

European Foundation for the Improvement of Living and Working Conditions

The tripartite EU agency providing knowledge to assist in the development of better social, employment and workrelated policies

The challenges of digital change and artificial intelligence for the world of work and social protection systems in the EU Member States

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Adoption rates of AI is expected to grow fast



Source: The Trajectory of Computer, Internet, and Al Adoption, Source: Bick et al. (2024)



How many jobs in Europe are *exposed* to AI?



- Estimates of exposure to AI are large but vary significantly
- Variation exists with respect to *where* AI exposure is going to be the largest:
 - Urban areas
 - Westerns & Northern Europe
 - High-income regions
- And *who* is more likely to be *exposed* to AI:
 - High-skilled workers
 - Working from home
 - Women
 - Older workers



Employment effects are relatively small



- Generally, positive effects of AI on employment
- Small employment effects relatively limited diffusion of AI technologies and the niche-level nature of adoption of AI
- Al is not only automating but also augmenting jobs
- Occupations that are more vulnerable to be replaced by AI are already growing slower



Al adoption in Europe started slowly...



Source: Enterprises using at least one AI technology, Eurostat ICT Survey.



...and accelerated quickly



Share of enterprises which use at least one AI system in the EU (ESTAT)



Low take-up in some sectors



Source: Enterprises using at least one AI technology by sector (Left panel) and type (Right panel), Eurostat ICT Survey.



...while the use of service robots is stagnating



Share of enterprises which use service robots

Source: Own calculations, Eurostat ICT survey.



Al holds the promise of significant productivity gains

- Simulation scenarios indicate that AI is likely to generate large increases in productivity
- Under the low adoption scenario (23% of firms use AI) -> 3% gain in productivity
- Under the high adoption scenario (40% firms use AI) -> 9%-11% gain in productivity



Source: OECD (2024).



Implied sectoral total factor productivity gains from AI over a 10-year horizon

Digitalisation and AI in the banking industry



Impact of digitalisation on employment in the financial sector

- Service sectors have accounted for all aggregate employment growth between 2008 and 2021, but the financial and insurance services sector has been one of the very few service sectors to have only modest employment increases.
- Overall increase is due to auxiliary services and partially to insurance, in which employment has been rising.
- The financial services sector (including most retail banking activities) has seen a significant decrease in total employment: by 9.6 percentage points in 13 years.

Employment change in service sectors, 2008–2021, EU27 (percentage points)



EU27 (all employment)



Source: EU Labour Force Survey



Digitalisation 1.0 - shift in occupational composition

- Occupational and educational upgrading has been relatively rapid in the sector compared to other sectors nearly two thirds of retail banking staff were graduates in 2020 (65%).
- There has been a shift in occupational composition of employment with a higher share of specialized professionals and fewer clerical support workers and managers.



Employment by broad occupation



Digitalisation 2.0 – impact of Al

- Demand for AI skills in the sector has grown significantly in the past decade
- Impact of AI on employment and skill composition primarily to be felt in professional occupations



Source: PWC, AI jobs barometer, 2024.





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Job quality & Al use Insights from case studies





What is job quality? And why is it important?

Physical environment

Posture-related (ergonomic) Ambient (vibration, noise temperature) Biological and chemical

Work intensity

Quantitative demands Pace determinants and interdependency Emotional demands

Working time quality

Duration Atypical working time Working time arrangements Flexibility

Social environment

Adverse social behaviour Social support Management quality

Skills and discretion

Cognitive dimension Decision latitude Organisational participation Training

Prospects

Employment status Career prospects Job security Downsizing

Earnings



2017 UPDATE



Job transformation rather than destruction...



For operators:

- Tasks simplification (cognitive underload & skills underutilisation)
- Physical demands remain
- Training: focus on safe technology
 use

For managers:

- Greater reliance on data-driven decision-making and system
- * Employment levels the same as in non automated warehouses

Highly automated manufacturing site



For shopfloor workers:

- Increased job complexity, high cognitive load
- Training: on-the-job, narrowly focused on specific technologies
- * Employment levels unchanged after relocation to new high-tech facility



Job (re) design: different approaches from case studies

- Top-down job redesign: Management-led initiatives that selectively automate tasks to maintain critical human oversight.
- Bottom-up job crafting: Worker-led adjustments using AI to offload tedious tasks, though overdependence on automation may risk skill loss.
- Job co-design and job (re)design via co-determination



Uptake of AI work management systems

- Mainly in larger companies
- Mainly in jobs with manual/repetitive routine tasks
- Relatively low uptake but growing across the EU27
- Sharp increase in worker-monitoring software (COVID-19)
- Increased number of patents for AIWM technologies





Source: EU-OSHA https://healthy-workplaces.eu

Examples of AI work management use

- To ensure optimal labour coverage of work shifts by assigning tasks and work schedules to specific workers automatically.
- To evaluate worker performance and productivity and provide recommendations on how it can be improved.

Source: EU-OSHA https://healthy-workplaces.eu





Perceptions





Use of digital technologies – workers' experience

Workers report that their organisation uses digital technologies to:

- Determine speed of work (52%)
- Increase surveillance (37%)
- Allocate tasks, working times, or shifts (30%)
- Have performance rated by 3rd parties (27%)
- Supervise/monitor work or behaviour (25%)
- Monitor vital signs (7%)

Source: OSH pulse 2022 - EU-27 (n=25,683) https://healthy-workplaces.eu



Robots and AI generally perceived positively in the EU



Source: Own calculations, Eurobarometer Survey 554.



Fears of job loss as a result of robots and AI remain



Due to the use of Robots and Artificial Intelligence, more jobs will disappear than new jobs will be created

Source: Own calculations, Eurobarometer Survey 554.



Negative perceptions about AI for intrusive purposes



Source: Own calculations, Eurobarometer Survey 554.



What's holding us back?



- 1. Need to rethink the way training and reskilling is organised and delivered.
- 2. Greater emphasis and transparency needed on job redesign strategies.
- 3. Limited workers involvement. Increased mental health impact.
- 4. No ethical thinking and human centricity in technology design and implementation (autonomy, humans in control, minimal use of personal data).





Emerging collective agreements on AI

- Issues related to digitalisation are not systematically addressed in existing agreements.
- A new wave of agreements focusing on Al is gaining momentum.
- Early adopters include **banking and insurance sectors**, leading the way in negotiating AI-related issues.





AI: Are fears just fears, or could they turn into reality?

- Al mostly **used to augment work**, rather than eliminate jobs.
- Future plans for tech adoption in companies show **job cuts are not ruled out**.
- Employees' stressors: fear of job loss, greater monitoring of activities, skills obsolescence, tech complexity or unreliability.



Conclusions

- Currently entering a new era of digitalisation characterised by faster adoption of AI technologies and diversifying the tasks that can be done by AI
- In the EU adoption rates remain low which also limits potential consequences of AI (positive or negative). However, the trend turns rapidly into acceleration.
- Aggregate employment effects of AI mostly positive, but much will depend on how productivity improvements play out as well as on balance between AI automation and augmentation
- Companies prioritize redeployment and training over job loss; but upskilling not easy for companies to do
- Importance of workers' participation in workplace implementation of AI



ARTIFICIAL GENERAL INTELLIGENCE

The future

(near)



Artificial General Intelligence

- Autonomous (independent);
- Regulatory framework limitations and enforcement;
- Interactions worker-AGI; employer – AGI; worker – (AGI?) – employer;
- Other ???



