



Measuring Industry 5.0 Adoption - an innovative data- driven approach



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Agenda

What is Industry 5.0?

Methodology & data sources

Industry 5.0 dictionary (AI-driven)

Vacancy and company analysis

Jobseekers' perspectives

Key findings & policy relevance

Q&A

What is Industry 5.0?

- Industry 5.0 emphasises collaboration between machines, humans, societal values, tasks, and the convergence of knowledge and skills to deliver tailor-made products and services (Leng et al., 2022).
- Three core principles: human-centricity, sustainability, resilience.
- Focus on worker well-being, green transitions, and robust value chains.
- Expected impact: major changes in skills, qualifications, knowledge, expertise, and work environments, according to academia and business leaders (Akundi et al., 2022; Long et al., 2020; Modgil et al., 2023; Nahavandi, 2019).

- Industry 5.0 is still in its early stages, and no dedicated dictionary or taxonomy exists.
- Traditional statistics provide limited granularity and timeliness.
- This lack makes research, monitoring, and policymaking more complex.
- Goal: Empirically explore Industry 5.0 practices using unstructured data.

Research Questions:

- To what extent do companies already reflect Industry 5.0 practices?
- How do Industry 5.0 practices correlate with skill demands?

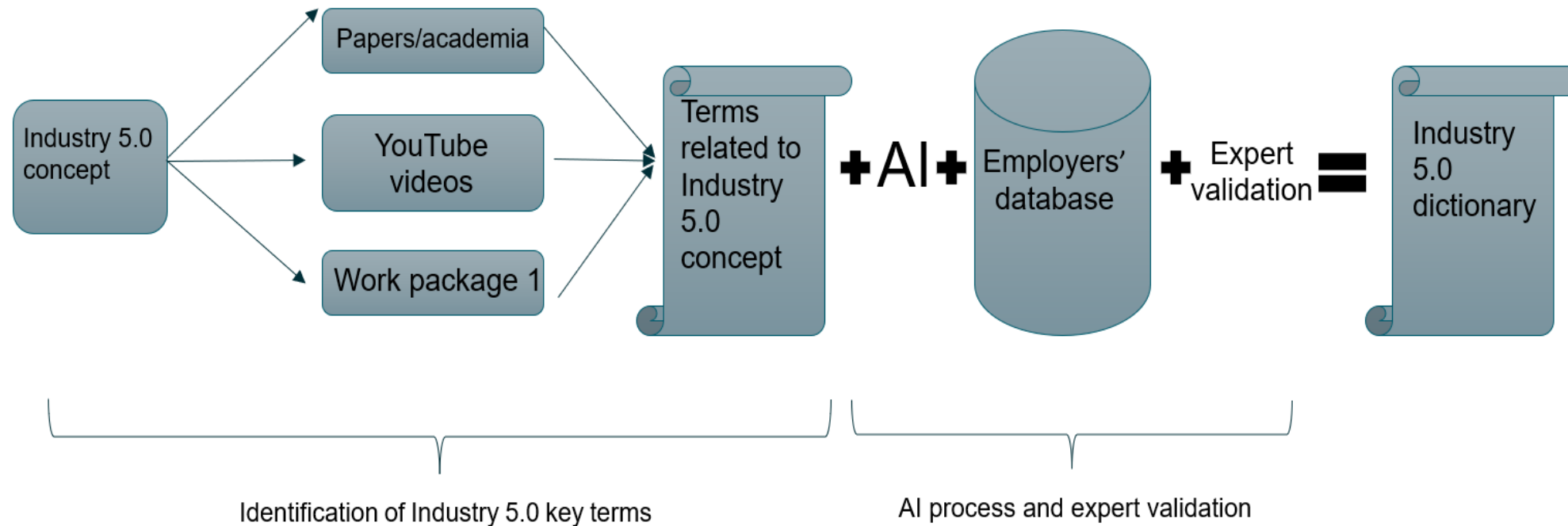
Methodology overview



Data sources used

- Scopus (academic publications)
- YouTube (conference videos)
- Vacancies (Reeds, Indeed, Stepstone, Jobdigger, etc.)
- Company profiles and people reviews.
- Stock exchange reports & ESG data (Measure company performance on Environmental, Social, Governance)
- European Skills/Competences, Qualifications and Occupations (ESCO)
- Collective agreements (e.g., France Légifrance)

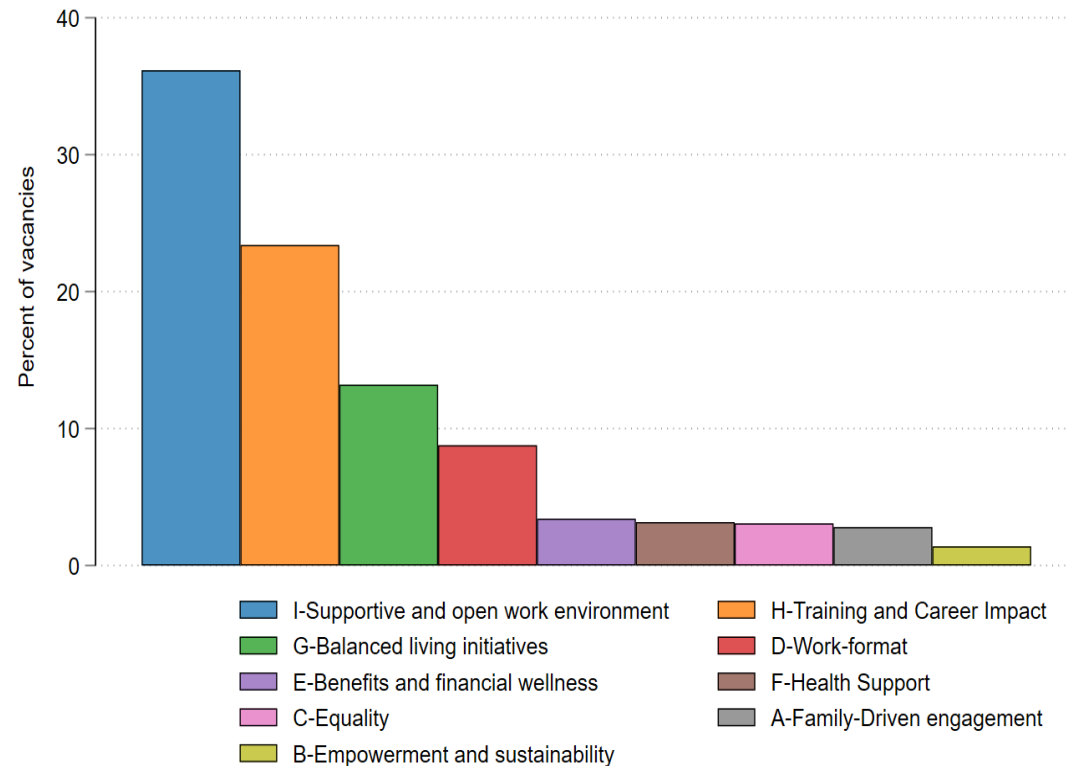
Steps for creating and Industry 5.0 dictionary



Topics: A-Family-Driven engagement; B-Empowerment and sustainability; C-Equality; D-Work-format; E-Benefits and financial wellness; F-Health Support; G-Balanced living initiatives; H-Training and Career Impact; I-Supportive and open work environment

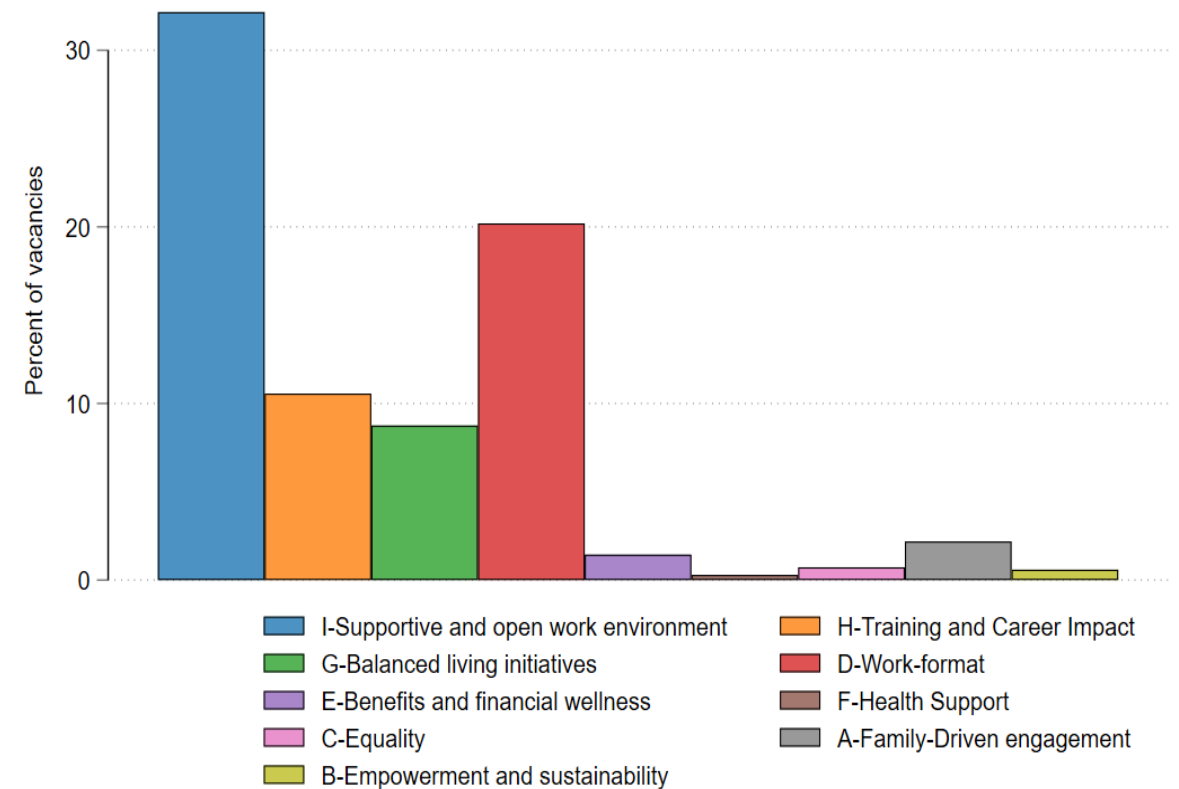
Percentage of vacancies mentioning Industry 5.0 patterns by major groups

UK 2023



Source: Cárdenas-Rubio et al. (2024)

France 2023



Source: Cárdenas-Rubio et al. (2024)

Percentage of companies' descriptions that mentioning at least one Industry 5.0 pattern

Country	Total companies' descriptions analysed	Percentage of companies' descriptions mentioning at least on Industry 5.0 pattern
Austria	413	39.1
France	2,154	14.3
The Netherlands	1,099	17.2
UK	1,636	33.8

Source: Cárdenas-Rubio et al. (2024)

- Focus on empowerment, sustainability, open culture.
- Supportive and open work environment are strongly highlighted.
- Ranking does not considerable vary across countries.

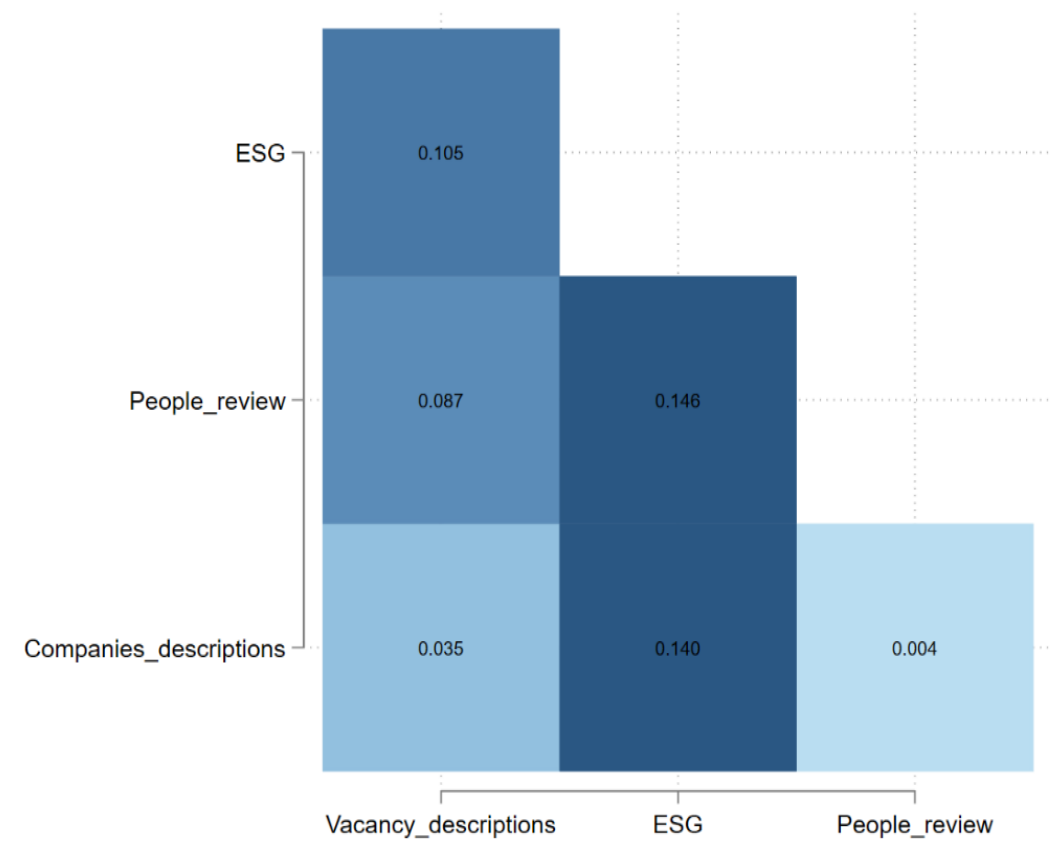
Jobseekers' Reviews

UK (N=1,636 companies)	Mean	SD	Min	Max
Culture and Values	3.75	0.45	2	4.9
Diversity and Inclusion	3.86	0.35	2.3	4.8
Work/life balance	3.70	0.45	1.4	4.9
Senior Management	3.32	0.43	1.4	4.9
Career Opportunities	3.47	0.42	1.7	4.8
Compensation and Benefits	3.76	0.47	1.5	4.8
Overall score	3.72	0.39	1.9	4.9

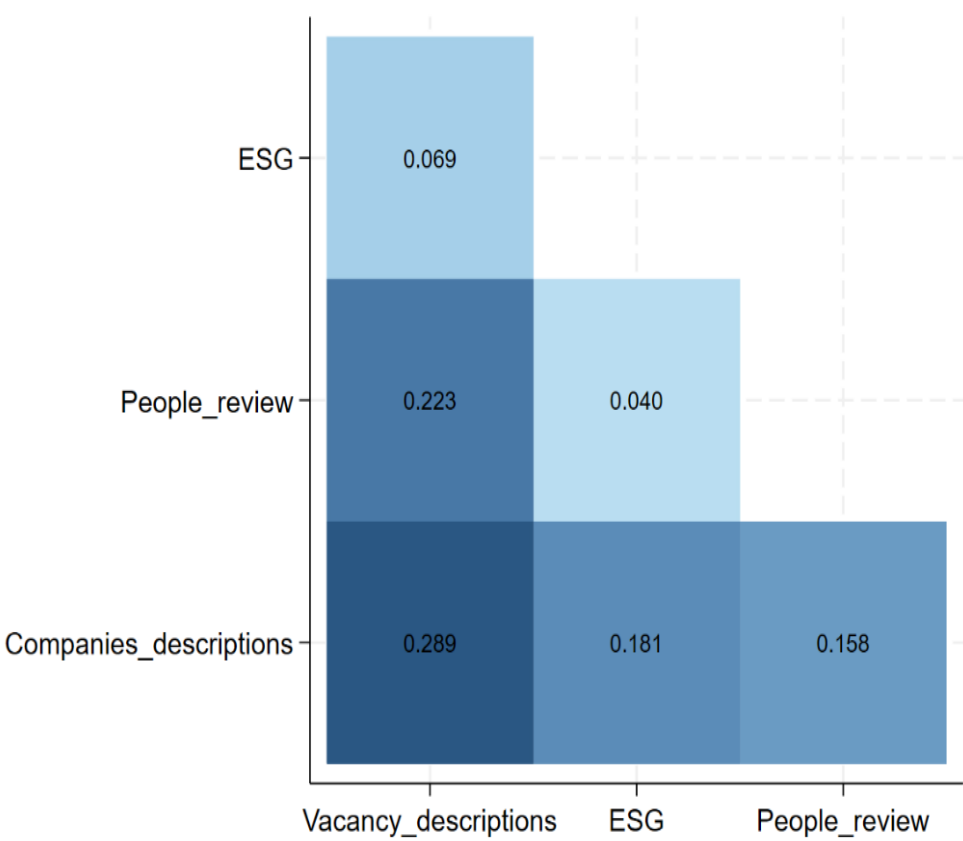
Source: Cárdenas-Rubio et al. (2024)

Correlation between Scores across countries

UK (2022-2023)



France (2022-2023)



Source: Cárdenas-Rubio et al. (2024)

Correlation between Industry 5.0 scores and skills demands by companies

UK (2022-2023)

	Vacancies	V_reviews	V_companies	V_ESG
green	0.022*	0.007	0.011	0.083**
digital	0.073***	0.043*	0.009	0.010
agriculture	-0.022	-0.034*	0.016	
arts_humanities	-0.078***	-0.035*	-0.003	0.018
assisting_caring	0.019	0.014	-0.007	0.055
administration_law	-0.028	-0.044*	0.011	-0.061
collaboration_creativity	0.052**	0.024	0.032**	
constructing	0.032*	-0.000	0.014	0.057
education	0.001	0.020	0.018*	-0.063
generic_qualifications	0.048**	0.060***	-0.002	0.092
handling_moving	0.036*	0.019	0.010	0.050
health	0.038*	0.026**	0.010	0.041
management	0.042*	0.032*	-0.000	0.154*
sciences	0.021	0.044*	0.031*	0.033
services	0.050*	0.016	-0.002	-0.084
specialised_equipment	0.017	0.032*	0.012	0.041

France (2022-2023)

	Vacancies	V_reviews	V_companies	V_ESG
green	0.041	0.046*	0.010	0.076
digital	0.119***	0.094***	0.084	0.033
agriculture	0.013	-0.003	-0.039	
arts_humanities	-0.026	0.006	-0.059	0.125
assisting_caring	-0.010	-0.019	-0.028	
administration_law	0.018	-0.021	0.029	-0.055
collaboration_creativity	0.013	0.035*	0.026	
constructing	-0.040	-0.027	-0.064	-0.091
education	0.050*	0.035	0.049	0.070
generic_qualifications	0.088***	0.078**	0.128*	0.121
handling_moving	0.071**	0.040	0.010	0.019
health	0.054*	0.033	-0.010	0.009
management	0.005	-0.008	-0.029	0.049
sciences	0.000	-0.006	-0.008	-0.121
services	0.045*	0.022	0.051	0.106***
specialised_equipment	0.020	0.009		-0.091

Source: Cárdenas-Rubio et al. (2024)

Key Findings

- Industry 5.0 practices can be identified using AI-driven dictionary.
- Human-centricity consistently present in vacancies and company data.
- Companies consistently prioritise supportive work environments, training, career development, and sustainability.
- Proved feasibility of using non-traditional data to create company-level Industry 5.0 indicators.
- Identifies the skills and workplace practices most associated with Industry 5.0.
- Risk Awareness: Greenwashing concerns underline the importance of monitoring companies' actual practices vs. claims.

Q&A

Thank you for your attention.
Questions and discussion.