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Investigating Supply Chain Skill Shifts in a Resilience-Oriented Context

Evidence from job postings in Romania, 2024-2026

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Resilience is framed as a technology problem, we ask about the people behind it

Since 2020, supply chains have absorbed one disruption after another: pandemic shocks, geopolitical conflict, energy crisis, and supply and demand volatility (Golan et al., 2020; Scholten et al., 2020; Grossman et al., 2024).

Firms increasingly treat resilience not as a one-off contingency plan, but as an ongoing organizational capability that must be continuously built and renewed (Ponomarov and Holcomb, 2009; Teece, 2007).

Capabilities depend on people, yet we know surprisingly little about how the skills organizations look for have changed as resilience rose on the strategic agenda (Wieland and Wallenburg, 2013; Han, 2022).

Job postings offer a real-time, market-revealed signal of what employers believe they need, an angle largely absent from the resilience literature (Kureková et al., 2015; Cammeraat and Squicciarini, 2021).

From organizational capabilities to individual competencies

The gap: Prior work links resilience to dynamic capabilities, but rarely operationalizes the underlying human competencies, and almost never tracks how they change over time using market-revealed data (Winter, 2003; Felin and Foss, 2005; Hosseini et al., 2019; Spieske and Birkel, 2021).



How are resilience-related competency categories articulated in supply chain job postings?



How does the relative emphasis of these competency categories change over time?

Resilience as a dynamic capability, built on microfoundations

Dynamic capabilities theory (Teece, 2007) frames resilience as the capacity to sense disruption, seize response opportunities, and reconfigure resources accordingly.

The microfoundational perspective (Winter, 2003; Felin and Foss, 2005) insists that such capabilities are ultimately enacted through individual-level skills and competencies, not abstract firm-level traits.

We treat the competencies organizations recruit for as observable microfoundations of supply chain resilience capability: a measurable trace of an otherwise abstract construct.

A four-category map of supply chain competencies

Technical & digital

Domain and systems expertise.

e.g. SAP/ERP systems, technical operations, logistics planning

Cognitive & analytical

Reasoning, analysis and insight.

e.g. business analysis, financial management, data interpretation

Social & collaborative

Communication and teamwork.

e.g. communication, teamwork, stakeholder management

Adaptive & transformative

Handling change and uncertainty.

e.g. business operations, executive management, people & talent management

Framework synthesized from 8 prior taxonomies (e.g. Hecklau et al., 2016; Cinque et al., 2021; Rodrigues et al., 2021).

Two snapshots of the Romanian supply chain labor market

Job postings collected from LinkedIn using the keyword 'supply chain', restricted to Romania, to ensure consistent identification of relevant roles (Kashive and Khanna, 2023; Sindhu Madhuri et al., 2024).

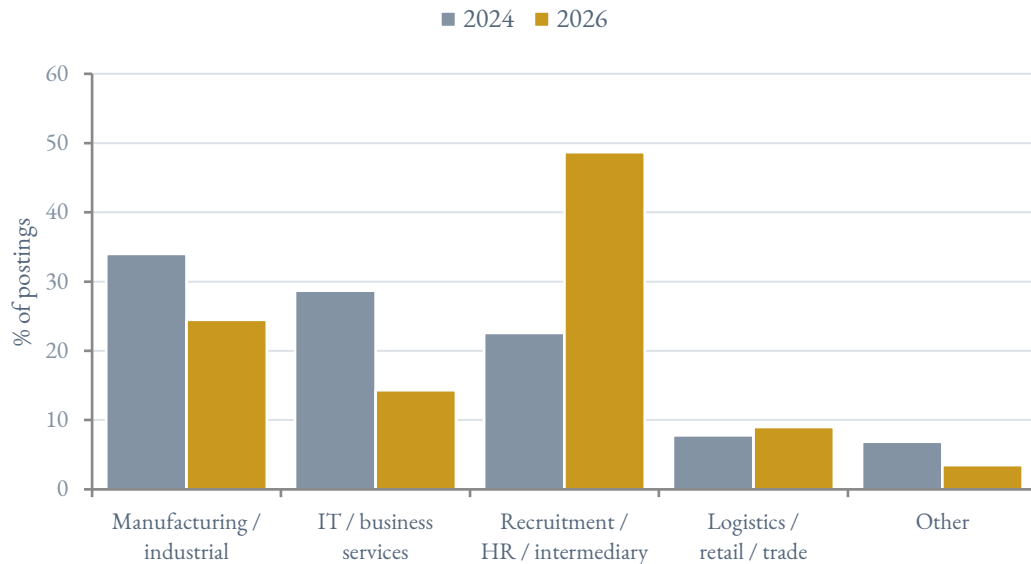
Two comparison windows: June 2024 and January 2026, covering a period of sustained disruption in supply chains (Kureková et al., 2015; Cammeraat and Squicciarini, 2021).

1,432 postings analysed in total: 721 in 2024 and 711 in 2026, each manually collected and recorded for completeness.

Listed skills were extracted from each posting and coded into the four-category framework using a structured, multi-step content-analysis procedure (De Mauro et al., 2018; Khaouja et al., 2021).

SAMPLE COMPOSITION

Who posted? The employer mix also shifted between waves



22.6% → 48.7%

Share of postings placed by recruitment / HR intermediaries

73.8% → 39.5%

Share of postings from large (1,000+ employee) companies

n = 721 (2024) and 711 (2026). Industry and firm-size shares are LinkedIn-classified, contextual indicators.

From free-text postings to a structured skill taxonomy

1

Extract

All listed skills per posting were compiled into a unified dataset directly from LinkedIn's structured skill fields.

2

Standardize

Synonymous or closely related terms (e.g. 'communication skill', 'effective communication') were harmonized into single standardized labels (De Mauro et al., 2018; Khaouja et al., 2021).

3

Classify

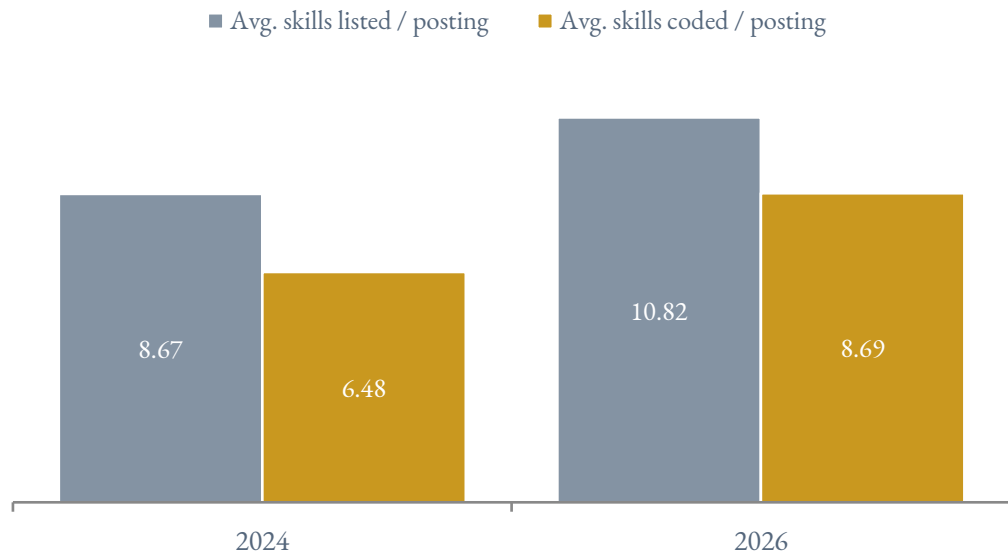
Each standardized skill was coded into one of the four competency categories using predefined rules, by two independent researchers.

4

Validate

Disagreements were jointly reviewed and resolved through discussion; coverage and consistency were checked across both waves.

Postings listed more skills in 2026, and we could code more of them



74.8% → 80.4%

Share of listed skills successfully coded (unique skills, dataset-wide)

4,673 → 6,181

Unique standardized skills coded across postings

Increase in skills/posting significant at $p < .001$. Total: 1,432 postings, 10,854 unique skills coded.

Three ways to look at the data

LENS 1

Posting-level presence

Did the share of postings mentioning each competency category change? (Table 4)

LENS 2

Within-posting composition

Among the skills that are mentioned, how did the internal mix change? (Table 5)

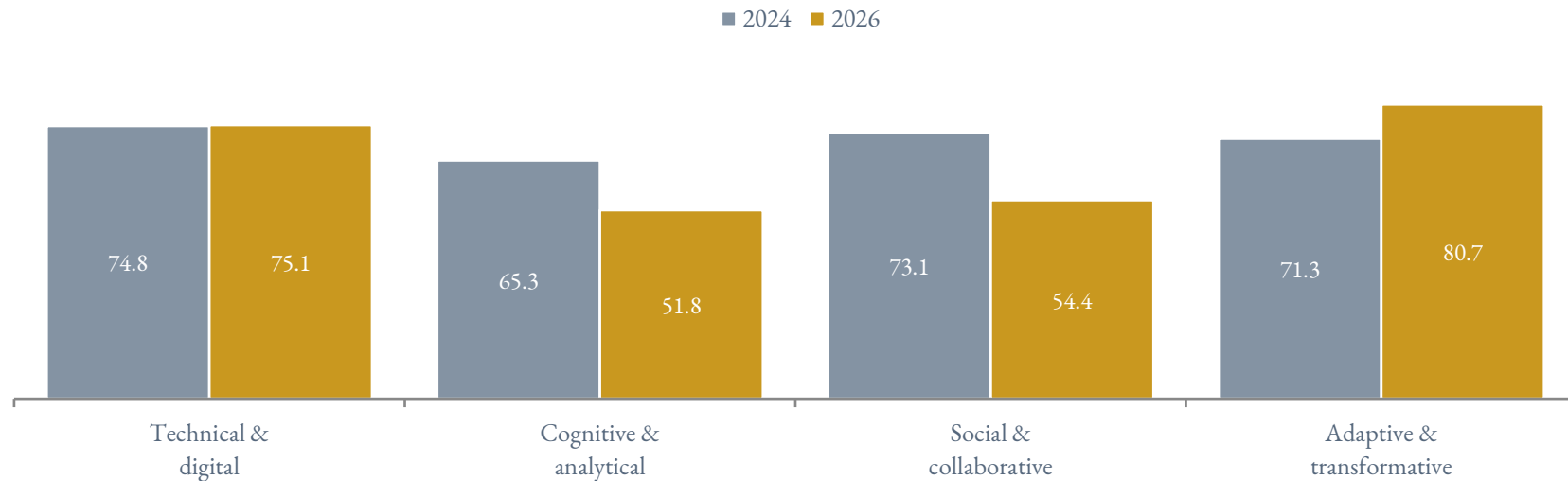
LENS 3

Individual skill drivers

Which specific skills are responsible for the category-level shifts? (Table 6)

RESULT 1 · POSTING-LEVEL PRESENCE

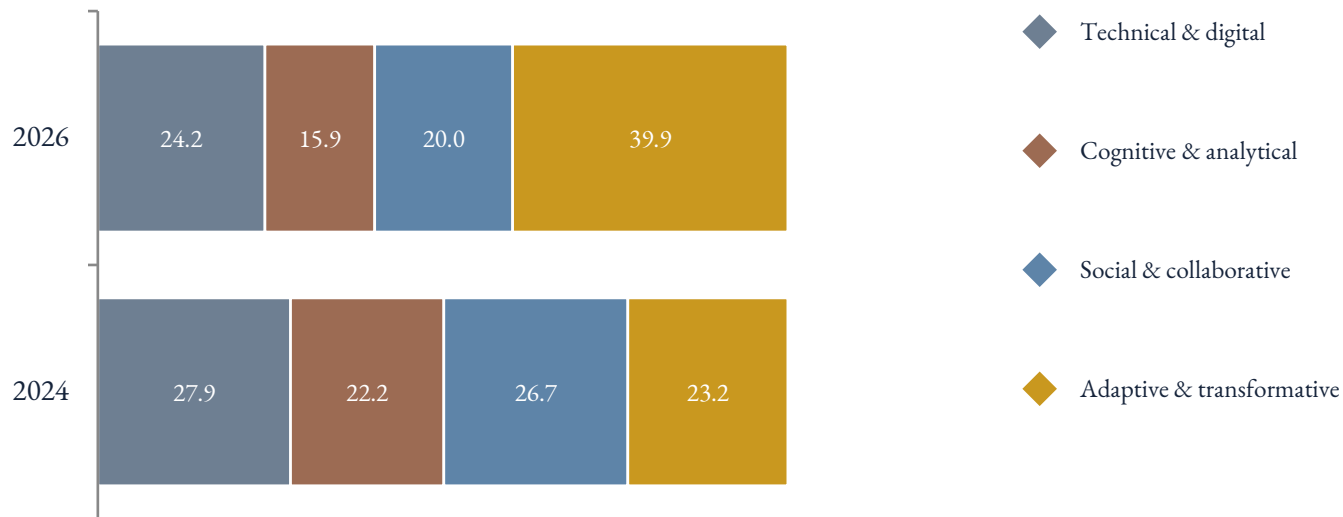
Adaptive competencies spread to more postings; cognitive and social recede



% of postings containing ≥ 1 skill in the category. Change: $+0.2pp$ n.s. ($p=.927$) · $-13.6pp^{***}$ · $-18.7pp^{***}$ · $+9.4pp^{***}$ (two-proportion z-test; $***p<.001$).

RESULT 2 · COMPOSITIONAL REWEIGHTING

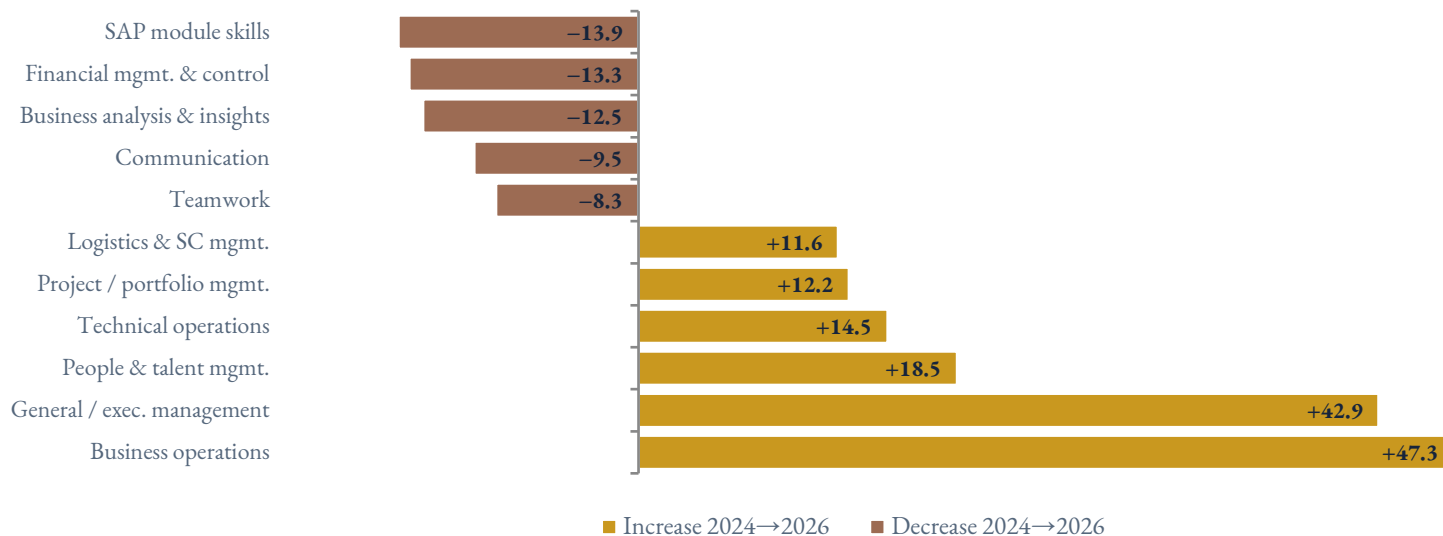
Within listed skills, adaptive competencies become the largest category



% of coded skills (composition of the skill mix). All changes significant at $p < .001$ (two-proportion z-test).

RESULT 3 · INDIVIDUAL SKILL DRIVERS

A small set of skills accounts for most of the reconfiguration



Change in % of postings containing the individual skill (percentage points), 2024→2026. All changes significant at $p < .001$.

Technical competencies: present everywhere, differentiating nowhere

Presence is essentially unchanged across waves (74.8% → 75.1%, n.s.): technical and digital skills are expected in nearly all roles, but they are no longer a differentiator (Hecklau et al., 2016; Ghobakhloo, 2020).

Their share of the overall skill mix declined (27.9% → 24.2%), not because they matter less, but because other categories are growing faster.

The decline of system-specific skills such as SAP (−13.9pp) suggests a shift toward more integrative, less tool-specific technical capability (Deming and Kahn, 2018).

Interpretation: technical competence has become a 'hygiene factor', necessary but no longer distinguishing (Winter, 2003; Teece, 2007).

Cognitive and social competencies decline for different reasons

Cognitive & analytical

Falls in both presence (65.3%→51.8%) and composition (22.2%→15.9%). Probably reflects a narrowing of where analytical skills appear — concentrated in specialized roles rather than disappearing from postings entirely (Lengnick-Hall et al., 2011; Felin and Foss, 2005).

Social & collaborative

Declines even more sharply (73.1%→54.4% presence). Driven by how skills are articulated, not their relevance: relational capabilities increasingly sit inside higher-order management roles rather than being listed as standalone 'soft skills' (Wieland and Wallenburg, 2013; Mubarik et al., 2022).

Adaptive competencies: now the single largest category

Largest gainer on every measure: +9.4pp presence and +16.7pp composition share: now the single largest competency category in job postings (39.9% of all coded skills in 2026) (Joussen et al., 2025; Shet et al., 2026).

Suggests resilience is increasingly recruited for as a managerial and operational leadership capacity: managing people and operations through disruption (Christopher and Peck, 2004; Brandon-Jones et al., 2014).

Consistent with dynamic-capabilities theory's emphasis on 'seizing' and 'reconfiguring': adaptive competencies build on technical foundations rather than replacing them (Teece, 2007; Qader et al., 2022).

Implications for theory and practice

Theoretical

Provides micro-level, empirical microfoundations for dynamic-capabilities accounts of supply chain resilience (Winter, 2003; Felin and Foss, 2005; Teece, 2007).

Supports a recombination-based view: capability development shows up as reconfiguration of existing competencies, not the emergence of entirely new domains (Teece, 2007; Eisenhardt and Martin, 2017).

Offers a longitudinal, market-revealed view of skill demand — most prior studies have used cross-sectional designs (Hecklau et al., 2016; Mubarik et al., 2022; Ivanov, 2023).

Practical

Resilience-oriented hiring should prioritize adaptive and managerial competencies, not only technical certifications.

Upskilling investment may need to shift toward change management and operational decision-making, in addition to technical training.

Social competencies need redefined evaluation criteria, as they are increasingly embedded within broader roles rather than listed standalone.

Limitations and future research

Single-country (Romania), single-platform (LinkedIn) design: generalizability to other labour markets or sourcing channels remains untested.

Sample composition shifted across waves (more recruitment-intermediary postings, smaller firms in 2026) a partial confound to address via weighting or stratified replication.

Two discrete time points, not a continuous series: limits conclusions about longer-term or non-linear trends.

Job postings capture stated requirements, not verified hiring outcomes or on-the-job skill use.

Future work: multi-country / multi-platform replication, continuous time-series tracking, and linking posting-level skill demand to firm-level resilience performance outcomes.

— CONCLUSION

Supply chain competency demand is shifting toward the adaptive

Between 2024 and 2026, Romanian supply chain job postings show a clear, statistically significant shift away from cognitive and social competencies and toward adaptive and transformative ones — while technical competence remains a stable, near-universal baseline.

80.7%

of 2026 postings require adaptive & transformative skills

39.9%

share of all coded skills that are now adaptive & transformative

+47.3pp

rise in 'business operations': the single largest individual mover

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Questions & Discussion

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