

Workshop  
**Human-centred  
digital transitions:**  
skill mismatches in European workplaces



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#ESJS2



**CEDEFOP**

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# THE IMPACT OF SKILLS UTILISATION AND JOB COMPLEXITY ON PARTICIPATION IN JOB-RELATED EDUCATION AND TRAINING

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# RELEVANCE OF THE TOPIC

**Lifelong learning is critical** to address challenges driven by aging populations and economic shifts (Cunha et al., 2006)

**EU goals:** promote continuous skill development (European Commission, 2010)

- However, training **access** remains uneven disadvantaging certain groups (Dieckhoff et al., 2007; Blossfeld et al., 2014, Roosmaa, 2022)

**Growing literature on skill mismatch** -> Desjardins and Rubenson, 2013, Levels, van der Velden, and Allen, 2014; Felstead, Gallie, and Green, 2017; Livingstone, 2017; Fregin, 2019; Fregin et al., 2020; Mavromaras and McGuinness, 2012)

- However, **limited interaction** between skill mismatch and adult training

# THEORETICAL BACKGROUND AND FINDINGS FROM RESEARCH I

## Human capital theory (Becker, 1975):

- Individuals and employers invest in training when **returns exceed the costs**
- **General vs specific skills**-> employers would support only training that develops specific work-related skills due to the risk that general skills are transferable across different employers

Companies are also **willing to invest in the general** knowledge and skills of their employees (Acemoglu and Pischke 1999; Loewenstein and Spletzer, 1999; Bills and Hodson, 2007)

## Human capital depreciation:

- Skills can become outdated due to technological changes
- Role of training: Align existing skills with new technology demands (Buchtemann and Soloff, 2003)
- Training plays a critical role in replenishing human capital (Rosen, 1975; Mincer and Ofek, 1982) and acts as a remedy for skill obsolescence (de Grip and van Loo, 2002).

Acemoglu and Pischke (1999) emphasise that new technologies make training essential, although labour market imperfections can result in suboptimal levels of workplace training.

# THEORETICAL BACKGROUND AND FINDINGS FROM RESEARCH II

**Workplace and job characteristics** influence training participation more than individual traits (Schindler et al., 2011; Görlitz and Tamm, 2016; Saar and Räis, 2017; Ehlert, 2020; Hornberg et al., 2024)

- **Job tasks** are fundamental to the essence of performing a particular job (Autor and Handel, 2013)
- Employees in **routine jobs** often receive less training (Ehlert, 2020)
- Job task profiles significantly influence access to training opportunities and jobs involving **complex tasks** often require rare skills, necessitating **additional training** to bridge skill gaps (Schindler et al., 2011)
- Tasks tied to occupations that involve the use of **new technologies or high obsolescence risks** demand continuous training to maintain productivity (Breshanan et al., 2002)
- Workers in jobs with **high automation risk** - > higher likelihood of job loss and limited access to training

# THEORETICAL BACKGROUND AND FINDINGS FROM RESEARCH III

## Influence of mismatches on training participation:

- Compared to well-matched employees, underskilled and overskilled workers are likely to have different motivations for engaging in job-related learning (Ferreira, Künn-Nelen and De Grip, 2017).
  - **Underskilled** -> typically need more training to perform adequately in their jobs
  - **Overskilled** -> may seek training to keep their skills current or to prevent skill depreciation
    - Being underskilled may encourage further learning investments, while being overskilled at job entry could discourage additional learning due to the potential deterioration of a worker's initial skill set from non-use

# THEORETICAL BACKGROUND AND FINDINGS FROM RESEARCH IV

## Alternative approaches to HCT:

- Human capital investment is influenced by macro-level social and economic institutions and the structure of work settings (Bassanini et al., 2007)
- Recent research in adult education has sought to integrate and elaborate on the role of structural and institutional dimensions in shaping participation patterns (Blossfeld et al., 2014; Rubenson and Desjardins, 2009; Saar, Ure and Desjardins, 2013; Roosmaa, 2022)
  - Therefore, both Individual and structural characteristics of work, economy, and society influence participation in adult education (Desjardins and Rubenson, 2011; Rubenson and Desjardins, 2009; Nilsson and Rubenson, 2014)

# ARTICLE SEEKS TO ANSWER THE FOLLOWING RESEARCH QUESTIONS

1.

How does the extent of skills utilisation affect participation in job-related training?

2.

In what ways does job complexity influence participation in job-related training?

3.

How does job complexity moderate the relationship between skills utilisation and participation in job-related training?

# HYPOTHESES

H1: Higher skill utilisation increases the likelihood of participation in job-related training

H2: Higher job complexity increases the likelihood of participation in job-related training

H3: Job complexity moderates the relationship between skills utilisation and participation in job-related training, with the impact of skills utilisation on training decreasing as job complexity increases

# DESCRIPTION OF VARIABLES I

## Dependent variable:

Participation in job-related training: *In the last 12 months, have you participated in any education or training activities to learn new job-related skills?*

## Independent variables:

Skill utilisation: *To what extent can you use your current knowledge and skills in your main job?*

Job complexity index: *How often did you do any of the following activities as part of your main job in the last month?*



1. Choosing the methods or tools of your work
2. Planning your work activities
3. Reacting to situations that could not be anticipated
4. Working on varying assignments
5. Learning new things
6. Try to develop or create new or improved products or services
7. Try to develop new or improved ways of doing your work

# DESCRIPTION OF VARIABLES II

**Control variables:** Gender, age group, highest educational level, occupation group, firm size, previous main activity, tenure in the current company, sector, contract type, work changes (changes in technology, in products, in work location), work routinisation index (task repetitiveness and following fixed procedures).

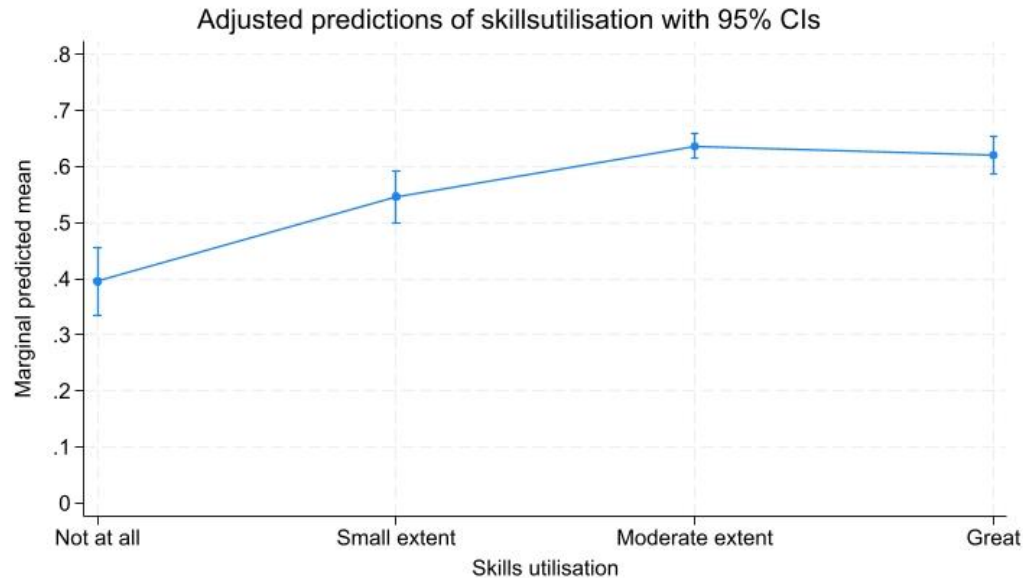
**Analysis:** Using multilevel logistic regression to examine the relationship between job-related training participation and skill utilisation and job complexity.

Predicted probabilities of training participation were calculated based on these models.



# - Results

# EFFECT OF SKILL UTILISATION ON PARTICIPATION IN JOB-RELATED TRAINING

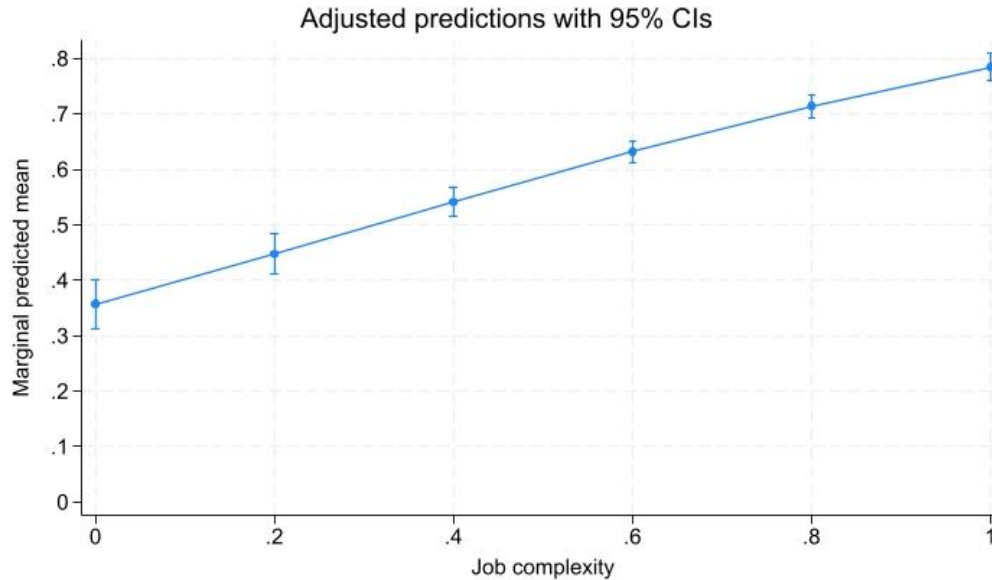


**Figure 1.** Predicted probabilities of job-related training participation at different levels of skills utilisation. Source: ESJS, own calculations based on multilevel logistic regression. All other covariates in the model were set to their respective means for these predictions.



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# EFFECT OF JOB COMPLEXITY ON PARTICIPATION IN JOB-RELATED TRAINING

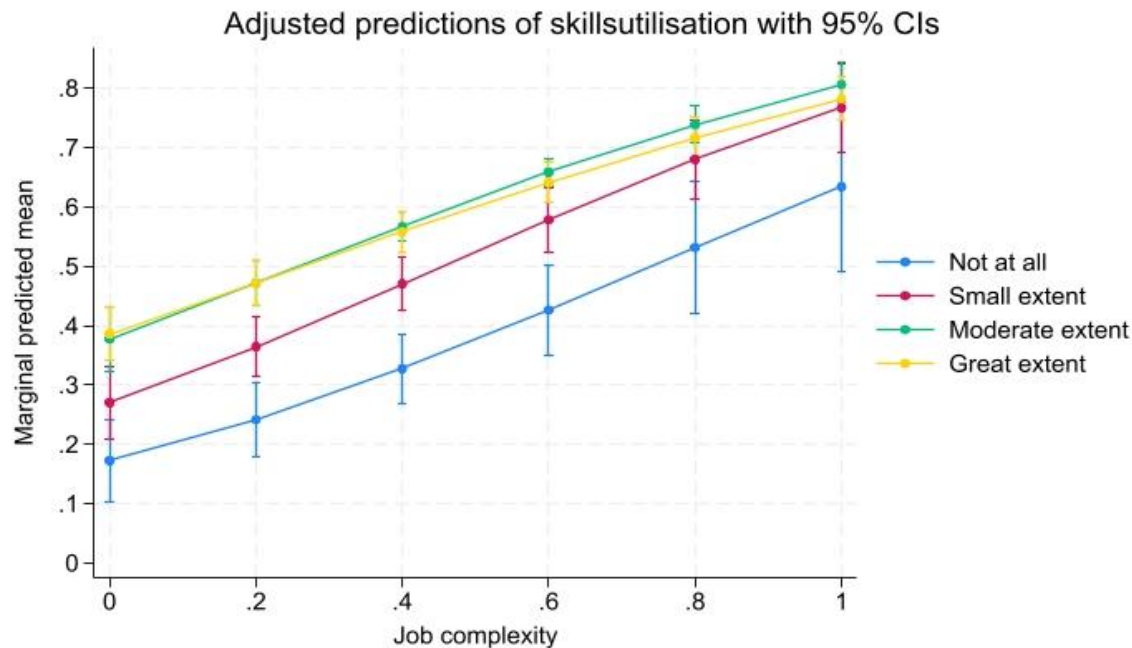


**Figure 2.** Predicted probabilities of job-related training participation at different levels of Job complexity. Source: ESJS, own calculations based on multilevel logistic regression. All other covariates in the model were set to their respective means for these predictions.



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# EFFECT OF INTERACTION OF SKILL UTILISATION AND JOB COMPLEXITY ON PARTICIPATION IN JOB-RELATED TRAINING



**Figure 3.** Predicted probabilities of job-related training participation at different levels of skills utilisation and job complexity. Source: ESJS, own calculations based on multilevel logistic regression. All other covariates in the model were set to their respective means for these predictions.



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# CONCLUSIONS

This article addressed a research gap in understanding how skills utilisation and job complexity affect training participation.

- The results show that workers who do not use their skills at all or only to a small extent are **less likely** to engage in job-related training compared to those with moderate or high skills utilisation
  - This finding aligns with the notion that higher skills utilisation is linked to greater training engagement
- The analysis also indicate that **higher job complexity** increases the likelihood of training participation, which is consistent with the theoretical framework suggesting that complex job roles necessitate continuous skill development to keep pace with evolving demands (Schindler et al., 2011; Bresnahan et al., 2002)

# CONCLUSIONS

Moreover, the results reveal a significant **positive interaction between skills utilisation and job complexity**:

- Higher job complexity enhances the probability of training participation across all levels of skills utilisation, with a more pronounced effect for employees using their skills to a small extent
- This suggests that complex job environments can mitigate some of the negative impacts of lower skills utilisation and reduce participation inequalities

# IMPLICATIONS

The findings emphasise the importance of considering both skills utilisation and job complexity to **better understand access to training participation**:

- **Job complexity** does not only shape the training needs but also reduce disparities in training opportunities
- Importance of conducting **yearly developmental talks** with employees or using self-report surveys to address together with other relevant topics also employees' perspectives on their skill utilisation and identify further training needs
  - Also to learn about their willingness to further develop their skills and advance in their careers
- **Developing targeted training programs** for workers with low skills utilisation can enhance their ability to apply their skills and prepare them for more complex tasks, benefiting both the companies and the individuals
- **Enhancing job complexity** by redesigning roles to include more varied tasks (if possible) can foster continuous learning and development, which can result in higher employee engagement and retention
- By implementing these strategies, companies and policymakers can cultivate a more skilled workforce and drive innovation in response to a rapidly changing labour market



Thank you!

Feel free to contact me: [liisa.martma@tlu.ee](mailto:liisa.martma@tlu.ee) or [LinkedIn](#)

See also: [www.skills2capabilities.eu](http://www.skills2capabilities.eu)

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