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THE IMPACT OF AI TECHNOLOGIES ON DYNAMICS AND RESTRUCTURING OF COMPANIES

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Abstract
Artificial intelligence, as a tool for creating the functionality of the European Union market, has a major impact on the way societies, economies and organizations operate. Accelerated digitalization favors the implementation of artificial intelligence in the operational processes of companies. Through the capacity to process data and automate complex processes, artificial intelligence becomes a strategic tool that contributes to increasing efficiency, reducing costs and increasing the decision-making process at the company level.
The purpose of this study is to analyze how the technologies adopted by companies influence their productivity but also the consolidation and strategic repositioning of companies through involvement in mergers and security operations. The study takes into account for the period 2021-2024 companies with at least 250 employees from European Union member countries. The impact of adopting technologies in data analysis, marketing or sales, production and logistics process, spoken language conversion, object identification based on images, ICT security is analyzed.
Beyond the influence of these variables, there are reservations in adopting artificial intelligence motivated by too high costs, incompatibility with existing equipment, ethical considerations, data availability, lack of expertise and clarity of legal consequences.
Keywords: *artificial intelligence; digital technologies; mergers and acquisitions; European Union.*
JEL Classification: G34; O33.

1. INTRODUCTION

Accelerated technology development with the development of systems capable of performing tasks attributed to human intelligence has given Artificial Intelligence (AI) a transformative role in the business environment, acting as a catalyst for innovation, operational efficiency and competitive advantage. Analyzing complex data, identifying patterns or generating predictions provides added efficiency, accuracy and speed, essential elements for achieving business success.

Artificial intelligence is redefining growth and competitiveness strategies with a direct impact on merger and acquisition (M&A) decisions, from evaluating target companies to predicting the synergy obtained.

The purpose of the research is to explore how the use of artificial intelligence in different processes of companies in the European Union affects the production of mergers and acquisitions operations and conditions in the period 2021-2024. The set of variables reflects the level of integration of intelligent technologies in the organizational activities of companies with at least 250 employees and their capacity for innovation, emphasizing the use of AI for data analysis, written language; workflow automation, recognition of objects or people in images; use of AI in logistics, marketing and sales, production process and IT security.

However, many companies in the European Union are not adopting artificial intelligence for various reasons, which from one year to the next have led more and more companies to abandon AI technologies (Figure1). Despite the transformative potential of artificial intelligence, companies that do not adopt these technologies raise questions about the barriers and perceptions that are holding back digital transformation. The reasons for companies not adopting AI are perceived costs as too high, being considered inaccessible investments, lack of relevant internal expertise for the integration process, incompatibility with existing equipment or systems, problems with data quality and accessibility, their protection and confidentiality, along with ambiguities regarding the legal consequences of using AI.

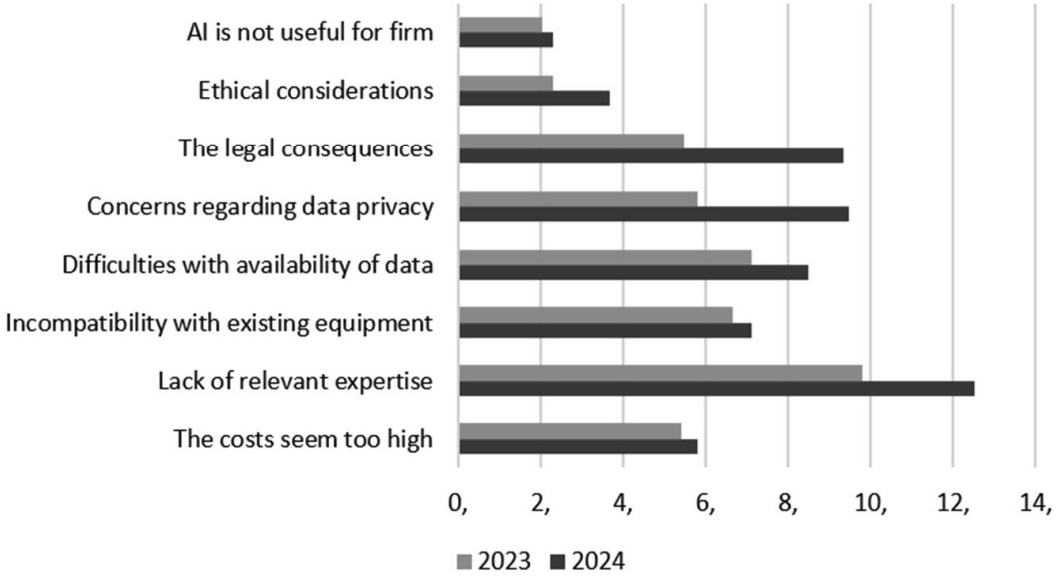

Figure 1. Reasons for non-adoption of AI by EU27 companies with at least 250 employees

These barriers can be reduced by government support for digitalization and training, providing subsidies to stimulate AI adoption, modernizing IT

infrastructure and including clear data protection standards. Bridging the gap between technology and perceived applicability by companies, as well as collaboration between the public, private and academic sectors, is essential to unlocking the full potential of AI.

The study contributes to economic literature by exploring an important current topic, less addressed in the evolution of mergers and acquisitions and more in the involvement of AI in the due diligence process.

As companies seek to gain competitive advantage, the integration of AI becomes a differentiating factor, which also influences the attractiveness of companies for M&A.

The study outlines a quantitative perspective on the impact of AI on the evolution of M&A transactions in European Union countries, which can be a support in making managerial and investment decisions for companies.

As a structure, the paper begins in the first section with the analysis of the specialized literature and the synthesis of the most relevant ideas. The second section develops the data and methodology used in the study, namely panel data for 18 European Union countries, analyzed between 2021-2024 using the Ordinary Least Square (OLS) method in the econometric software EViews. The third section highlights the research results and discussions, followed by conclusions, research limitations, and future research directions.

2. LITERATURE REVIEW

The literature on mergers and acquisitions has traditionally focused on financial and governance factors that determine transaction success.

Recent studies define mergers and acquisitions as those operations through which the assets of one company are transferred to another, with distribution of shares to the shareholders of the target company (Bîlteanu and Stancu, 2024). Synergy occurs when the overall performance of the new company is superior to the separate individual performances. Chiriac *et al.* (2024) consider mergers and acquisitions a rapid reorganization strategy in order to acquire superior management to enter new markets, to acquire already trained employees, to share risks and to reduce the financial effort. In line with this perspective, the approach to mergers and acquisitions from the study conducted by Herghiligiu *et al.* (2024) is also found, which adds that mergers and acquisitions consolidate the financial position and determine the amplification of the company's value to correct the negative results obtained at a given time. Thus, the need for survival, protection, diversification of activity and increased sales appear as reasons for mergers and acquisitions. At the same time, Verma and Kumar (2024) argue that mergers and acquisitions are a normal phenomenon for developing countries and for large companies open to global trade for business expansion.

Opinions contrary to the above are found in the study by (Ilea *et al.*, 2024) who consider mergers as phenomena that create severe traumas leading to

behavioral and psychological problems of the staff, and to problems related to the adaptation of both the staff and the two companies. The complexity of transactions stems from the difficulties regarding the different perception of organizational culture and the takeover process, which limits the communication and sharing of valuable information for organizations. Similarly, Manole *et al.* (2024) consider that organizations undergo mergers and acquisitions that cause vulnerability and insecurity, threatening the identity of employees and their organizational belonging by changing organizational values and culture, while at the same time creating uncertainty related to achieving the company's well-being and performance.

Research in the field of artificial intelligence has gained momentum in recent times, with the increasing digitalization and technology adoption worldwide. Recent studies (Table 1) highlight that the integration of AI can transform business models by automating processes and increasing company efficiency.

Table 1. Synthesis of specialized literature on the impact of digitalization on M&A

Author	Year	Outcomes
Rien	2018	Managers should prepare organizations for the transition to AI by following Kotter's 8-step change model.
Gounopoulos *et al.*	2023	Companies that prioritize AI technologies tend to adopt more aggressive investment policies, driving mergers and acquisitions in a desire to build an empire.
Bedekar *et al.*	2024	By incorporating AI, the due diligence process becomes more efficient, more accurate and more strategic.
Cazzaro	2024	Al accelerates the closing of M&A transactions, facilitating the decision-making process regarding transaction structure and risk management.
Tokachichu, Kotha and Biyyala	2024	AI innovations reduce the difficulty of traditional mergers and acquisitions and create new sources of value. But investments in safety, cybersecurity and a professional workforce are needed.
Zhang *et al.*	2024	AI more precisely identifies successful synergistic combinations, considering important elements such as revenue growth rate, market capitalization/EBITDA ratio, and debt to equity.
Alghizzawi *et al.*	2025	AI highlights the importance of careful planning and strong leadership for post-merger integration to achieve real benefits from the M&A transaction.

As early as 2018, it was expected that the due diligence process in mergers and acquisitions would be fully or partially automated by 96% by 2028, as both manual and cognitive activities can be taken over by machines (Rien, 2018). The same process, due diligence, is significantly improved by artificial intelligence in

mergers and acquisitions deals by providing competitive advantage in a dynamic market. By incorporating AI, the process becomes more efficient, more accurate and more strategic, helping to assess financial health, compliance risks and strategic alignment. Thus, AI transforms due diligence into an essential tool for M&A success (Bedekar *et al.,* 2024). Long processes can become more efficient throughout the life cycle of a transaction with the help of innovations (Kostas, 2022). AI accelerates M&A closings, facilitating decision-making on deal structure and risk management (Cazzaro, 2024). The AI-based process for M&A target selection and synergy prediction demonstrates superior predictive performance in identifying successful synergistic combinations compared to traditional target selection methods. Compared to traditional methods, the use of artificial intelligence provides better results in selecting M&A targets and predicting synergies. AI more accurately identifies successful synergistic combinations, considering important elements such as revenue growth rate, market capitalization/EBITDA ratio, and debt to equity. In addition, the integration of text-based features increases the accuracy of the model, allowing the assessment of qualitative elements of compatibility between firms (Zhang *et al.*, 2024).

Moving from the due diligence stage to the actual adoption of artificial intelligence in companies, it is found that the adoption of AI is still limited due to the diversity of data, the need for human communication and cultural resistance to change. Managers should prepare organizations for the transition to AI, following Kotter's 8-step change model, namely: urgent awareness among the team; building the change leadership team; developing the AI implementation strategy; clearly communicating the vision for the transformation; initiating concrete actions; generating short-term gains; accelerating progress and definitively establishing the change in the organization's culture (Rien, 2018). In the current merger and acquisition environment, which is undergoing a profound transformation, companies must adopt new technologies to remain competitive. Emerging technologies such as cloud ERP, artificial intelligence, blockchain and quantum computing make the financial integration process more efficient, more precise and more strategic. These innovations reduce the difficulty of traditional mergers and acquisitions and create new sources of value. In the future, technology will become an important factor in the success of mergers and acquisitions, reshaping the entire process. However, realizing this potential requires investments in safety, cybersecurity, a professional workforce and the application of best practices (Tokachichu *et al.,* 2024).

Less pleasant aspects of AI adoption refer to overinvestment or possible cyberattacks. Those companies that give high priority to AI technologies tend to adopt more aggressive investment policies, which drive mergers and acquisitions. Managers of these companies often engage in acquisitions out of a desire to build an empire, which can have a negative impact on shareholder wealth through

overinvestment. Effective corporate governance, both internal and external, can mitigate these tendencies, provide controls and advice, and thus protect shareholder interests. In addition, the negative synergies arising from mergers and acquisitions in the context of AI automation highlight the risk that these transactions will destroy company value. In addition, companies that lean towards automation tend to finance mergers and acquisitions with available cash, which would otherwise be used to cover operational risk, exacerbating the problem of overinvestment (Gounopoulos *et al.*, 2023). At the same time, robust regulations are needed to ensure the ethical use of artificial intelligence (Cazzaro, 2024).

Mergers and acquisitions offer significant growth opportunities, but rarely create shareholder value without difficulty, not least because of the challenges associated with cultural integration and the realization of synergies. The results of mergers and acquisitions vary greatly across industries, with the size of the deals having a large impact on the price. In innovative industries, such as technology, companies have a greater potential to realize the expected synergies, while in regulated areas, such as financial services, integration is more difficult (Alghizzawi *et al.*, 2025).

These issues highlight the importance of careful planning and strong leadership for post-merger integration in order to obtain real benefits from the merger and acquisition transactions.

3. DATA AND METHODOLOGY

The main objective of this study is to determine how artificial intelligence goes beyond the due diligence process and is adopted by companies, influencing both their productivity and the consolidation and strategic repositioning of companies through involvement in mergers and acquisitions. To determine the impact of digital technologies on mergers and acquisitions, the study considers the recent period 2021-2024. Annual data is taken for companies with at least 250 employees from European Union member countries, namely Austria, Belgium, Bulgaria, Czech Republic, Croatia, Finland, France, Germany, Italy, Ireland, Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Hungary. The selection of states and the analyzed period was made based on data availability. Panel data were automatically collected with an annual frequency from the websites of the World Bank (Development Indicators, DataBank), European Commission (Eurostat Database), Institute for mergers, acquisitions and alliances. The regression model tables were constructed by processing the panel data in the statistical-econometric program Eviews.

The multiple linear regression model uses as dependent variable Mergers and Acquisitions (MA), expressed as an annual number of M&A transactions (Figure 2).

As independent variables, various dimensions related to technology adoption within companies are used, variables that are expressed as a total percentage of enterprises (Table 2):

- Enterprises use machine learning for data analysis (DATA_ANAL);
- Enterprises use AI technologies performing analysis of written language (WRIT_LNG);
- Enterprises use AI technologies automating different workflows or assisting in decision making (AUT_ WORK);
- Enterprises use AI technologies generating written or spoken language (GEN _LNG);
- Enterprises use AI technologies identifying objects or persons based on images (IDENT_OBJ);
- Enterprises use AI technologies for logistics (LOG);
- Enterprises use AI technologies for marketing or sales (MKT_SALE);
- Enterprises use AI technologies for production processes (PROD);
- Enterprises use AI technologies for ICT security (ICT_SEC).

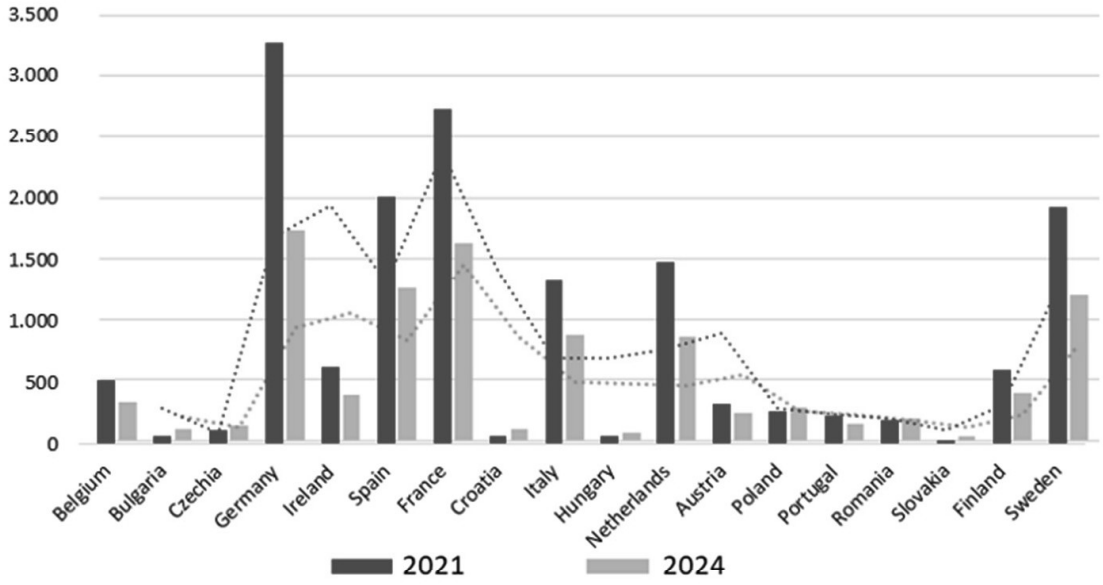

Figure 2. Evolution of the number of mergers and acquisitions in the period 2021-2024

In addition to these variables, are also taken into account Education level of population by educational attainment level (ED_POP); Unemployment rate (UNEMP); Government expenditure on education (GEE), GDP per capita growth rate (GDP), expressed as Annual growth rate of the ratio between GDP and the number of inhabitants; Inflation rate (INF), which takes into account the Annual growth rate of the Harmonized Index of Consumer Prices.

Table 2. Description of the dependent variable and independent variables

Variable	Symbol	Calculation method	Data source
Dependent variable			
Mergers and Acquisitions Operations	MA	Annual number of mergers and acquisitions	Institute for mergers, acquisitions and alliances
Independent variables			
Enterprises use machine learning for data analysis	DATA_ANAL	Percentage of enterprises	Eurostat
Enterprises use AI technologies performing analysis of written language	WRIT_LNG	Percentage of enterprises	Eurostat
Enterprises use AI technologies automating different workflows	AUT_ WORK	Percentage of enterprises	Eurostat
Enterprises use AI technologies generating written or spoken language	GEN _LNG	Percentage of enterprises	Eurostat
Enterprises use AI technologies identifying objects or persons based on images	IDENT_OBJ	Percentage of enterprises	Eurostat
Enterprises use AI technologies for logistics	LOG	Percentage of enterprises	Eurostat
Enterprises use AI technologies for marketing or sales	MKT_SALE	Percentage of enterprises	Eurostat
Enterprises use AI technologies for production processes	PROD	Percentage of enterprises	Eurostat
Enterprises use AI technologies for ICT security	ICT_SEC	Percentage of enterprises	Eurostat
Education level of population	ED_POP	Percentage of population	Eurostat
Unemployment rate	UNEMP	Percentage of total workforce	World Bank
Government expenditure on education	GEE	Percentage of GDP	Eurostat
GDP per capita growth rate	GDP	Annual growth rate	World Bank
Inflation rate	INF	Annual growth rate	Eurostat

For the multiple linear regression model we estimate the following model:

$$MA_{i,t} = \alpha_0 + \beta_1 \text{DATA\_ANAL}_{i,t} + \beta_2 \text{WRIT\_LNG}_{i,t} + \beta_3 \text{AUT\_ WORK}_{i,t} + \beta_4 \text{GEN \_LNG}_{i,t} + \beta_5 \text{IDENT\_OBJ}_{i,t} + \beta_6 \text{LOG}_{i,t} + \beta_7 \text{MKT\_SALE}_{i,t} + \beta_8 \text{PROD}_{i,t} + \beta_9 \text{ICT\_SEC}_{i,t} + y_1 \text{ED\_POP}_{i,t} + y_2 \text{UNEMP}_{i,t} + y_3 \text{GEE}_{i,t} + y_4 \text{GDP}_{i,t} + y_5 INF_{i,t} + \varepsilon i,t \quad (1)$$

where MA represents the number of mergers and acquisitions of country i in year t; βx - represents the set of independent variables; γx - represents the control variables; ε - represents the standard error.

4. RESULTS AND DISCUSSION

The descriptive statistics of the variables used in the research (Table 3) illustrate for mergers and acquisitions a minimum of 28 operations and a maximum of 2726. The average, located at 613 operations, suggests the presence of low-number operations in several countries.

Table 3. Descriptive statistics for the multiple linear regression model

	Mean	Median	Max.	Min.	Std. Dev.
M_A	613.41	303.50	2726	28	694.94
WRIT_LNG	11.44	10.97	26.06	2.96	6.24
AUT_WORK	16.51	13.80	38.73	4.78	8.57
DATA_ANAL	14.25	12.44	32.45	3.27	8.32
ED_POP	35.37	35.80	58.50	11.90	10.45
GEN_LNG	6.24	5.27	16.39	0.99	4.02
ICT_SEC	12.20	12.06	31.02	2.42	7.23
IDENT_OBJ	11.24	10.53	26.45	2.36	5.26
LOG	6.12	5.50	15.82	1.32	3.63
MKT_SALE	8.10	6.99	19.09	2.18	4.38
PROD	10.87	10.93	24.77	2.22	5.41
UNEMP	6.22	6.14	14.78	2.60	2.55
GDP	3.63	3.48	14.03	-8.05	4.60
INF	5.21	4.10	17.00	0.90	3.56
GEE	4.85	4.90	7.30	2.80	1.04

Enterprises use of AI technologies performing analysis of written language (WRIT_LNG) oscillates between a minimum of 2.96% and a maximum of 26.06%, with a balanced average of 11.44%. Enterprises that use AI technologies automating different workflows or assisting in decision making (AUT_ WORK) have a balanced average of 16.51 located between a minimum of 4.78% and a maximum of 38.73%. Enterprises use machine learning for data analysis (DATA_ANAL) suggest, with an average of 14.25, that it is close to the minimum of 3.27% and less than the maximum of 38.73%. Education level of population (ED_POP) oscillates between 11.9-58.5%.

Enterprises use AI technologies generating written or spoken language (GEN _LNG) has a low adoption in companies with a minimum of 0.99% of companies,

while the maximum reaches 16.39%. Enterprises that use AI technologies for ICT security (ICT_SEC) have an average of 12.2%, a minimum of 2.42 and a maximum of 31.02%.

Enterprises use AI technologies identifying objects or persons based on images (IDENT_OBJ) oscillates between 2.36-26.45%, with an average of 11.24. Lower values are recorded for the variable Enterprises use AI technologies for logistics (LOG), adopted in companies with a minimum of 1.32% and a maximum of 15.82. For Enterprises using AI technologies for marketing or sales (MKT_SALE) a balanced average between the minimum and the maximum is found, of 8.1%, while the average of 10.87% for Enterprises use AI technologies for production processes (PROD) is slightly close to the minimum of 2.22. The unemployment rate (UNEMP) takes values between 2.6% and 14.78, with an average of 6.22%. The most pronounced decrease in GDP per capita (GDP) was -8.05 percent, while the positive average of 3.63 suggests few negative values. Inflation rate (INF) and Government expenditure on education (GEE) have averages balanced between minimum and maximum.

The correlation matrix (Table 4) illustrates a strong positive relationship between Enterprises use AI technologies performing analysis of written language (WRIT_LNG) and Enterprises use AI technologies automating different workflows or assisting in decision making (AUT_WORK). Also positively correlated with Enterprises use AI technologies performing analysis of written language (WRIT_LNG) are Government expenditure on education (GEE), Enterprises use machine learning for data analysis (DATA_ANAL), Enterprises use AI technologies generating written or spoken language (GEN _LNG), Enterprises use AI technologies identifying objects or persons based on images (IDENT_OBJ), Enterprises use AI technologies for logistics (LOG), Enterprises use AI technologies for marketing or sales (MKT_SALE), Enterprises use AI technologies for production processes (PROD), Enterprises use AI technologies for ICT security (ICT_SEC), Unemployment rate (UNEMP).

Table 4. Correlation matrix for the multiple linear regression model

	WRIT_ LNG	AUT_ WORK	GEE	DATA_ ANAL	ED_ POP	GEN_ LNG	ICT_S EC	IDENT _OBJ	INF	LOG	M_A	MKT_ SALE	PRO D	GDP	UNEMP
WRIT_LNG	1														
AUT_WORK	0,86	1													
GEE	0,38	0,51	1												
DATA_ANAL	0,95	0,94	0,45	1											
ED_POP	-0,11	-0,01	-0,13	-0,06	1										
GEN_LNG	0,81	0,83	0,36	0,88	0,02	1									
ICT_SEC	0,89	0,89	0,51	0,92	-0,06	0,90	1								
IDENT_OBJ	0,86	0,87	0,45	0,87	-0,19	0,84	0,90	1							
INF	-0,36	-0,32	-0,07	-0,37	0,13	-0,31	-0,32	-0,39	1						
LOG	0,88	0,91	0,54	0,90	-0,15	0,80	0,93	0,90	-0,25	1					
M_A	0,24	0,25	0,21	0,38	-0,16	0,38	0,32	0,27	-0,36	0,16	1				
MKT_SALE	0,86	0,96	0,39	0,93	-0,07	0,87	0,90	0,90	-0,40	0,91	0,28	1			
PROD	0,91	0,90	0,45	0,92	-0,09	0,85	0,93	0,92	-0,28	0,92	0,24	0,89	1		
GDP	-0,36	-0,32	-0,08	-0,36	-0,04	-0,41	-0,37	-0,23	-0,45	-0,37	0,05	-0,29	-0,36	1	
UNEMP	0,24	0,23	0,10	0,30	-0,49	0,35	0,20	0,40	-0,42	0,15	0,56	0,31	0,24	0,17	1

With mergers and acquisitions (M_A) the correlation is weakly positive. Weak negative correlations are established between Enterprises that use AI technologies performing analysis of written language (WRIT_LNG) and Education level of population (ED_POP), GDP per capita growth rate (GDP), Inflation rate (INF).

Correlations with the variable Enterprises use AI technologies automating different workflows or assisting in decision making (AUT_ WORK) are mainly positive for: Enterprises use machine learning for data analysis (DATA_ANAL), Enterprises use AI technologies generating written or spoken language (GEN_LNG), Enterprises use AI technologies identifying objects or persons based on images (IDENT_OBJ), Enterprises use AI technologies for logistics (LOG), Enterprises use AI technologies for marketing or sales (MKT_SALE), Enterprises use AI technologies for production processes (PROD), Enterprises use AI technologies for ICT security (ICT_SEC), Unemployment rate (UNEMP), Government expenditure on education (GEE), Mergers and Acquisitions (M_A). Education level of population (ED_POP), GDP per capita growth rate (GDP), Inflation rate (INF) are in weak negative correlation with the Enterprises use AI technologies automating different workflows or assisting in decision making (AUT_ WORK) variable.

Government expenditure on education (GEE) has weak negative correlations with the variables related to Education level of population (ED_POP), GDP per capita growth rate (GDP), Inflation rate (INF). It has moderate positive correlation with the other variables, except Unemployment rate (UNEMP) with weak positive correlation.

Enterprises use machine learning for data analysis (DATA_ANAL) has a weak negative correlation with Education level of population (ED_POP) and a moderate negative correlation with GDP per capita growth rate (GDP) and Inflation rate (INF). Strong positive correlations are established with Enterprises use AI technologies generating written or spoken language (GEN _LNG), Enterprises use AI technologies identifying objects or persons based on images (IDENT_OBJ), Enterprises use AI technologies for ICT security (ICT_SEC), Enterprises use AI technologies for logistics (LOG), Enterprises use AI technologies for marketing or sales (MKT_SALE), Enterprises use AI technologies for production processes (PROD). With the other variables, the correlations are moderately positive, respectively: Unemployment rate (UNEMP), Mergers and acquisitions (M_A).

Most of the correlations for Education level of population (ED_POP) are negative, except for Enterprises use AI technologies generating written or spoken language (GEN _LNG) and Inflation rate (INF).

Enterprises use AI technologies generating written or spoken language (GEN _LNG) is positively correlated with most variables, except Inflation rate (INF) and GDP per capita growth rate (GDP). The same negative correlations with

inflation and GDP are also found for the variable Enterprises use AI technologies for ICT security (ICT_SEC) and the variable Enterprises use AI technologies identifying objects or persons based on images (IDENT_OBJ).

Inflation, in turn, is moderately negatively correlated with Enterprises use AI technologies for logistics (LOG), Enterprises use AI technologies for marketing or sales (MKT_SALE), Enterprises use AI technologies for production processes (PROD), Unemployment rate (UNEMP), GDP per capita growth rate (GDP), Mergers and acquisitions (M_A).

The variable Enterprises that use AI technologies for logistics (LOG) is negatively correlated with only one variable, GDP. The correlations with mergers and acquisitions are all positive, while GDP continues to have negative correlations with Enterprises who use AI technologies for marketing or sales (MKT_SALE) and Enterprises use AI technologies for production processes (PROD).

The empirical results of the regression model highlight both positive and negative impacts (Table 5). A statistically significant impact is exerted by Enterprises use of AI technologies performing analysis of written language (WRIT_LNG), causing a decrease in mergers and acquisitions by 192 units. This decrease is caused by the use of technologies, especially in the due diligence process, to automatically analyze contracts and reports, in which hidden risks and inconsistencies between companies are more easily identified, leading to a decrease in M&A. It is also found that the use in compliance with regulations, companies being more cautious in M&A decisions.

Another negative impact is determined by the increase by one unit of Enterprises using AI technologies for generating written or spoken language (GEN_LNG). The decrease in mergers and acquisitions occurs when technologies generating written or spoken language allow companies to develop innovative processes and solutions internally, reducing the need for external acquisitions for expansion or know-how. Increased efficiency and lower operating costs facilitate the adoption of an organic growth strategy, at the expense of expansion through M&A.

However, several variables are driving M&A activity. Enterprises use machine learning for data analysis (DATA_ANAL) drives M&A growth because it provides advanced analysis of financial, operational and market data, contributing to the faster and more accurate identification of suitable targets for acquisitions. Improvements are also taking place in the due diligence process, through a more realistic assessment of potential synergies and the optimization of post-acquisition integration.

Enterprises use AI technologies for ICT security (ICT_SEC) drives M&A with 146 units, as it provides advanced data protection during critical M&A processes, such as due diligence and post-M&A integration. Companies that use

AI for cybersecurity can more effectively manage cyber risks during transactions and are also perceived as trusted leaders attractive as acquisition targets.

Table 5. Empirical results of the regression model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	173.5935	700.8551	0.247688	0.8070
WRIT_LNG	-192.5223	55.12720	-3.492328	0.0024***
AUT_ WORK	-74.14406	60.88790	-1.217714	0.2382
DATA_ANAL	253.4313	72.24595	3.507896	0.0024***
GEN _LNG	-136.5912	64.96257	-2.102614	0.0491**
ICT_SEC	146.5389	41.33855	3.544849	0.0022***
IDENT_OBJ	16.50612	69.31463	0.238133	0.8143
LOG	-62.75740	111.3141	-0.563787	0.5795
MKT_SALE	-61.05322	107.8186	-0.566259	0.5778
PROD	-65.20164	73.39988	-0.888307	0.3855
ED_POP	5.276449	8.922042	0.591395	0.5612
UNEMP	145.6694	54.83011	2.656742	0.0156**
GDP	-7.993286	26.62573	-0.300209	0.7673
INF	-13.10988	25.95000	-0.505198	0.6192
GEE	-52.65937	118.8259	-0.443164	0.6627

Notes: a. Dependent Variable: Zscore(MA); ***,** and * Variables are significant at 1%, 5%, 10% level.

The unemployment rate (UNEMP) stimulates mergers and acquisitions when high unemployment causes company valuations to fall and makes them more attractive for low-cost acquisitions. More vulnerable companies thus become accessible targets. Increased labor availability is also a sign of easy access to available employees, reducing post-M&A integration costs and time.

Several variables are not statistically significant. Enterprises use AI technologies automating different workflows or assisting in decision making (AUT_ WORK) may have a marginal impact due to common use in many companies. The variable Enterprises use AI technologies identifying objects or persons based on image (IDENT_OBJ) may only be relevant in certain industries such as security and has no influence on large-scale M&A. Enterprises use AI technologies for logistics (LOG) may have an impact on internal efficiency and less on merger decisions. Enterprises that use AI technologies for marketing or sales (MKT_SALE) do not outline clear synergies for M&A. Enterprises use of AI technologies for production processes (PROD) may be a common process in mature industries, thus not being a primary decision-maker for acquisitions.

Education level of population (ED_POP) does not directly affect M&A decisions or the attractiveness of a country for M&A. Government expenditure on education (GEE) also acts in the same sense. Labor market conditions, as reflected

by GDP per capita growth rate (GDP) and Inflation rate (INF), may influence the pace or timing of M&A transactions, but are not decisive factors for M&A.

Table 6. Regression model performance indicators

R-squared	0.738963	Akaike info criterion	15.43495
Adjusted R-squared	0.546619	Schwarz criterion	16.10835
F-statistic	3.841892	Hannan-Quinn criterion	15.66460
Prob(F-statistic)	0.003683	Durbin-Watson stat	1.723117

The regression model is statistically significant with Prob(F-statistic) < 0.05 (0.003683), explaining approximately 74% of the variation in the dependent variable (R-squared = 0.7389). Corrected for the number of variables, the model explains approximately 55% of the variation (Adjusted R-squared = 0.5466). The Durbin-Watson test close to value 2 indicates a suitable model from the perspective of autocorrelation (Table 6).

5. CONCLUSIONS

In the context of accelerated technology and the constant desire of companies to expand and amplify success, this paper investigates the impact of adopting artificial intelligence in company processes on mergers and acquisitions operations. The analysis was conducted for a sample of countries in the European Union, analyzed between 2021-2024.

Mergers and acquisitions have been both stimulated and slowed by the adoption of artificial technology. Enterprises use of AI technologies in performing analysis of written language determine a decrease in mergers and acquisitions caused by the use of technologies in the due diligence process, to automatically analyze contracts and reports, a way in which hidden risks and inconsistencies between companies are more easily identified, leading to a decrease in M&A. A negative impact is also determined when Enterprises use AI technologies generating written or spoken language allow companies to develop innovative processes and solutions internally, reducing the need for external acquisitions for expansion or know-how. Increased efficiency and lower operational costs facilitate the adoption of an organic growth strategy, at the expense of expansion through M&A.

The variables that drive M&A activity are Enterprises use machine learning for data analysis because it provides advanced analysis of financial, operational and market data, contributing to the faster and more accurate identification of suitable targets for acquisitions. Enterprises use AI technologies for ICT security increase M&A because they provide advanced data protection during critical M&A processes, such as due diligence and post-M&A integration. Unemployment rates increase M&A when high unemployment causes company valuations to decrease and increases the attractiveness of low-cost acquisitions.

Increased labor availability is also a sign of easy access to available employees, reducing post-merger integration costs and time.

The findings highlight the need to prioritize investments in AI for data analysis and IT security, as it demonstrates a high level of digital maturity and adaptability essential for strategic partnerships. However, caution is also needed in the use of artificial intelligence in language generation and analysis, as it is negatively associated with M&A and balancing investments with more efficient AI solutions. Macroeconomic conditions such as the unemployment rate should be on the attention of investors when periods of high unemployment can create opportunities for market consolidation. For the use of AI in logistics, marketing, production or visual identification, an insignificant influence is found, suggesting the possible redirection of technologies towards those with substantial impact when M&A is targeted.

The limitations of the research consist of the sample limited to 18 EU member states and the reduced time period between 2021-2024 due to the lack of data availability. Future research directions include the expansion of the data and the analysis sample, as well as the inclusion of other variables in the testing.

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