

# DOES SIZE MATTER? A COMPARATIVE STUDY ON AI'S INFLUENCE ON EMPLOYEE TRAINING, BUSINESS EFFICIENCY, AND COMPETITIVE PRESSURE

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## Abstract

Artificial intelligence (AI) is reshaping work organisation, yet firms do not benefit equally because adoption depends on organisational scale, resources and workforce readiness. A key practical problem is that smaller enterprises often lack the resources, infrastructure and skills needed to adopt AI, while larger firms may be better positioned to convert AI into training and efficiency gains. This study therefore examines whether company size is associated with AI-related perceptions and outcomes among private-sector firms in Hungary and Slovakia. Data were collected through a structured questionnaire from 269 private-sector enterprises and classified according to European Union size categories. The data were analysed using descriptive statistics, Pearson Chi-Square tests and Gamma coefficients. The results indicate that larger enterprises are more likely to implement AI, invest in employee upskilling, and achieve efficiency gains. Micro and small firms often face resource constraints, limiting adoption and benefits, while medium-sized firms occupy a middle position. No significant link was found between company size and perceptions of AI-related competitive disadvantage, suggesting that industry factors may play a stronger role. These findings highlight the need for targeted support for smaller firms and strategic workforce alignment in larger ones. The study's limitations include its exploratory sample size and lack of industry-specific analysis, indicating the need for broader future research.

**Keywords:** Artificial Intelligence, Firm Size, Operational Efficiency, Technology Adoption, Workforce Training.

**JEL Codes:** D22, L25, J24, M15, O33.

## Introduction

In recent years, artificial intelligence (AI) has become an increasingly important part of business operations. It influences product development, decision-making, and everyday organisational processes (Gafni & Levy, 2024). The rapid spread of machine learning, industrial robotics, and AI-based solutions has accelerated technological transformation across industries (Shuhaiber, 2022). AI is no longer used solely for process automation; it also supports customer interaction, service delivery, and strategic decision-making (Pillai & Sivathanu, 2020). Companies use AI to improve efficiency, reduce costs, and strengthen their competitive position (Alsheibani et al., 2018). However, the ability to adopt AI varies considerably among firms, particularly according to their organisational capacities and available resources.

SMEs' success in AI adoption depends mainly on their internal digital and innovation capabilities (Arroyabe et al., 2024). Although many firms recognise the benefits of AI, implementation often involves organisational and financial challenges (Dwivedi et al., 2021). Previous studies suggest that companies with easier access to AI-related knowledge and expertise are more likely to adopt these technologies and invest in employee upskilling (Shuhaiber, 2022). AI can support organisational decision-making through advanced data analysis and pattern recognition beyond traditional business intelligence tools (Brynjolfsson & McAfee, 2017). At the same time, factors such as organisational culture, managerial support, and previous technological experience also influence adoption decisions.

Larger enterprises tend to achieve higher levels of AI integration than SMEs, which often face barriers related to costs, infrastructure, limited expertise, and difficulties in attracting skilled employees (Tominc et al., 2024; Ahmed, 2024). SMEs require more targeted support to successfully implement AI technologies (Oldemeyer et al., 2025; Schwaeke et al., 2025).

This study examines how company size shapes the adoption and perception of AI. The research focuses on three main areas: AI-related workforce training, operational efficiency, and competitive pressure. First, it analyses whether company size influences investment in employee upskilling, as firms increasingly need workers with AI-related competencies (Hajmási & Machová, 2024). Second, it investigates whether organisations of different sizes perceive AI as a tool for improving efficiency. Third, it explores whether firms view the lack of AI adoption as a competitive disadvantage.

Beyond testing the statistical relationships between firm size and AI-related perceptions, this study contributes to the existing literature by providing empirical evidence from the Central European business environment, where comparative studies on organisational size and AI adoption remain limited. By addressing these questions, the study contributes to a better understanding of how micro, small, medium-sized, and large enterprises respond to AI-driven changes. The findings may support business leaders and policymakers in developing more effective strategies for AI adoption and workforce development across organisations of different sizes.

### **Literature review**

Firm size plays an important role in shaping innovation capacity and organisational performance. Smaller firms often benefit from flexibility and faster decision-making, while larger companies usually possess stronger financial and technological resources that support innovation activities (Hui et al., 2013; Machova et al., 2023). Larger organisations are generally in a better position to invest in research and development, advanced technologies, and employee training, which can strengthen long-term competitiveness (Leal-Rodríguez et al.,

2015; Khan et al., 2023). Research also indicates that company size influences the relationship between innovation and business performance, since larger firms typically have more stable access to knowledge, infrastructure, and capital (Jiménez-Jiménez & Sanz-Valle, 2011).

From a theoretical perspective, company size can be linked to AI adoption through resource availability and organisational readiness. The Resource-Based View explains differences in firms' financial, technological and human capacities, while the Technology–Organisation–Environment framework highlights the role of internal preparedness and external pressure in technology adoption. Recent studies confirm that AI may strengthen competitiveness when embedded in business operations (Guzonova et al., 2026), while successful digital transformation also depends on skilled employees and openness to organisational change (Lagodiienko et al., 2025).

The spread of artificial intelligence has made these differences even more visible. AI adoption contributes positively to firm growth and operational performance, particularly when combined with other digital technologies such as Big Data Analytics and IoT solutions (Ardito et al., 2024). Large enterprises are usually more capable of integrating AI into their organisational systems because they possess broader technological capabilities and stronger research capacities (Chen, 2020). Smaller firms, however, may react more quickly to technological changes due to simpler organisational structures and shorter decision-making processes (Farooq et al., 2021). Small frontier firms often experience notable productivity gains from AI adoption, whereas larger companies tend to benefit more strongly in terms of innovation performance (Kopka & Fornahl, 2024).

Despite these opportunities, SMEs still face several obstacles that slow the implementation of AI solutions. Limited financial resources, weaker infrastructure, lack of expertise, and difficulties in attracting qualified professionals remain among the most common barriers (Ahmed, 2024; Oldemeyer et al., 2025; Schwaeke et al., 2025). Successful AI integration also requires organisational learning, active employee involvement, and continuous

workforce development (Khan et al., 2023; Peretz-Andersson et al., 2024). In practice, this means that training and re-skilling are becoming increasingly important as companies adapt work processes to AI-supported decision-making and automation.

Larger organisations also encounter challenges, although of a different kind. Their more complex structures and formal communication systems may slow organisational change and increase coordination costs (Baumann-Pauly et al., 2013). At the same time, stronger managerial capabilities and better access to capital often make the adoption of advanced technologies easier for larger enterprises (Jylhä et al., 2020). Other studies point out that AI can positively influence innovation capacity, collaboration, and risk management across organisations of different sizes (Dvorsky, 2025; Han & Mao, 2024). AI-supported systems also improve data analysis and decision-making processes, which can contribute to operational efficiency and innovation performance (Wang et al., 2023; Li et al., 2023).

Previous research points to clear differences in how firms of different sizes approach AI adoption, workforce development, and innovation. Larger firms usually rely on stronger financial and technological resources, whereas smaller enterprises tend to build more on flexibility and adaptability. These differences make company size an important factor when examining the opportunities and challenges associated with AI integration.

## Methodology

The study examines the relationship between company size and the perception of AI-driven changes in work organisation. The research focuses on three areas: AI-related workforce training, operational efficiency, and competitive pressure. More specifically, the study investigates whether company size influences firms' views on employee training needs, efficiency improvements, and the potential competitive risks associated with AI adoption.

The research targeted private-sector firms in Hungary and Slovakia. These countries were selected because they operate within a similar European Union regulatory framework and apply harmonised SME classifications (European Commission, 2020). Companies were selected from national company registers and sectoral databases using a randomised sampling procedure. After removing duplicate and invalid contacts, invitations were sent to firms in both Hungarian and Slovak languages. Only one response per company was included in the final dataset.

Public-sector organisations were excluded because their organisational structures, decision-making processes, and funding systems differ substantially from those of private enterprises. The study therefore focused exclusively on competitive business environments.

Firms were classified according to the official European Union enterprise categories based on employee numbers, annual turnover, and balance sheet totals. The final sample consisted of 269 companies: 104 microenterprises (38.7%), 61 small enterprises (22.7%), 38 medium-sized enterprises (14.1%), and 66 large enterprises (24.5%) (Table 1).

**Table 1. Classification of enterprises by size based on European Union standards**

Company Size	Number of employees	Annual net revenue or balance sheet total	Sample size (N = 269)	Percentage of sample
<b>Microenterprise</b>	Fewer than 10 employees	≤ €2 million	104	38.7%
<b>Small enterprise</b>	Fewer than 50 employees	≤ €10 million	61	22.7%
<b>Medium enterprise</b>	Fewer than 250 employees	≤ €50 million OR balance sheet ≤ €43 million	38	14.1%
<b>Large enterprise</b>	More than 250 employees	> €50 million OR balance sheet > €43 million	66	24.5%

*\*Source: Authors' compilation based on European Commission (2020) enterprise classification and primary data collection.*

A quantitative questionnaire design was chosen because the study compares perceptions across enterprise-size groups. This approach made it possible to collect standardised answers from a relatively broad group of firms and to analyse whether responses differed by company size. The questionnaire was developed based on previous literature and expert consultations. It included three main sections: company characteristics, AI adoption, and perceived organisational impacts of AI. Before the main data collection phase, the survey was tested to improve clarity and reliability. Data collection was conducted between March and October 2024 using Google Forms.

The collected data were cleaned and validated before analysis. Duplicate responses and entries from public-sector organisations were removed. Because all questions in the online questionnaire were mandatory, the dataset contained no missing values. After validation, 269 complete responses remained for analysis.

The data were first organised in Microsoft Excel and later analysed in IBM SPSS. Descriptive statistics were used to describe the sample, followed by Chi-Square tests examining whether company size was associated with AI adoption, training needs, efficiency perceptions, and competitive concerns. The Chi-Square test was selected because both the independent and dependent variables were categorical in nature. The assumptions required for the analysis were checked in advance, and all conditions for valid application of the test were satisfied (Csallner, 2015). Pearson's Chi-square tests were

complemented with effect-size interpretation using Cramér's V, while Gamma coefficients were used where both variables were ordinal. This approach allows us to distinguish between statistically detectable associations and their practical strength. In addition, the descriptive patterns are interpreted cautiously, especially where visual differences in the figures are not supported by statistically significant test results.

Throughout the research process, anonymity and voluntary participation were ensured. Although the sample size limits broader generalisation, the study still provides useful insight into how firms of different sizes approach AI-related organisational changes.

## **Results and discussion**

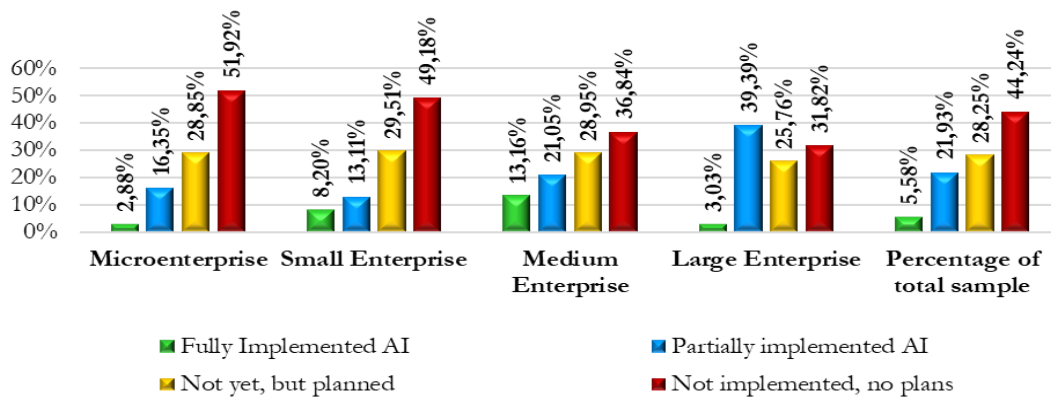
The study surveyed 269 enterprises from a broad range of industries. The largest share of firms operates in other services (16.08%), industry (15.73%), trade and vehicle repair (10.14%), construction (9.79%), and hospitality (9.09%). Transportation and storage (8.04%), manufacturing (4.90%), agriculture (4.55%), and information and communication (5.24%) were also represented. Smaller shares included healthcare, education, finance, administrative support, and creative industries. Most businesses in the sample operate as limited liability companies (59.48%), while sole proprietors account for 23.05% and joint-stock companies for 8.55%. Partnerships, cooperatives, and self-employed professionals were also included, providing a diverse picture of business structures. The sample consisted of 104 microenterprises

(38.7%), 61 small enterprises (22.7%), 38 medium-sized enterprises (14.1%), and 66 large enterprises (24.5%).

The analysis shows noticeable differences in AI adoption across company sizes. Micro and small enterprises are still mostly at an early stage, with many firms either not using AI or only considering future implementation. This cautious approach is often linked to limited financial and technical resources, as well as uncertainty about the practical value of AI in everyday operations. Medium-sized companies show higher adoption levels and stronger intentions to invest further, particularly in areas such as process automation, resource allocation, and decision support. Large enterprises report the highest level of partial AI

adoption, although implementation at this scale often involves organisational restructuring and substantial employee training.

The findings indicate that AI adoption generally rises with company size, mainly because larger firms tend to have stronger resources, better technological readiness, and greater pressure to optimise operations. At the same time, the relatively high number of firms that have not yet adopted AI points to continuing barriers, including limited expertise, uncertain returns on investment, and concerns about disruptions to existing workflows. These differences are illustrated in Figure 1, which presents the distribution of AI adoption levels across company sizes.



**Figure 1. AI adoption patterns by company size**

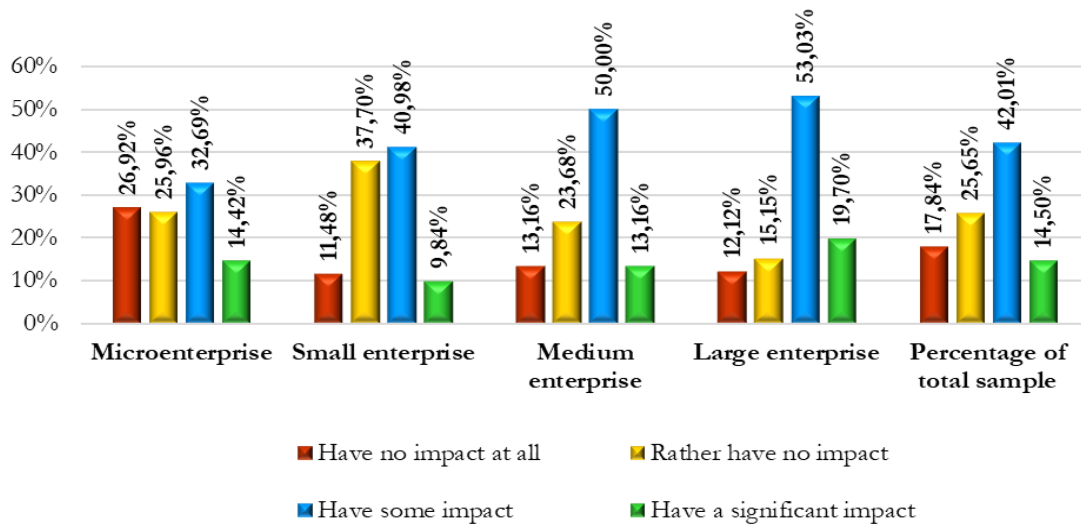
*\*Source: Authors' results.*

Building on the previous results, we examined whether company size influences how firms perceive AI-related training needs. The analysis focused on whether larger organisations are more aware of future workforce requirements than smaller businesses. Since employee training plays an important role in maintaining efficiency and adapting to technological change, the results provide insight into how companies expect AI to influence skills development over the next five years.

Figure 2 shows clear differences between company categories. Most microenterprises expect little or no effect of AI on workforce training, which is consistent with their lower level of AI adoption and more limited resources. Large enterprises, in contrast, much more frequently expect AI to substantially reshape employee training needs.

Small enterprises show somewhat greater recognition of the importance of AI-related skills development, although uncertainty is still visible. Medium-sized firms appear more prepared for these changes, as most already view AI as an important factor influencing workforce development. This suggests that greater technological readiness and stronger organisational capacities support a more proactive approach to employee training.

The gap between micro and large enterprises is particularly noticeable. Only a small proportion of microenterprises expect major training-related changes, while more than half of large companies anticipate a significant impact. The findings point to weaker adaptation capacities among smaller firms and highlight the importance of targeted support in employee training and digital development.



**Figure 2. Perceived impact of AI on training needs by company size**

*\*Source: Authors' results.*

We used Pearson's Chi-square test to examine the relationship between company size and AI-related training needs. The analysis compared company size categories (micro, small, medium, and large enterprises) with the perceived increase in training requirements measured on a four-point scale. All expected cell frequencies met the statistical assumptions required for the test. The results showed a statistically significant relationship between the two variables ( $\chi^2 = 21.066$ ;  $df = 9$ ;  $p = 0.012$ ) (Table 2). This indicates that perceptions of AI-driven training needs differ across company sizes. Larger enterprises are more likely to

expect substantial changes in employee training requirements, while smaller firms generally anticipate fewer adjustments. The findings suggest that organisational scale influences how companies prepare their workforce for AI-related changes and digital transformation. The significant Linear-by-Linear Association value ( $p = 0.002$ ) further shows that perceived training needs tend to increase gradually as company size grows. In practical terms, the difference is not only between micro and large enterprises, but also appears step by step across the size categories.

**Table 2. Chi-Square Test results for the relationship between company size and perceived impact of AI on training needs**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.066 <sup>a</sup>	9	0.012
Likelihood Ratio	20.861	9	0.013
Linear-by-Linear Association	9.903	1	0.002
N of Valid Cases	269		

*a. 0 cells (0.0%) have expected count less than 5.*

*\*Source: Authors' compilation in SPSS software based on primary data collection.*

Given that both variables are ordinal, we further examined the relationship using the Gamma coefficient (Table 3), which captures the direction and strength of the association. The result,  $\text{Gamma} = 0.234$  ( $p = 0.002$ ), indicates a weak but statistically significant positive relationship at the 1% level. This means that as company size increases, firms are more likely to

anticipate rising training needs related to AI. In practical terms, larger enterprises appear more aware of AI's implications for workforce development, reflecting their higher adoption rates, greater exposure to automation technologies, and more structured HR strategies. Smaller firms, in contrast, remain less prepared, largely due to resource constraints and limited

understanding of AI’s long-term impact on skills. These findings underscore that company size not only shapes AI adoption itself but also the extent

to which organisations prepare their employees for technological transformation.

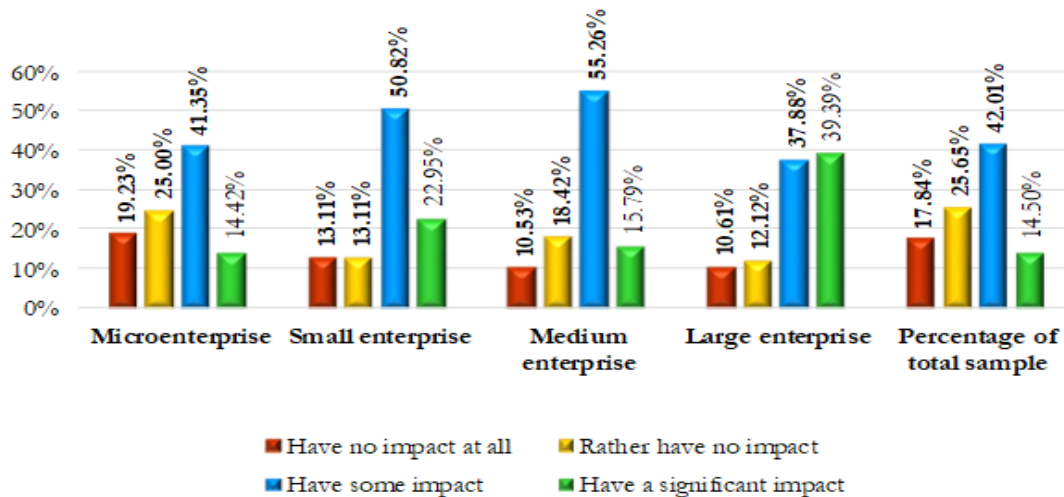
**Table 3. Gamma coefficient analysis of the association between company size and perceived AI-driven training needs**

		Value	Asymptotic Standard Error <sup>a</sup>	Approximate T <sup>b</sup>	Approximate Significance
Ordinal by Ordinal	Gamma	0.234	0.074	3.146	0.002
N of Valid Cases		269			
<i>a. Not assuming the null hypothesis.</i>					
<i>b. Using the asymptotic standard error assuming the null hypothesis.</i>					

\*Source: Authors’ compilation in SPSS software based on primary data collection.

To examine how company size shapes perceptions of AI-driven efficiency improvements, we analysed views on workflow optimisation and process acceleration (Figure 3). Microenterprises remain relatively sceptical, as most respondents expect only limited or moderate efficiency gains. Lower adoption levels, continued reliance on manual processes, and restricted resources likely reduce their ability to take full advantage of AI-based solutions. Small and medium-sized enterprises show a stronger recognition of AI’s practical benefits. Many firms in these categories already associate AI with smoother workflows, faster processes, and improved decision-making. As organisations grow and become more digitally developed,

awareness of AI’s potential for improving efficiency also appears to increase. Large enterprises express the strongest confidence in AI-related efficiency gains. Higher adoption rates, broader automation practices, and stronger financial capacities make these firms more likely to view AI as an important tool for workflow optimisation and cost reduction. The results show a gradual shift across company sizes: while smaller firms often see AI as a supplementary tool, larger enterprises increasingly perceive it as a key factor in improving operational efficiency. Besides resource availability, this difference is also linked to the greater pressure large organisations face to coordinate and optimise more complex operations.



**Figure 3. Perceived impact of AI on efficiency and process acceleration by company size**

\*Source: Authors’ results.

To assess whether company size significantly influences perceptions of AI-driven efficiency improvements, we performed a Pearson Chi-Square test (Table 4). The

assumption regarding minimum expected cell counts was met, ensuring the validity of the analysis. The test produced  $\chi^2 = 22.104$  with 9 degrees of freedom and a p-value of 0.009,

indicating a statistically significant association at the 1% level. This finding demonstrates that the way firms perceive AI's potential to enhance efficiency is not random but systematically related to their size. Larger companies are considerably more likely to view AI as a key driver of workflow optimisation, while smaller enterprises remain cautious or unconvinced. In practical terms, this reflects how differences in

resources, process complexity, and digital maturity shape organisational expectations of AI's benefits. The significant Linear-by-Linear Association result ( $p = 0.001$ ) indicates that perceived efficiency benefits rise progressively across company-size categories. AI becomes more visible as a practical tool for workflow improvement when firms operate with more complex organisational processes.

**Table 4. Chi-Square Test results for the relationship between company size and perceived AI-driven efficiency improvements**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.104 <sup>a</sup>	9	0.009
Likelihood Ratio	21.104	9	0.012
Linear-by-Linear Association	12.059	1	0.001
N of Valid Cases	269		

*a. The Chi-Square test condition was met, since 0 cells (0.0%) had expected counts lower than 5.*

\*Source: Authors' compilation in SPSS software based on primary data collection.

While the Chi-Square test confirms the existence of a significant relationship, it does not capture its strength or direction. To address this, we applied the Gamma coefficient (Table 5). The result,  $\text{Gamma} = 0.275$  ( $p < 0.001$ ), indicates a weak but statistically robust positive association. This means that as company size increases, firms are more likely to perceive AI as an efficiency-enhancing tool.

In practice, this suggests that larger enterprises recognise AI as a driver of workflow

optimisation and process acceleration because they rely more heavily on automation and possess greater resources for integration. Smaller firms, by contrast, continue to perceive AI's efficiency benefits more cautiously, reflecting both their lower adoption rates and limited technological capacity. These findings reinforce the view that organisational scale not only conditions the level of AI implementation but also shapes expectations of its transformative potential.

**Table 5. Gamma Coefficient analysis for the relationship between company size and perceived AI-driven efficiency improvements**

	Value	Asymptotic Standard Error <sup>a</sup>	Approximate T <sup>b</sup>	Approximate Significance
Ordinal by Ordinal Gamma	0.275	0.072	3.750	0.000
N of Valid Cases	269			

*a. Not assuming the null hypothesis.*  
*b. Using the asymptotic standard error assuming the null hypothesis.*

\*Source: Authors' compilation in SPSS software based on primary data collection.

To assess how company size influences the perception of AI as a competitive disadvantage, we analysed whether firms believe they risk falling behind due to AI adoption (Figure 4). Micro and small enterprises generally express limited concern, with most anticipating little or only moderate impact. This likely reflects their operation in local or niche markets where AI penetration remains low and direct

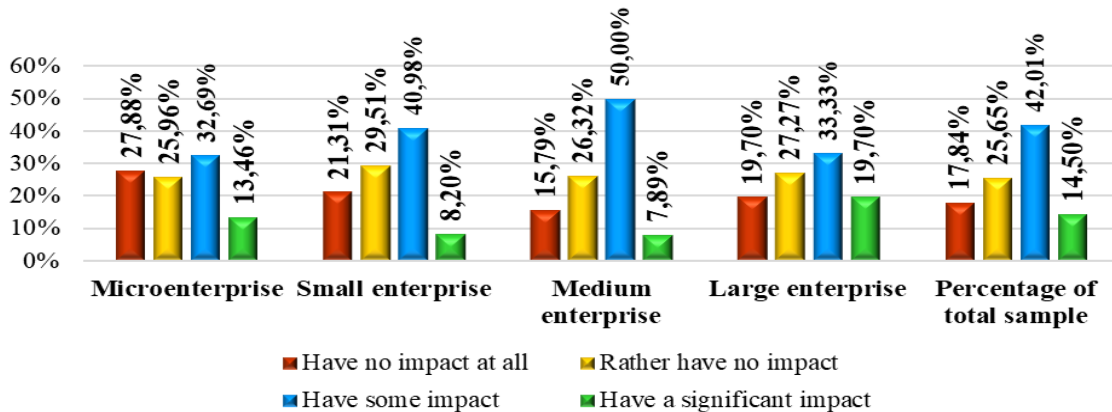
competition with AI-driven firms is less pronounced.

Medium-sized enterprises show the highest level of concern, with half recognising AI as a potential competitive disadvantage. Their position between smaller and larger players may expose them to competitive pressures from both sides, particularly when competing with resource-rich firms that already integrate AI into

their operations. Large enterprises also report significant competitive pressure, with a notable share anticipating strong disadvantages if they lag behind in AI adoption. This reflects their exposure to fast-moving, innovation-driven markets where AI has already become a decisive factor for maintaining market leadership.

The results reveal a clear trend: while micro and small businesses remain relatively

unconcerned about AI-driven competition, medium and large firms perceive greater risks. This suggests that competitive pressure is shaped not only by firm size but also by industry dynamics, where sectors with rapid AI diffusion force firms to adopt or risk losing their competitive edge.



**Figure 4. Perceived competitive disadvantage due to AI by company size.**

\*Source: Authors' compilation based on primary data collection.

To determine whether company size significantly influences the perception of AI as a competitive disadvantage, we conducted a Pearson Chi-Square test (Table 6). The result ( $\chi^2 = 9.415$ ,  $df = 9$ ,  $p = 0.400$ ) was not statistically significant, indicating no systematic relationship between firm size and perceptions of AI-related competitive risks. In practical terms, this means that concerns about falling behind due to AI

adoption are not determined by company size. Instead, such perceptions are likely shaped by other factors, including industry dynamics, technological readiness, and strategic outlook. These findings suggest that even small firms may feel competitive pressure in rapidly digitalising sectors, while some large firms may not perceive AI as an immediate threat depending on their market environment.

**Table 6. Chi-Square Test results for the relationship between company size and perceived competitive disadvantage due to AI**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.415 <sup>a</sup>	9	0.400
Likelihood Ratio	9.276	9	0.412
Linear-by-Linear Association	2.291	1	0.130
N of Valid Cases	269		

*a. This result relates to the Chi-Square test assumption, which requires that no more than 20% of cells have an expected count below 5. In this case, only 1 cell (6.3%) fell below this threshold, so the test remains valid.*

\*Source: Authors' compilation based on primary data collection.

As a final step in our analysis, Table 7 summarises the hypothesis testing results, which offers a clear and structured overview of the statistical relationships examined throughout the study. The findings show that company size has a significant impact on AI adoption, efficiency

improvements and training needs. By contrast, it has little influence on perceived competitive disadvantage. Larger firms are more likely to integrate AI into their workflows, optimise processes, and prepare employees for AI-driven tasks. In contrast, smaller firms face more

challenges in AI implementation, which may limit their ability to benefit from automation and process acceleration. From a management perspective, these findings highlight the need for tailored AI strategies based on company size. Large enterprises can focus on scaling AI solutions and aligning them with workforce development, while smaller firms may require more support, simplified AI applications, and cost-effective solutions to enhance their operations. Training and skill development programs should also be designed with these

differences in mind to ensure that AI adoption contributes to more efficient work organisation across all company sizes.

The insights gained from this study are particularly relevant in modern management challenges, where AI is becoming a key factor in shaping work processes. As businesses prepare for the future of AI-driven work organisation, decision-makers must consider both technological and human resource factors to integrate AI into their operations successfully.

**Table 7. Summary of hypothesis testing**

Hypothesis	Chi-Square Value	P-Value	Significance Level
H1: Company size influences perceived AI-driven training needs	21.066	0.012	<i>Significant at 5% level</i>
H2: Company size influences perceived AI efficiency improvements	22.104	0.009	<i>Significant at 1% level</i>
H3: Company size influences perceived AI-related competitive disadvantage	9.415	0.400	<i>Not significant</i>

*\*Source: Authors' results.*

### **Conclusion**

The results indicate that company size has a clear influence on how firms approach AI adoption, workforce development, and operational efficiency. Large enterprises are much further ahead in integrating AI into daily operations, while many micro and small firms are still only experimenting with these technologies or remain uncertain about their practical value. These differences are closely connected to available resources, technological readiness, and internal expertise.

The most visible differences appeared in employee training and perceptions of efficiency improvements. Larger companies are more likely to expect increasing training demands and to view AI as a useful tool for workflow optimisation, automation, and cost reduction. Smaller firms recognise these advantages more cautiously, mainly because of lower adoption levels and more limited organisational capacities. The statistical analysis confirmed significant relationships between company size and both AI-related training needs and perceived efficiency improvements.

At the same time, no significant relationship was found between company size and perceptions of AI-related competitive disadvantage. This suggests that competitive pressure is influenced more by industry conditions and market dynamics than by company size itself.

The findings point to the need for different approaches to AI implementation across company categories. Smaller firms may benefit from more accessible digital solutions, external expertise, and targeted support programmes, while larger enterprises face greater challenges in integrating AI into existing organisational structures and employee development strategies. For business practice, this means that micro and small firms should begin with low-cost AI applications in administration, customer communication, inventory monitoring, and routine decision support. These areas require relatively limited investment and can help smaller firms gain experience before adopting more complex AI systems.

Several limitations should also be considered. The exploratory sample of 269 firms from Hungary and Slovakia limits broader generalisation, and the use of self-reported survey data may not fully reflect actual organisational practices. In addition, the cross-sectional design captures perceptions at a single point in time.

Future research could expand the sample, compare industries in greater depth, and include objective indicators such as AI investments, automation intensity, or training expenditures. It

would also be useful to examine different stages of AI adoption, since firms using isolated AI tools may face different challenges from organisations where AI already forms part of everyday operations.

The study also suggests that AI adoption is shaped by organisational scale, available resources, managerial preparedness, and workforce capabilities alongside technological factors. These differences should be taken into account when designing AI strategies and digital support initiatives for firms of different sizes.

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