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Exploring Transversal Skills in Online Job Advertisements: **Insight from web data analysis in Spain**

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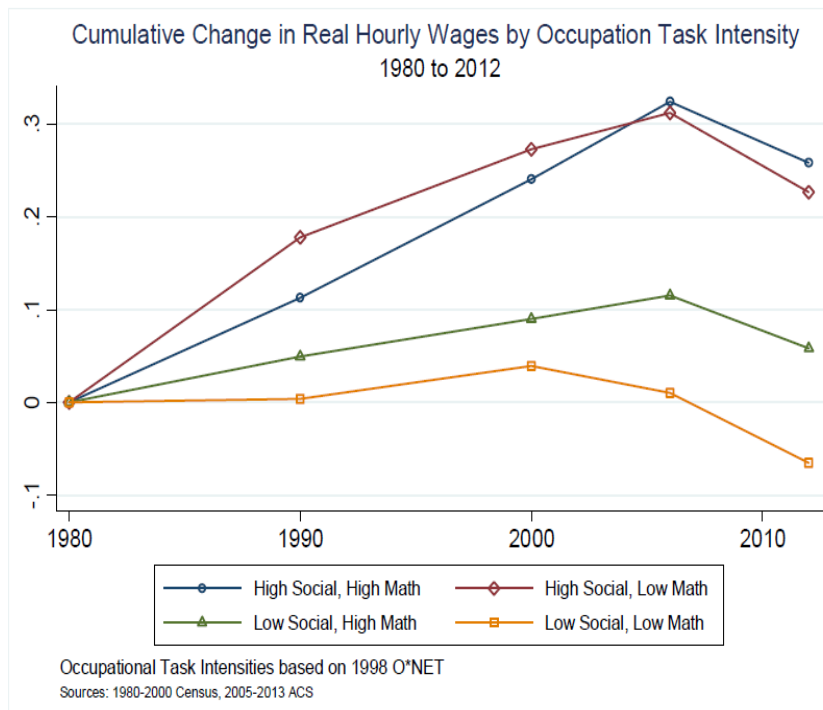
1. INTRODUCTION

Work shapes who we are — it's a lifelong journey of growth and identity.



Complementarity Between Social and Cognitive Skills

FIGURE V



Each line plots the percent change in mean hourly wages – relative to a 1980 baseline and in constant 2012 dollars – between 1990 and 2012 for occupations that are above and/or below the 50th percentile in nonroutine analytical and social skill task intensity as measured by the 1998 O*NET. Consistent occupation codes for 1980-2012 are updated from Autor and Dorn (2013) and Autor and Price (2013). See the text and Appendix for details on the construction of O*NET task measures and for examples of occupations in each of the categories.

Occupations requiring both high social and high math skills experienced the strongest wage growth from 1980 to 2012.

Even occupations with **only social skills** (●), saw **more wage growth** than those with **only math skills** (●), highlighting that **social and cognitive skills are complementary** and that **social skills alone are increasingly valuable**.

Color	Task Intensity Type	Wage Trend
Blue	High Social, High Math	Strongest increase
Red	High Social, Low Math	High increase
Green	Low Social, High Math	Moderate / flat
Orange	Low Social, Low Math	Decrease

A myriad of terms for transversal skills



stability attitudes cognitive 21st
emotional
extraversion transversal Five soft Big
skills teamwork agreeableness empathy openness life Non
personality conscientiousness adaptability century social
perseverance communication traits behaviours



The **Union of Skills (2025)** highlights the vital role of **transversal skills** not only for employability and innovation, but also as a cornerstone for democratic resilience and social cohesion across the EU.

The **European Education Area**

(September 2020)

Focus area: Quality in education and training.

Supports the development of basic and transversal skills

Other recognised in major EU policy frameworks like the *Key Competences for Lifelong Learning* and *LifeComp*, transversal skills are foundational to employability, lifelong learning, and social participation in the digital age.



A Gap Between Education and the World of Work



There is still a gap between what universities teach and what employers need. Companies often say graduates **lack soft skills** (*Osmani et al., 2019*)

Employers value TRANSVERSAL skills more than technical knowledge in many cases. They help graduates get hired, adapt to change, and progress in their careers (*García-Álvarez et al., 2022; Karaca-Atik et al., 2023*)



Transversal Skills and Their Impact on Employment, Retention, and Performance

Table 3: The returns to non-cognitive skills based on database I

	Unweighted mean		Weighted mean	
			Not Controlled for Education	Controlled for Education
Cognitive skills (29/7/22)	0.112 ***		0.168 ***	0.088 ***
	[0.07;0.15]		[0.12;0.21]	[0.05;0.12]
Non-cognitive skills (245/55/190)	0.013 *		0.025 **	0.007 *
	[-0.001;0.02]		[0.004;0.05]	[-0.001;0.02]
Big five (199/45/154)	0.013		0.006	0.004 *
	[0-.005;0.02]		[-0.03;0.04]	[-0.001;0.01]
Agreeableness (39/9/30)	-0.026 *		-0.006	-0.021 ***
	[0-.05;0.001]		[-0.02;0.01]	[-0.03;-0.01]
Conscientiousness (40/9/31)	0.043 **		0.067 ***	0.014 ***
	[0.01;0.08]		[0.03;0.11]	[0.01;0.02]
Extraversion (40/9/31)	0.051 **		0.078 ***	0.002 *
	[0.01;0.09]		[0.05;0.11]	[-0.0003;0.003]
Neuroticism (40/9/31)	-0.026		-0.070 **	-0.016 ***
	[0-.03;0.01]		[-0.13;-0.01]	[-0.02;-0.01]
Openness (40/9/31)	0.004		-0.055	0.022 ***
	[0-.02;0.03]		[-0.14;0.04]	[0.01;0.04]
Other definitions (46/10/36)	0.016		0.044 **	0.030 ***
	[-0.01;0.04]		[0.01;0.08]	[0.01;0.05]

Cognitive skills remain the most rewarded in terms of wages, but specific non-cognitive skills like **goal orientation and reliability (conscientiousness)** and **intellectual curiosity and adaptability (openness)** also lead to **significant earnings gains**.

On the other hand, traits linked to emotional vulnerability (neuroticism) or excessive compliance (agreeableness) can be detrimental.

Other studies: Strong non-cognitive skills are associated with:

- Higher job satisfaction
 - Better job performance
 - Longer job retention
- (Karaca-Atik et al., 2023)



Source: Cabus, Napierala & Carretero (2021). Table 3 is based on a meta-analysis including 15 studies in 12 countries. The most reliable results are weighted averages controlled for education.

2. Objective

As part of the **KeyCom research project**, funded by the Spanish Ministry of Science, Innovation and Universities

Our goal is to **identify the transversal (non-cognitive) skills and competencies** that are most relevant for **employability and professional success** in Spain.

- We aim to:
 - Develop a **skills assessment system** for new graduates
 - Design a **training pathway** during undergraduate studies
 - Ensure better alignment between **education and labour market needs**

To achieve this, we are conducting (Mixed Method):

- **Focus groups** with experts, employers, and recent graduates
- A **systematic literature review** on transversal skills and employability
- **An analysis of online job ads in Spain, focusing on how transversal skills are mentioned and evolve**
→ **with attention to regional and sectoral differences**
- A **longitudinal assessment** of transversal and cognitive competences among students.

3. Methods

Source of Data:

Web job ads in Spain from the **Skills-OVATE** database, developed by Cedefop.

Time Periods Analysed:

Two consecutive one-year periods:

- Q3 2023 – Q2 2024
- Q4 2023 – Q3 2024

Quantitative content analysis of job ads using ESCO taxonomy:

Level 1: 6 skill clusters (e.g., Self-management, Communication)

Levels 2–3: Detailed subcategories

Indicators Extracted:

% of job ads mentioning at least one transversal skill

Frequency of each skill category

Regional trends (across Spanish regions)

Occupational trends

ESCO LEVEL 1: T1–T6 Overview Diagram

T1: Core Skills and Competences

- T1.1 Mastering languages
- T1.2 Working with numbers and measures
- T1.3 Working with digital devices

T2: Thinking Skills and Competences

- T2.1 Processing information, ideas, concepts
- T2.2 Planning and organising**
- T2.3 Dealing with problems
- T2.4 Think creatively and innovatively**

T3: Self-management skills and competences

- T3.1 Working efficiently**
- T3.2 Taking a proactive approach**
- T3.3 Maintaining a positive attitude**
- T3.4 Demonstrating willingness to learn**

T4: Social and communication skills and competences

- T4.1 Communicating**
- T4.2 Supporting others**
- T4.3 Collaborating in teams/networks**
- T4.4 Leading others**
- T4.5 Following ethical code of conduct

T5: Physical and manual skills and competences

- T5.1 Manipulating & controlling equipment
- T5.2 Responding to physical circumstances

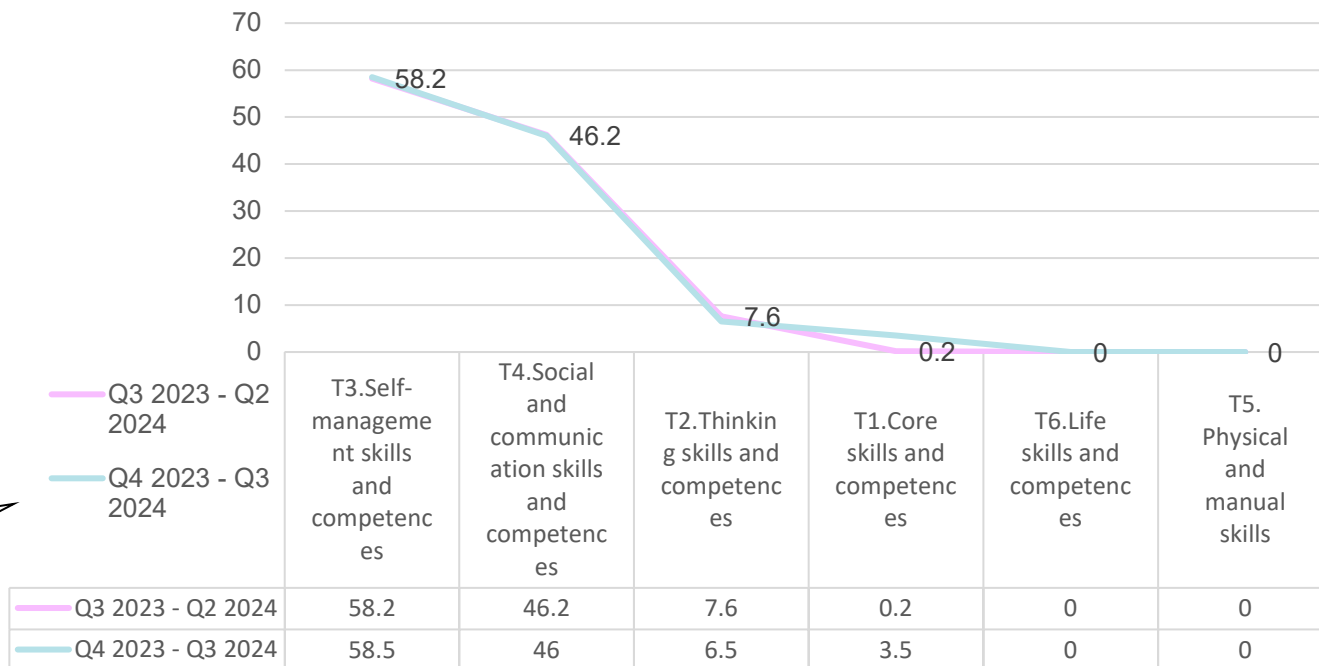
T6: Life skills and competences

- T6.1 Applying health-related skills
- T6.2 Applying environmental skills
- T6.3 Applying civic skills
- T6.4 Applying cultural skills
- T6.5 Applying entrepreneurial & financial skills
- T6.6 Applying general knowledge

4. Results

High demand: In both periods, in Spain, around **73% of job ads** mention at least one transversal skill

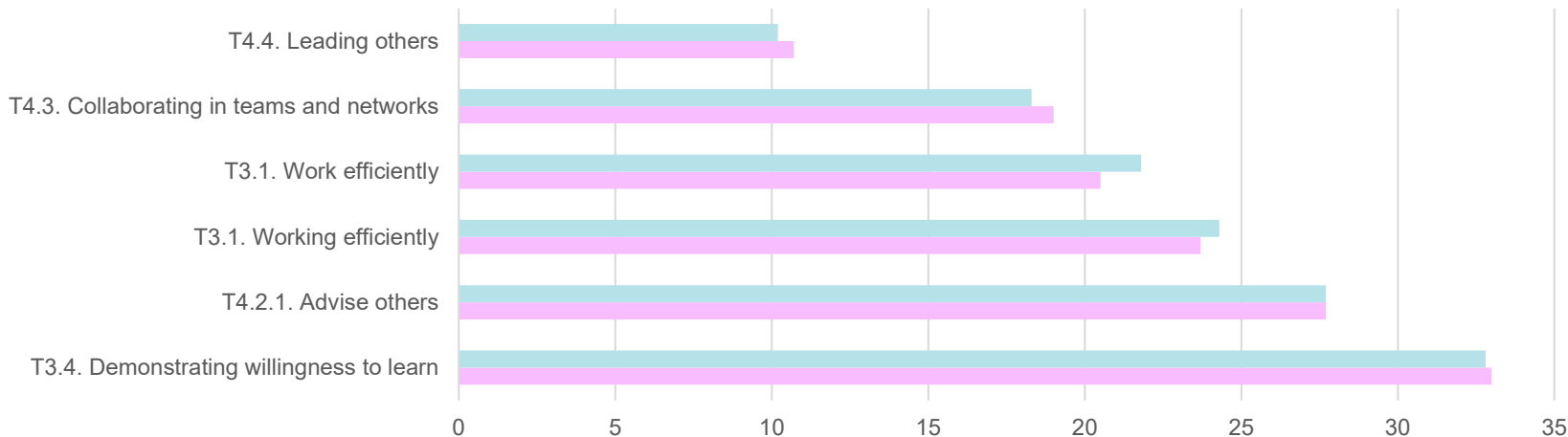
Demand for transversal skills (ESCO Level 1) in OJAs in Spain 2023-2024



Self-management and communication skills are clearly the most in-demand transversal skills.

Willingness to learn and advising others are the most highly demanded transversal skills in job ads.

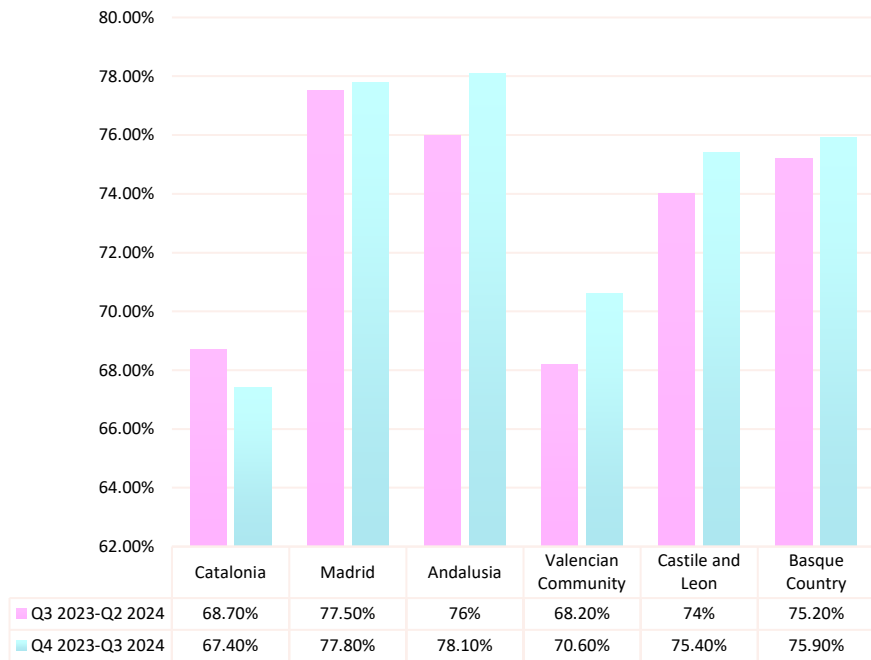
Demand for transversal skills (ESCO Level 2-3) in OJAs in Spain 2023-2024



	T3.4. Demonstrating willingness to learn	T4.2.1. Advise others	T3.1. Working efficiently	T3.1. Work efficiently	T4.3. Collaborating in teams and networks	T4.4. Leading others
■ Q4 2023-Q3 2024	32.8	27.7	24.3	21.8	18.3	10.2
■ Q3 2023-Q22024	33	27.7	23.7	20.5	19	10.7

Demand for transversal skills: Regional results

Demand for transversal skills in OJAs in Spain by Region



- **Andalusia** leads in **overall demand growth**, becoming the top region in Q4.

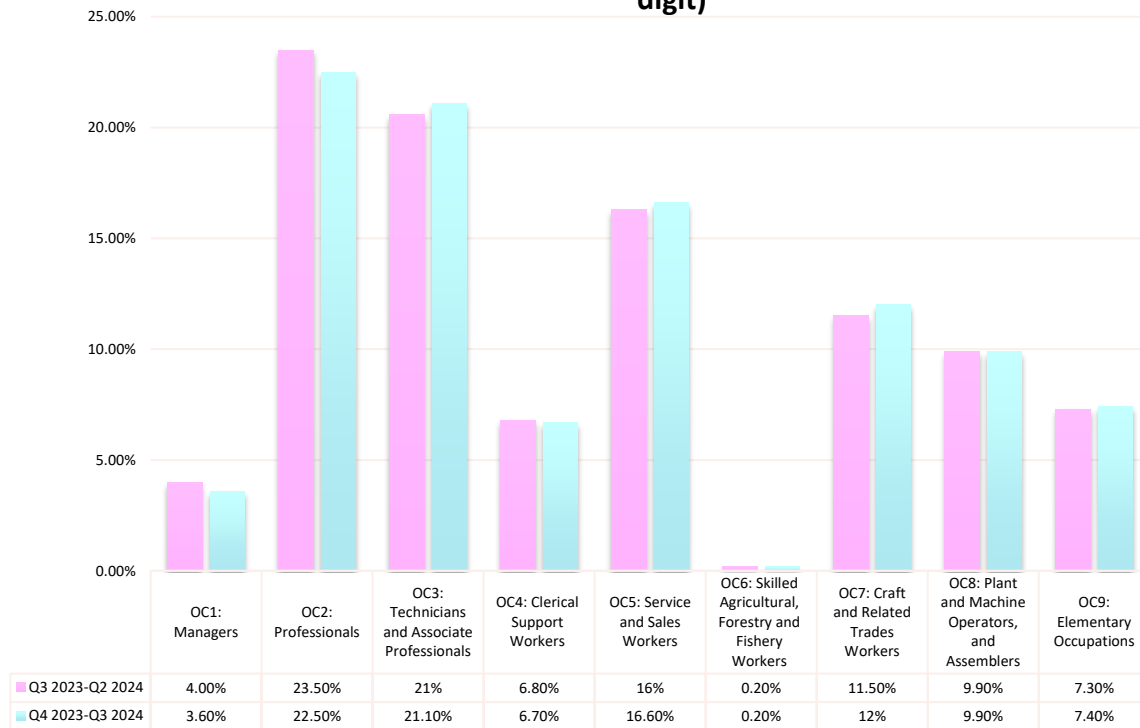
- **Madrid** remains consistently high, suggesting a stable and mature labour market preference for transversal skills.

- **The Valencian Community** shows the **strongest growth**, indicating growing awareness or employer need for these competences.

- **Catalonia** is the only region with a slight **decline**, though still above 67%, with a strong focus on **self-management and communication**.

Demand for transversal skills: Occupation

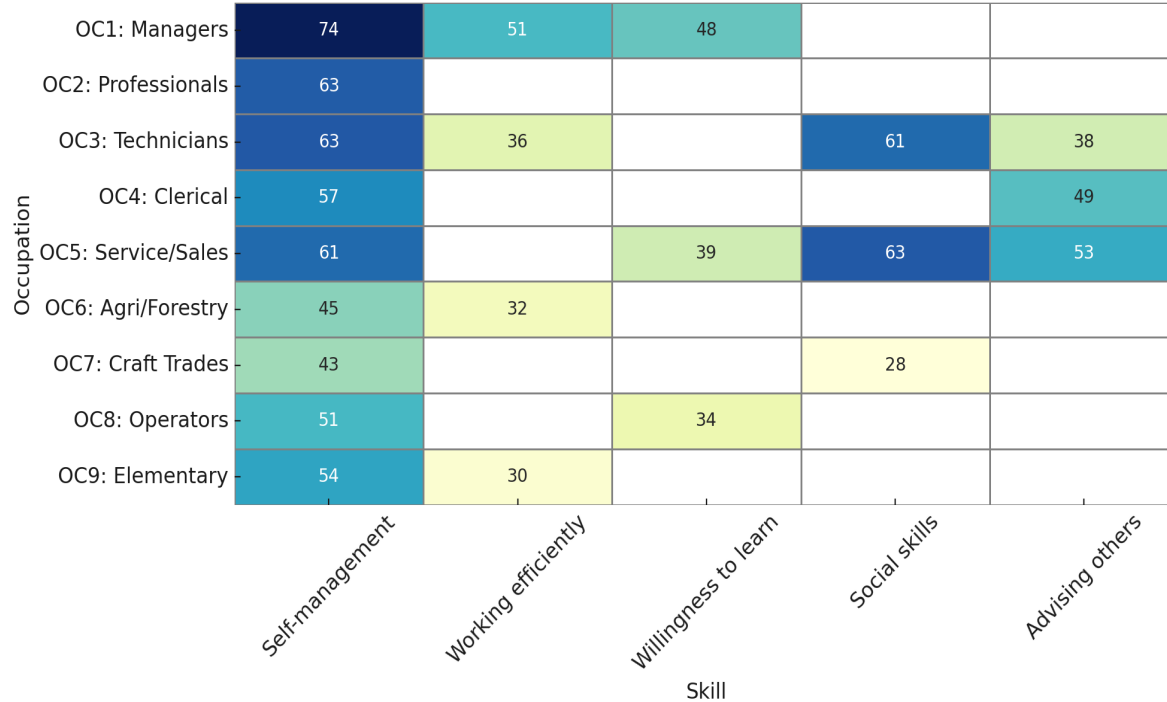
OJAs in Spain according to Occupation demanded (ISCO Classification – 1 digit)



Professionals (OC2) and technicians (OC3) together account for over **40% of online job demand**, highlighting a labour market focused on skilled and knowledge-intensive profiles.

Transversal skills demanded by occupation

Heatmap of Transversal Skills Demanded by Occupation (Actual Data)



- **Managers (OC1)** show the **highest demand** for transversal skills, especially self-management and efficiency.
- **Professionals (OC2)** and **Technicians (OC3)** require a combination of self-management, communication, and advising skills.
- **Service and Sales (OC5)** roles strongly emphasize **social interaction** and **customer service skills**.

5. Conclusions

Clear mismatch between education and labour market

Employers value transversal skills (e.g. communication, adaptability) more than current academic programmes reflect — reinforcing the need to design new graduate training paths.

Certain skills lead to better outcomes

Skills like **orientation/reliability** and **curiosity/adaptability** are linked to higher earnings (Cabus et al., 2021), supporting their inclusion in future assessment and curricula.

Transversal skills are critical for employability

Our analysis confirms that transversal skills are consistently demanded across occupations and regions.

Demand of transversal skills is measurable and widespread

Over **73% of job ads** mention transversal skills, with self-management and communication leading — justifying the need for a transversal skills assessment system.

Regional and occupational trends guide training design

Differences across **regions** and **sectors** show the value of tailoring training pathways to local and professional needs — aligning with the project's goal.

Triangulation in progress


We are currently triangulating the results of the job ad analysis with other sources, including focus groups and the systematic literature review, to strengthen the findings and inform the final training and assessment framework.





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