usually composed of several selected specialists, are responsible for carrying out the integration, representing the company's interests before the opposing party (Midaxo, 2018).

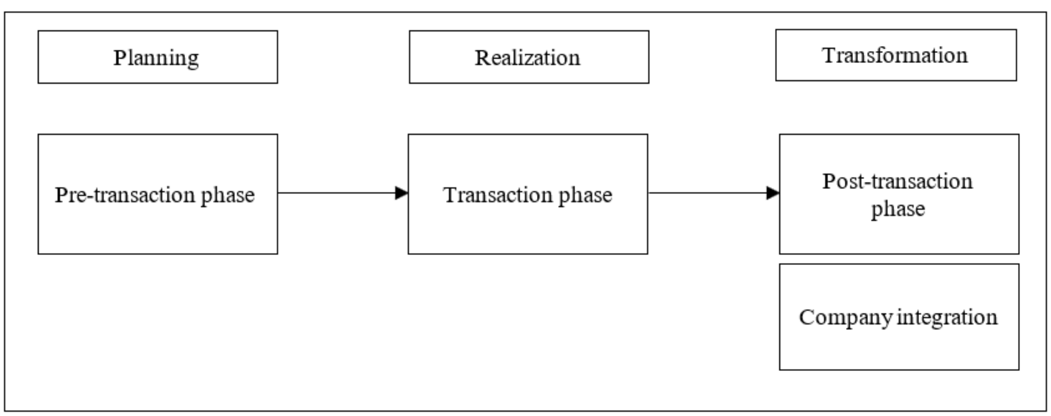
Post-merger integration (PMI) is a key research strand on the effectiveness of mergers and acquisitions. One of the fundamental studies on the integration process is the concept presented by Haspeslagh and Jemison (1991), who argued that PMI should be considered a process of strategically combining the resources and competencies of two organizations. The authors emphasized that the appropriate integration method depends on the level of strategic interdependence and the need to maintain the autonomy of the acquired company. Contemporary approaches to M&A transactions indicate that the mere conclusion of an acquisition agreement does not automatically lead to the creation of value for the company. The key stage, in which the assumed operational, financial, and organizational synergies materialize, is the post-transaction integration phase. Bodner and Capron (2018) point out that the M&A transaction itself does not automatically create value. Only the integration process allows companies to reconfigure resources, combine competencies, change organizational structures, and leverage potential synergies. The authors emphasize that the key challenge is not the merger itself, but rather the proper definition of the scope of integration and maintaining the balance between the need to coordinate activities and maintaining the autonomy of the acquired company. This means that integration success depends on the quality of management decisions made in the period following the transaction. Research by Graebner, Heimeriks, Huy, and Vaara (2017) follows a similar line of thought, suggesting that the integration process should be analyzed as a complex process of organizational learning and change management. Kroon (2022) also emphasizes the importance of a comprehensive approach to PMI, pointing to the need to simultaneously manage the so-called hard and soft dimensions of integration. The first group includes, among others, the integration of operational processes, IT systems, and organizational structures, while the second encompasses aspects related to organizational culture, communication, and employee management. The author points out that omitting any of these dimensions may limit the company's ability to realize the expected synergies.

The significant role of cultural factors in the integration process is also highlighted by Stahl and Tung (2015) and Teerikangas and Irrmann (2016), who point out that cultural differences between organizations can hinder the merger process by increasing uncertainty, limiting knowledge exchange, and generating organizational conflicts. At the same time, the authors emphasize that appropriate management of cultural differences can mitigate negative consequences and support the value creation process. The literature also highlights the importance of organizations' ability to develop repeatable integration management mechanisms. Abravanel, Biron, and Brueller (2025) analyze how companies refine their PMI routines through experience gained during subsequent acquisitions. The authors suggest that organizations can develop specific integration capabilities that allow for more effective management of future transactions. This means that the quality of PMI is not solely the result of one-time actions but can also be the result of established procedures, management structures, and organizational experience. Another important area of recent research is the issue of cooperation between organizations after an acquisition. Bingham, Heimeriks, and Meyer-Doyle (2024) point out that, particularly in the case of acquisitions of technology companies, effective integration requires building cooperation mechanisms that reduce barriers resulting from cultural, geographic, and organizational differences. The authors emphasize that formal integration alone is not sufficient to achieve value from the transaction, as it is necessary to create conditions that enable knowledge transfer and team collaboration. Research by Gokkay, Liu, and Stulz (2026) confirms that the integration phase is a key intermediary mechanism between the implementation of an M&A transaction and the achievement of economic effects. The authors point out that the experience and competences of the integration teams influence the ability of companies to realize the expected synergies, which translates into the company's financial results. Natakula (2026) also notes that one of the main reasons for failing to achieve synergies after an M&A is delays in IT systems integration. They propose an approach in which PMI is treated as a transformation of the enterprise architecture, not just a technical integration of systems. The results of this research strengthen the assumption that the quality of PMI process management may be a significant determinant of the economic efficiency of enterprises after M&A transactions.

III. THE POSITION OF THE INTEGRATION PHASE IN THE M&A

The M&A process can be divided into five stages, consisting of: making the decision to initiate the merger, pre-transaction analyses – due diligence and company valuation, negotiations on the final agreement, the waiting period for obtaining necessary approvals (interim period), and the acquisition and commencement of the enterprise integration phase (Klimczak, 2020). Another division might consider three elements: the preparatory phase, the negotiation phase, and the integration phase (Herdan, 2008, p. 31). Regardless of whether any of them is considered binding, it can be noted that these phases are contractual and illustrative in nature. However, in each case, they share certain common features: the pre-transaction phase, the transaction in the strict sense, and the post-transaction phase. Figure 1 indicates the sequence of procedures in mergers and acquisitions, along with the location of enterprise integration as the main component of the final stage.

FIGURE 1. THE ROLE OF INTEGRATION IN M&A



Source: results of own studies.

Each of these phases may present specific difficulties that prevent or hinder the merger process, and consequently, its success. During the preparation phase, problems may arise related to incomplete or insufficient information about the merger process and the agreement leading to it, as well as difficulties with asset valuation and ownership issues. The negotiation phase is associated with formal and legal issues related to the merger agreement, as well as difficulties resulting from social factors (employee resistance) and financial factors (securing the capital necessary to finalize the investment). During the implementation phase, formal and legal difficulties may arise resulting from the signing of the merger agreement. Finally, in the post-implementation phase, threats related to integration may arise, and therefore, the efficiency and effectiveness of the established strategy and declared goals (Łopacińska, 2022, p. 258).

The primary responsibility of management and transaction leads is to identify these risks early and eliminate them as fully as possible. Some of these challenges may be external – primarily legal and organizational – as well as internal or mixed (external and internal) and stemming from capital, financial, or socio-political interdependencies (Szczepankiewicz, 2000, p.

140). Therefore, some difficulties can be identified within the organization, e.g., duplication of processes in both companies, while others can be identified outside its structures, e.g., unfavorable national legislation.

More than half of mergers and acquisitions deals result in the destruction of shareholder value, and only some deliver added value for all parties within five years of the merger (Klimczak, 2020). It's worth noting that integration success is determined by two opposing factors, between which a specific trade-off exists. In the first case, the decisive factor is the speed of decision-making, which implies progress in achieving quick benefits and added value for shareholders. In the second case, prudence is crucial, which dictates conservative and balanced decision-making, without haste, and with respect for the integrity of the other party. Therefore, it seems that these factors are rightly defined as opposing. However, there is no rule that dictates the acceptance of any one solution as fully effective in every case. The connecting factor between both options is time, and it is appropriate to consider it in the integration process. There is no doubt that the speed of the integration process depends not only on the type of transaction (merger or acquisition) but also on the expected goals and declared motives for entering into it. In practice, companies often experience losses in the first few years after a merger. This not only fails to reflect the companies' pre-merger financial condition but also impacts their financial performance in subsequent years. Integration involves the free exchange of technology between companies, the development of common standards, additional cross-functional projects, and the accounting of tasks or the reduction of peripheral activities, if required by the pre-merger financial assessment.

One of the key assumptions of the integration phase is achieving synergy. Synergy is the additional value for the company generated during the merger (Toborek-Mazur, 2010, p. 34). It is created through the rationalization of operations, asset restructuring, and the reduction of costs irrelevant to the company's core business. Synergy occurs when the value of the synergy effect is higher than the sum of the individual values of the companies before the merger (Toborek-Mazur, Partacz, 2022). For the integration process, knowledge of the estimated target synergy is a reliable predictor of expected costs, particularly when taking into account the expected control premium and transaction costs. The role of the merging companies' strategies is to ensure that integration activities aimed at achieving synergy are defined at the merger plan stage.

IV. Planning and implementing integration

As previously mentioned, integration only occurs after the transaction is completed. Integration is therefore the implementation of the provisions outlined in the previous stages. It begins with defining the target state and the necessary changes that the affected companies must address by identifying opportunities and ways to counteract them. Time is crucial from the perspective of the adopted strategy, as is the identification of priorities. The fundamental determinant is the ability of managers to precisely understand and define integration goals and the ability to achieve them (McGrath, 2011, p. 51).

Selection of activities allows for an assessment of the value, risk, quantity, and resources necessary to achieve the intended goal, which, due to its far-reaching organizational and financial consequences, plays a particularly crucial role in mergers and acquisitions. It is crucial to recognize the situational context in which the merger takes place and the potential social and organizational challenges (Zając, 2014). This approach increases the chance of achieving the expected, measurable financial benefits, often resulting in an accurate assessment of synergies, as well as the organizational changes brought about by the merger for the company's stakeholders. In practice, investors often prioritize priorities by first selecting those that offer the highest value while maintaining low risk and a reasonable level of predictability. Only then are factors that may deliver lower value, but are also more risky and require more detailed planning, selected.

The main problems in the integration phase include: a heavy workload of the M&A team, insufficient communication within the team and between individual management levels, difficulties in the post-merger organization resulting from the lack of information/knowledge flow or technological support (mainly in conglomerate mergers), duplication of processes (in concentric mergers), leadership conflicts and employee resistance to change (usually in the case of hostile takeovers), discrepancies in organizational culture and legal differences (most often in the case of cross-border transactions).

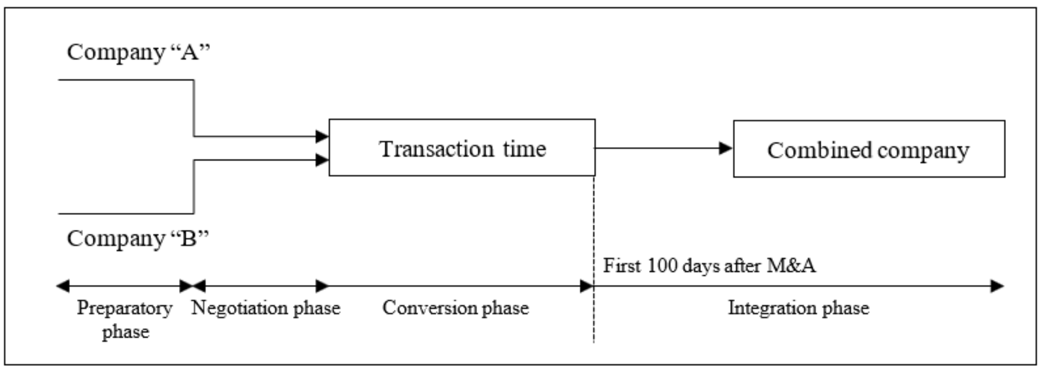
Considering all the factors hindering the success of a merger, integration problems may primarily concern three areas: market, financial, and socio-cultural, but also others, such as marketing, legal, or technological (Patel, 2021). Financial and tax issues are particularly important, primarily stemming from differences in reporting and taxes applied in a given country. Integration of financial departments must incorporate internal control mechanisms to ensure compliance with applicable procedures. This applies in particular to issues related to the unification of performance indicators within reporting, budgeting, and future expense planning, as well as other indicators, such as those related to goodwill valuation or synergy effects, as well as the timeline for management reporting and forecasting (Toborek-Mazur, Wójcik-Jurkiewicz, 2022).

A separate issue is the security of storing control and accounting documentation, as well as defining potential financial and personal data control mechanisms during the transition period, before and after the merger. Legal compliance issues constitute a fundamental point of reference not only in accounting, reporting and data security matters, but also in the fulfilment of formal requirements related to the acquisition of an enterprise and the issue of liability for obligations or the legal consequences of acquiring assets that were not subject to universal succession, e.g. licenses (Kuźnik, 2014).

Therefore, integration planning should consider factors including: identifying the goals and motives of both the seller and the buyer, the expected benefits after the merger –

particularly the expected synergy effect, barriers and risks that may result from a misalignment of the strategy with the economic reality, and a timeline for the sequence of actions taken to properly complete the integration (Partacz, 2022). Practice indicates that the first 100 days following the merger are crucial for the integration phase, as they involve structural and ownership changes that require stabilization and an efficient management system, as well as stabilization of the organizational model. Although there is consensus regarding the importance of the first few days following the merger for integration, the literature is ambiguous regarding the pace of its implementation. Some researchers indicate that the most favorable time for implementing changes occurs immediately after the merger date, including R. Askhenas, L. DeMonaco, and S. Francis, as well as D. Rankine and P. Howson (Stankiewicz-Mróz, 2013). This may be due to the relationship between early completion of the integration phase and achieving synergy (Colombo, Conca, Buongiorno, & Gnan, 2007). Such action can also positively impact employee motivation and foster cultural tolerance through a rapid transition to the new organizational structure. Therefore, speed is considered a sign of efficiency, and delaying the integration process is considered one of the causes of failure. While this scenario may indeed occur in many cases, it should be noted that too rapid an integration process can also generate unnecessary risk of errors and fail to calm employee moods, which is one of the most frequently cited advantages, for example, due to overload. It seems that finding a compromise between these relationships focuses on case study analysis, taking into account current market trends, stakeholder expectations, and individual development perspectives. Figure 2 presents a diagram of the merger, including the integration phase.

FIGURE 2. MERGER DIAGRAM DIVIDED INTO PHASES IN MERGERS AND ACQUISITIONS



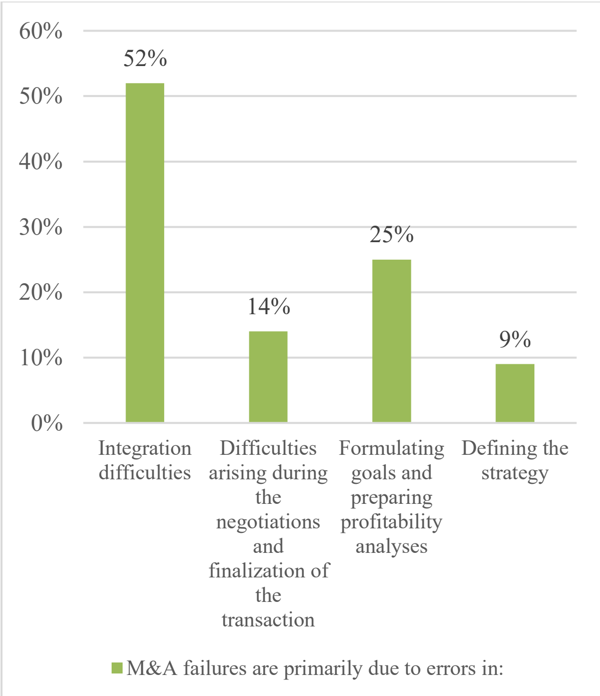
Source: results of own studies

Although implementation occurs after the merger transaction, due to natural events leading to the concentration of previously separate entities, the integration planning process itself may (but does not have to) be conducted well in advance. The literature offers three approaches to integration planning: after the transaction, at the beginning, or at the end of the merger (Chwistecka-Dudek, 2003). It seems that the first method is the most risky because it prevents assessment of the merger's impact before its actual implementation, during the preparatory phase. While this method reduces the costs of in-depth profitability analyses, understanding the source of the risk of transaction failure allows for a more accurate assessment of the transaction's cost structure, which, due to the lack of accurate forecasts, could lead to an overestimation of the merger's value. Advance planning is beneficial because it not only forces companies to confront integration problems (abandoning the strategy of marginalizing problems), which ultimately may lead to the merger's failure, but also influences the stability of the integration itself. A company takes different actions for which it was previously prepared than when it must react on an ongoing basis to threats it had not previously anticipated. In a 2021 study conducted by Deloitte, nearly 75% of respondents indicated the preparation of a detailed integration plan, considering that 70% of the merger's value is lost at the integration level and 30% at the transaction level. This data indicates that the existence of a strategy aligned with the integration plan can help reduce value loss, which directly translates into the effectiveness of the entire merger (Deloitte, 2021).

Potential risks to the failure of the integration phase of merged companies include costs exceeding previous estimates and expectations. Integration costs vary depending on the sector in which the companies operate. These discrepancies primarily relate to the value of the transaction and the level of projected revenues. The structure of revenues and costs differs between companies operating in sectors with high integration costs, such as consumer goods, medical devices, or pharmaceuticals, and those operating in the energy sector or technology, media, and telecommunications (TMT) industries.

A study by the New York Times, Harvard Business Review, and Australia Financial Review found that a poorly executed integration phase accounts for over 50% of M&A transaction failures (Schrommer, 2021). This is primarily due to inadequate management alignment with the expectations and challenges. Other challenges include inadequate goal formulation and profitability analysis (25%), errors during negotiation and transaction closing (14%), and incorrect strategy definition (9%). Table 1 summarizes the main causes of M&A transaction failures. Chart 1 illustrates the key factors determining the failure of M&A transactions, with particular emphasis on errors made at the stage of strategic planning and the assessment of the deal profitability.

CHART 1. THE MAIN REASONS FOR M&A TRANSACTION FAILURES



Source: results of own studies based on (Schrommer, 2021).

During the integration of companies, skillful management of human resources and customer relations, which stems from the adopted organizational culture, is crucial. Since merging companies are formed by the merger of different organizational cultures, a plan should be developed that selects patterns and standards that can be developed within the newly formed entity. Therefore, behaviors that would harm or devalue the "weaker" party to the merger agreement should be avoided (Czerkas, 2018, p. 309). This would generate conflict and prevent a smooth merger process. Therefore, additional analyses of the companies' organizational cultures are recommended. Such analysis will help understand discrepancies and reduce the risk of future conflicts during the merger strategy development phase. Transparency in this process is crucial from a human resources management perspective, instilling a sense of trust and demonstrating positive prospects for employees resulting from the integration. This is crucial because, from a human resources management perspective, merger transactions generate stress among employees due to potential fear of job loss and uncertainty regarding the direction of the new company's development. This phenomenon is referred to in the literature as the “fusion syndrome”, which is essentially negative in nature (Koskowski, 2019).

These actions are crucial in a dynamically evolving competitive environment that requires decisive, yet swift, action. The rapid pace of market change stems not only from the need to concentrate capital but also from macroeconomic shifts. The changes triggered by the COVID-19 pandemic and the conflict in Ukraine have led to adjustments to existing business plans. According to a 2020 study by Bain & Company, approximately 50% of respondents stated that the COVID-19 pandemic hindered the completion of M&A transactions, and 70% stated that this event impacted the accurate preparation of a profitability analysis (Spits, 2021). In this sense, communication stemming from the adopted organizational culture between a company and its internal and external environments is crucial for diagnosing the current market situation and making strategic decisions, particularly with regard to integration occurring as part of mergers and acquisitions. This statement is supported by research conducted by PwC in 2017. It shows that the degree of determination in implementing a merger depends on meeting integration goals and the ability to address potential integration challenges, including misclassification of resources, extended integration process implementation time, or employee attrition (the study showed discrepancies ranging from 28% to 75%, depending on the criterion and the degree of integration management readiness). The chosen approach, in turn, is important for achieving synergy. The study indicated that in successful integration, the expected synergy occurred in 83% of cases (PwC, 2017). Similar conclusions can be drawn from a BCG study, which indicated that successful decision-making leads to higher returns on the merger (Kengelbach, Keienburg, Degen, Söllner, Gell, 2021).

V. SPECIFICITY OF THE MODEL AND RESEARCH METHODOLOGY FOR ESTIMATING ECONOMIC DEPENDENCIES IN THE POST-M&A INTEGRATION PROCESS

Based on the adopted research assumptions and identified determinants of the effectiveness of the post-M&A integration process, an econometric model was formulated to estimate the impact of the quality of post-merger integration management on changes in the economic efficiency of the enterprise. The model's construction is based on the assumption that a properly designed and implemented integration process should lead to more efficient use of enterprise resources and increased economic effects resulting from the transaction.

To empirically verify the impact of managing the integration phase following mergers and acquisitions (M&A) transactions on the economic performance of enterprises, the authors developed an econometric model designed to identify factors determining changes in financial performance following the integration process. The assumption was made that the success of an M&A transaction is not solely a consequence of the proper selection of the target company and the terms of the transaction, but also significantly depends on how the post-merger integration period is managed.

As previously noted, the literature indicates that the integration phase is one of the most critical stages of the M&A process, as it is during this period that the expected operational, financial, and organizational synergies materialize. At the same time, it is a stage characterized by high uncertainty, the risk of losing key employees, cultural conflicts, and difficulties related to harmonizing processes and management systems. Therefore, the model includes variables describing the quality of integration management, as well as control variables characterizing the scale and specificity of the transaction (Toborek-Mazur, 2022).

The dependent variable in the model is the change in the company's return on assets (ΔROA), treated as a measure of economic efficiency achieved after the integration process. This indicator determines the difference between the ROA level two years after the acquisition and the ROA value in the period preceding the transaction. Adopting this construction of the dependent variable allows us to assess whether the integration process has improved the company's resource utilization. The key explanatory variable is our proprietary Integration Management Quality Index (PMI Index), which reflects the degree of preparation and implementation of integration activities. This indicator encompasses elements such as the establishment of an integration management team (Integration Management Office), the level of integration of operational processes, IT systems integration, communication activities, and key employee retention. The choice of ROA stems from its ability to comprehensively assess the efficiency of company resource utilization following the merger or acquisition. Unlike measures based solely on the market value of the company, ROA reflects the organization's actual ability to generate operating profits using its assets. Moreover, the model uses not the ROA level but its change, defined as the difference between the return on assets after the integration process and the return on assets before the transaction. This approach allows for controlling for initial differences between companies and allows for assessing the actual impact of the integration process on improved economic efficiency. Furthermore, the choice of an indicator based on ROA, rather than measures based on the company's market value, such as share price change, stems from the fact that the subject of this study is not the capital market reaction to the announcement of an M&A transaction, but rather an assessment of the actual economic effects achieved as a result of managing the integration process. ROA therefore allows for capturing whether actions undertaken in the post-merger integration phase have translated into improved resource efficiency.

The choice of ROA as the dependent variable also stems from its universality and comparability across companies of varying size and business structure. This indicator is widely used in empirical studies on the effectiveness of mergers and acquisitions, as it enables the assessment of whether the transaction and subsequent integration process contributed to increased operational efficiency. To limit the influence of factors not directly related to the quality of the integration process, the model includes control variables: transaction value, the international nature of the acquisition, cultural distance between companies, company size, and debt level. This allows us to determine whether the observed impact of the PMI Index on company performance remains significant after accounting for other transaction determinants. With these considerations in mind, the authors propose the following model:

$$\Delta ROA_i = \beta_0 + \beta_1 PMI_i + \beta_2 ln(D_i) + \beta_3 T_i + \beta_4 C_i + \beta_5 ln(A_i) + \beta_6 L_i + \varepsilon_i \quad (1)$$

where:

ΔROA_i- change in the company's return on assets after the integration process (the difference between ROA after the M&A transaction and ROA before the transaction), the study assumed a 3-year time horizon;

PMI_i- post-merger integration process management quality indicator (PMI), including the degree of integration of processes, IT systems, communication and human resources management;

$ln(D_i)$- natural log of the i-th firm's M&A transaction value;

T_i- binary variable specifying the nature of the transaction (domestic – 0; international – 1);

C_i- an indicator of the cultural distance between the acquiring company and the acquired company;

$ln(A_i)$- natural logarithm of the value of the assets of the acquiring company before the transaction is completed;

L_i- the level of debt of the company measured as the ratio of financial liabilities to the value of assets understood as: $L_i = \frac{Debt_i}{Assets_i}$

ε_i- a random component of the model that includes the influence of factors not included in the equation.

Parameter is a key parameter of the model, as it determines the impact of integration process management quality (PMI) on the change in a company's economic performance following the completion of an M&A transaction. The remaining variables serve as controls, allowing for the separation of the impact of integration quality from the effects resulting from the scale of the transaction, cultural characteristics, and the company's financial situation. The empirical study was conducted on a sample of 50 mergers and acquisitions (M&A) transactions completed between 2020 and 2024. The research period was chosen to reflect the current conditions for companies operating after the COVID-19 pandemic, characterized by increased acquisition activity, changes in business models, and the growing importance of effective integration process management.

The research sample encompasses medium-sized and large-scale M&A transactions conducted by companies operating in global markets, with a particular focus on sectors characterized by high integration intensity, such as information technology, industrials, energy, pharmaceuticals, financial services, and consumer goods. Transactions for which data could be obtained regarding the transaction value, characteristics of the companies involved in the acquisition, and financial results before and after the integration process were eligible for the study.

The criteria for qualifying sample transactions were: a) Completion of the M&A process between 2018 and 2022, including a three-year post-integration period; b) availability of financial data of the acquiring company before the transaction and in the three-year period after its completion (companies with publicly available financial results were used for the study); c) the ability to identify integration activities that would enable the construction of an integration management quality indicator (PMI Index).

The analyzed sample includes both domestic and international (cross-border) transactions, allowing for the impact of institutional, organizational, and cultural differences on the effectiveness of the integration process to be taken into account. The study included transactions with varying economic value and varying levels of organizational complexity, enabling an analysis of the determinants of post-M&A integration success.

For each transaction, the change in return on assets (ΔROA) over the three-year period following the completion of the integration process was determined. The three-year time horizon was adopted because the full materialization of synergies resulting from a business combination often requires more than one year. This three-year period allows for the consideration of both short-term operational effects and more lasting changes resulting from process reorganization, system integration, and leveraging economies of scale.

The estimation was conducted using the Ordinary Least Squares (OLS) method. This method was used to determine the direction and magnitude of the impact of the quality of integration process management (PMI Index) on the change in economic efficiency of companies, as measured by ΔROA, while also taking into account control variables related to the scale and characteristics of the transaction. The results of the least squares regression model estimation are presented in Table 1.

TABLE 1. ECONOMETRIC MODEL ESTIMATION RESULTS

Independent variable	β coefficient	Std. Err.	T-statistics	P-value
β_0	-2.18	1.73	-1.26	0.21
PMI Index	6.78	1.26	5.37	<0,001
$ln(D)$	0.31	0.25	1.25	0.22
T	-0.60	0.40	-1.51	0.14
C	-1.88	0.73	-2.58	0.013
$ln(A)$	0.28	0.28	0.97	0.34
L	-3.16	1.47	-2.15	0.037

Source: results of own studies.

One of the most important parameters of the proposed model is the coefficient value for the PMI Index variable, β_1= 6,78. This indicates that an increase in integration management quality by 0.1 index point results in an average increase in the change in ROA by approximately 0.68 percentage points. This parameter is statistically significant, as p < 0.001, indicating that there is evidence to support hypothesis H1. A higher level of management quality during the post-M&A integration phase in the studied sample positively impacts economic efficiency, as measured by changes in ROA. Thus, effective planning and implementation of integration activities are key factors in achieving the expected merger outcomes. An increase in the quality of integration process management promotes improved economic efficiency of the merged companies. The second variable with a significant impact was the cultural distance index (C). The obtained regression coefficient was negative, indicating that increased cultural differences between merging companies limit the achieved integration outcomes. This result is consistent with other research findings indicating that differences in organizational culture hinder structural integration, communication, and the achievement of shared strategic goals. A statistically significant effect was also observed for the company's debt level (L). The negative coefficient value indicates that companies with higher debt levels achieved, on average, a lower improvement in return on assets after the integration process. This may indicate a limited ability to finance integration activities and greater pressure to maintain financial liquidity after the acquisition. The remaining variables included in the model, including the transaction value, its domestic (international) nature, and company size, did not reach statistical significance. The obtained results suggest that the analyzed factors do not exert an independent influence on the change in economic efficiency of companies after M&A, after taking into account the quality of integration process management and other control variables.

After analyzing the structural parameter values, the model's fit and overall significance were assessed. Basic measures used in linear regression analysis were used, including the coefficient of determination, the adjusted coefficient of determination, and the F statistic. Table 2 presents the regression model fit statistics.

TABLE 2. REGRESSION MODEL GOODNESS-OF-FIT STATISTICS

Parameter	Value
Number of observations	50
R^2	0,73
Corrected R^2	0,69
F-statistc	18,92
p-value (F)	<0,001

Source: results of own studies.

The coefficient of determination R^2 = 0.731 indicates that the model explains approximately 73.1% of the variability in the change in corporate return on assets following M&A transactions. The adjusted coefficient of determination was 0.692, which means that after taking into account the number of explanatory variables, the model explains approximately 69.2% of the observed variability. The F statistic and its corresponding significance level (p<0.001) confirm that the model as a whole is statistically significant.

The obtained results allow us to positively verify the research hypothesis that higher quality management of the post-merger integration process leads to improved economic efficiency of the enterprise in mergers and acquisitions. At the same time, the analysis indicates that integration effectiveness depends not only on the quality of management actions but also on organizational and financial conditions, particularly the level of debt and the cultural distance between the merging companies.

VI. CONCLUSIONS

The integration process following a merger and acquisition transaction typically lasts from one to two years. This time can be shorter in the case of less complex organizational mergers, or longer in the case of large groups of companies with foreign capital, where organizational culture integration and adaptation to legal regulations are also necessary. Nevertheless, from a management perspective, the first few days following the merger are crucial. A new management system is formed, taking into account both the revised ownership and HR systems, and tasks are carried out to stabilize the organizational structure of the entire enterprise. The success of this process influences the effectiveness of the entire transaction and the time required to achieve the desired synergy effect. Considering both socio-economic factors – employee willingness to accept the merger

– and the volatility of the capital market caused by various events, the integration of information systems can contribute to the success of the entire merger.

One of the fundamental failures of mergers and acquisitions is errors made during the strategy development phase of the merged companies, as well as those that arise during the integration process. Very often, during the development of a merger plan, during profitability analyses and due diligence, potential problems that may arise during the integration phase of the merged companies are identified. The more thorough and comprehensive the analysis, the lower the risk of adverse events occurring during the integration phase. Of course, not all events can be identified, as each is often the result of different, more or less interconnected circumstances. However, an assessment that includes a comparison of expected and achievable results should be considered.

Human resources management is crucial during integration. Effective implementation of solutions within the organizational culture of all participating companies allows not only to avoid changes-related anxiety but also to provide direction to employees through the transparency of management and integration teams within the merged companies. At the same time, this transparency cannot be complete, as the selection of a business partner – the company to be acquired – should be the result of confidential discussions and negotiations conducted solely between the top management of the companies involved. The selection of a candidate may take place in several stages or be limited to the selection of a few candidates for acquisition.

The assessment primarily encompasses the ability to generate profits, but also assesses management competencies (a so-called management audit) to minimize the risk of failure. This is supported by data from reports by companies such as Bain & Company, PwC, and Boston Consulting Group. Reducing the risks that may arise during the integration phase will allow for faster and more effective realization of the merger's expectations, primarily in terms of achieving synergies, which are a key driver for many M&A transactions.

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