UNIVERSITY OF LIFE SCIENCES ”KING MIHAI I” FROM TIMISOARA
”YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES”

05-06 November 2026



AI ADOPTION AND ECONOMIC READINESS IN THE EU

KABANOVA ANASTASIIA [1], ȚURCAN RINA[1] , TONEA ELENA[2]
[1]*Technical University of Moldova, Faculty of Economic Engineering and Business, Chișinău, Republic of Moldova*
[2]*University of Life Sciences “King Mihai I” from Timișoara, Faculty of Management and Rural Tourism, Romania*

Abstract: *The rapid digital transformation of business has created new opportunities for productivity, innovation, and competitiveness, while revealing substantial differences in the capacity of European Union economies to adopt emerging technologies. This study aims to examine artificial intelligence (AI) adoption among enterprises in the EU and its association with economic readiness. The analysis is designed to compare enterprise digital intensity across EU member states, assess trends in business AI adoption during 2021–2025, and investigate cross-country disparities in 2025. Particular attention is given to the relationship between AI adoption and gross domestic product per capita. The proposed empirical framework further considers digital skills, the availability of ICT specialists, enterprise cloud computing use, research and development expenditure, and innovation performance as potential explanatory factors. Data are to be drawn primarily from Eurostat and the European Innovation Scoreboard, using descriptive statistics, comparative visualisations, correlation analysis, and, subject to data availability and diagnostic checks, regression modelling. The study seeks to identify patterns of association and economic conditions linked to enterprise AI adoption, providing evidence relevant to digital transformation strategies and policy development across the EU.*

• Introduction

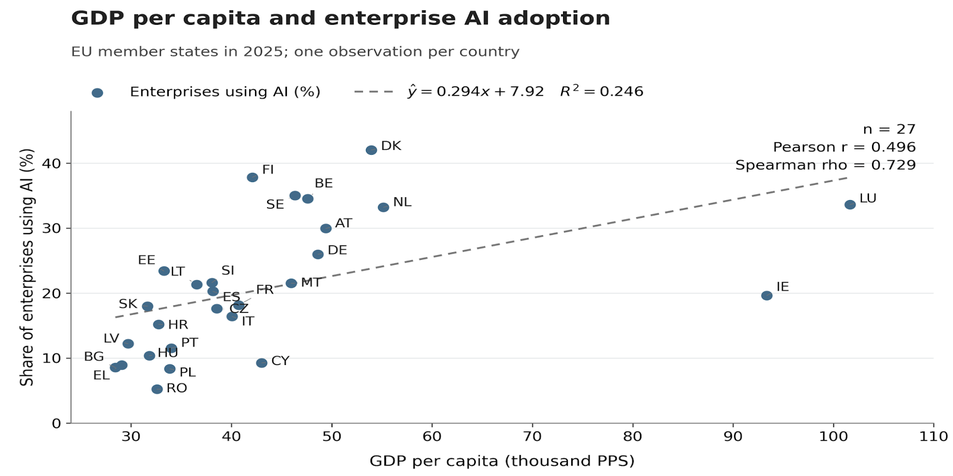
The rapid digital transformation of European businesses has accelerated the adoption of artificial intelligence (AI), creating new opportunities for innovation, productivity, and competitiveness. However, significant disparities in AI adoption persist across EU member states, reflecting differences in economic development and technological capabilities. Economic readiness for AI adoption extends beyond financial resources and involves digital skills, ICT expertise, technological infrastructure, and innovation capacity. Examining these factors is essential for identifying the conditions associated with AI adoption and supporting effective digital transformation strategies across the EU.

• Material and method

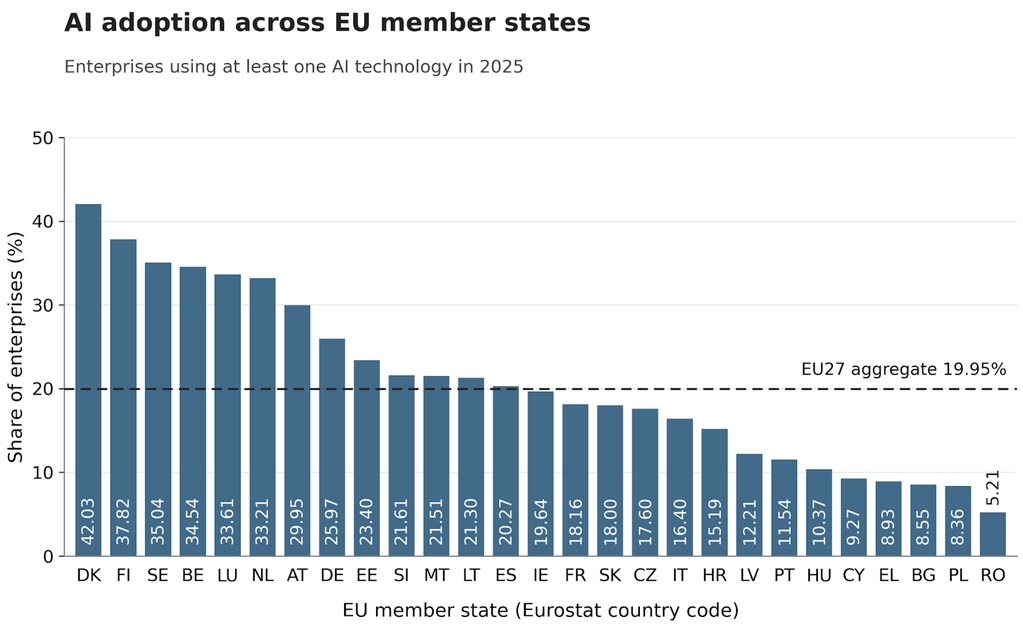
The study examines AI adoption across all 27 EU member states, using data from Eurostat and the European Innovation Scoreboard. The analysis covers enterprise AI adoption trends during 2021–2025 and cross-country differences in 2025, focusing on enterprises with at least 10 employees. Descriptive statistics, comparative analysis, and Pearson and Spearman correlation coefficients are applied to assess adoption patterns and their relationship with GDP per capita. Multiple linear regression models are employed to examine associations between AI adoption and economic readiness indicators, including digital skills, ICT specialists, cloud computing use, R&D expenditure, and innovation performance. Statistical uncertainty is assessed using HC3 robust standard errors and 95% confidence intervals.

• Results and discussions

AI adoption among EU enterprises increased from 7.65% in 2021 to 19.95% in 2025, while 72.11% of enterprises achieved at least basic digital intensity. Significant disparities were observed across member states, with Denmark recording the highest AI adoption rate (42.03%) and Romania the lowest (5.21%). GDP per capita showed a moderate positive correlation with AI adoption (Pearson’s r = 0.496), indicating that economic prosperity alone cannot fully explain national differences. The regression model incorporating GDP, digital skills, and cloud computing explained 58% of the variation in AI adoption. Alternative models revealed positive associations with ICT specialist employment, R&D expenditure, and innovation performance, with adjusted R^2 values of 0.606, 0.739, and 0.738, respectively. These findings suggest that technological expertise and innovation capacity are important components of economic readiness for AI adoption, although the observed relationships do not establish causality.



Sources: Eurostat nama_10_pc and isoc_eb_ai; data retrieved 26 October 2026.
Enterprises with 10 or more persons employed in covered sectors. PPS adjusts for country price levels.
Ordinary least squares fit; GDP includes provisional observations. The relationship is descriptive.



Source: Eurostat isoc_eb_ai; extracted 26 October 2026.
Enterprises with 10 or more persons employed in covered activities. The Netherlands has a break-in-series flag.

• Conclusions

AI adoption among EU enterprises has increased significantly, although substantial disparities persist across member states. The findings indicate that economic prosperity alone is insufficient to explain these differences, highlighting the importance of technological expertise, R&D investment, and innovation capacity. Strengthening digital competencies, supporting technological innovation, and improving access to AI expertise may facilitate broader business adoption. However, successful AI integration requires careful evaluation of business needs, implementation costs, and potential benefits. The results provide insights for developing more targeted digital transformation strategies and policies across the EU.