

Joint Master in Global Economic Governance and Public Affairs

***Strategic Foresight 2035:
The Impact of Artificial Intelligence on
Workers' Skills in
The Italian Labour Market***

Supervised by Professor Riccardo Viale

Tommaso Scaramella

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Statement on the Use of Artificial Intelligence

The author acknowledges the use of Claude, an artificial intelligence system created by Anthropic (Anthropic, 2026), in the preparation of this work. Specifically, AI-generated assistance was limited to language refinement and organisational editing of written content, on the basis of analysis, reasoning, and sources independently gathered and elaborated by the author. The intellectual ownership of all conceptual frameworks, empirical results, interview materials, bibliographic references, and final conclusions rests entirely with the author.

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Tommaso Scaramella



Abstract

This thesis examines how artificial intelligence will reshape the skills required of Italian workers by 2035, and what institutional choices will determine which of several plausible futures the Italian labour market ultimately approaches. It responds to a specific methodological gap: existing research on AI and employment, in Italy and internationally, relies predominantly on deterministic forecasting, which cannot capture the non-linear disruptions characteristic of a genuinely discontinuous technological transition. To address this gap, the thesis constructs a two-by-two scenario matrix, a strategic foresight method organised around two critical uncertainties, the trajectory of technological development and Italy's prevailing socio-economic orientation, generating four scenarios: Intentional Symbiosis, Algorithmic Fragility, Regulated Humanism, and Protected Stratification. Each scenario is grounded in current Italian evidence on AI adoption, skill mismatch and demographic change, analysed for its implications across four occupational categories, and tested for plausibility through a qualitative consultation with Italian sector stakeholders. The analysis finds that artificial intelligence is already reallocating tasks rather than substituting occupations wholesale, and that a persistent divide between large firms and Italy's SME-dominated productive base, evident in AI adoption, skill demand and the diffusion of skills-first practices, poses a distinctive strategic dilemma linked to the tacit knowledge underlying Italian craftsmanship. A set of durable, transversal skills is identified as valuable irrespective of which scenario materialises. The thesis concludes that the outcome for Italian workers is not technologically predetermined but depends on deliberate governance choices made by the state, firms and social partners.

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Introduction

Artificial intelligence has ceased to constitute an emerging technology and has instead become a structural feature of contemporary economic life. Unlike the waves of automation that preceded it, which acted principally upon manual and routine labour, generative and increasingly agentic artificial intelligence systems intervene directly in cognitive and analytical work, extending into functions long considered the exclusive province of human judgement. This is not a technology that automates a discrete set of occupations; it is a general-purpose capability that reconfigures the tasks composing nearly every occupation simultaneously, and does so at a pace that outstrips the capacity of education systems, labour-market institutions and firms to adjust in step. The consequence is not merely a shift in the demand for particular technical skills, but a more fundamental redefinition of what it means to be competent in an economy where the execution of well-specified tasks is increasingly delegable to a machine. How this transformation reshapes the skills required of workers is accordingly not a narrow technical concern, but one bearing upon the future organisation of economic and social life.

Italy confronts this transformation from a position that is analytically distinctive rather than merely a smaller variant of the international pattern. The country's economic competitiveness rests disproportionately upon a dense fabric of small and medium-sized enterprises, the productive base commonly associated with the international reputation of Made in Italy, whose capacity to absorb and finance technological change differs markedly from that of the large, capital-intensive firms on which much international analysis of artificial intelligence and employment is implicitly modelled. This structural specificity is compounded by an accelerating demographic contraction, projected to remove nearly three million people from Italy's working-age population within the decade under examination here, and by a documented and continuing emigration of the country's most qualified young workers, a loss of human capital that a shrinking domestic labour force can ill afford. Beneath both conditions lies a further, less quantifiable one: the absence, within Italian economic and industrial policy, of a settled consensus on the direction the country's labour market ought to take, as forces favouring liberalisation and talent-based competition contend with interests better served by a slower, less disruptive path. Left unaddressed, this combination of structural vulnerability and institutional indecision risks leaving Italy a recipient rather than a shaper of the technological trajectories that will determine its economic future, a risk already visible in its exposure to trade and technology decisions made elsewhere.

Despite the evident scale of this challenge, the research available to inform it remains, in a specific and remediable sense, poorly suited to the task. The overwhelming majority of existing work on artificial intelligence and employment, in Italy and internationally, relies upon linear econometric forecasting: static occupational-exposure indices, projected forward from historical data under the implicit assumption that future socio-economic dynamics will extrapolate in a straight line from the past. Such methods perform adequately where technological change is incremental and institutional responses are stable. They are poorly equipped to capture a transformation characterised

by genuine discontinuity, non-linear disruption and strategic inflection points of the kind artificial intelligence has already begun to produce, and they are structurally incapable of representing what this transformation's outcome most fundamentally depends upon: not the trajectory of the technology alone, but the institutional, organisational and political choices through which that trajectory is mediated. Where this deficiency exists internationally, it is more acute still within Italy specifically, where the sole methodologically comparable precedent, a scenario-based foresight exercise addressing the future of work in general terms, does not extend its analysis to the specific question of workers' skills, leaving the intersection of artificial intelligence, skills and the Italian labour market without a scenario-based treatment of its own.

It is within this gap that the present study is positioned. It addresses the following question: how will artificial intelligence reshape the skills required of Italian workers by 2035, and what institutional choices will determine which of several plausible futures the Italian labour market ultimately approaches? In response, a two-by-two scenario matrix is constructed, a method drawn from the strategic foresight tradition rather than from deterministic forecasting, and adapted specifically to the Italian case. Rather than projecting a single trajectory, this method identifies the critical uncertainties, genuine and currently unresolved tensions between competing institutional and value-based choices, that will determine the labour market's eventual configuration, and organises them around two governing dimensions: the trajectory of technological development, ranging from substitutive automation to symbiotic augmentation, and the prevailing socio-economic orientation, ranging from individualist efficiency to collective solidarity. The four resulting scenarios, Intentional Symbiosis, Algorithmic Fragility, Regulated Humanism and Protected Stratification, are grounded empirically in current Italian evidence on AI adoption, skill mismatch, demographic change and the wider structural forces acting upon the domestic labour market, analysed systematically for their implications across the operational, managerial, executive and entrepreneurial strata of the Italian labour hierarchy, and tested for plausibility against the judgement of a panel of Italian sector experts consulted specifically for this purpose. Where the evidence base permits, a set of durable, transversal skills is further identified, retaining their value irrespective of which of the four scenarios ultimately materialises, and offering a practical foothold for action under conditions that cannot be resolved with certainty.

The contribution advanced by this approach operates at two distinct levels, academic and practical, though the two are not easily separated. Academically, the specific methodological deficiency identified above is directly addressed: to the author's knowledge, this constitutes the first application of a structured, two-by-two scenario methodology to the question of artificial intelligence's impact upon Italian workers' skills, extending the country's sole existing domestic foresight precedent with a granular focus on skills that precedent does not provide, and situating the Italian case within, rather than at the margins of, the wider foresight literature reviewed in the chapter that follows. Practically, the value of this contribution lies in its capacity to inform the choices of those actors upon whose decisions the central claim advanced here depends: the state, in its responsibility for reforming education and training systems; firms, and Italian small and medium-sized enterprises in particular, in the manner in which they approach the development and deployment of their workforce's skills; and trade unions,

in a role that must evolve toward the negotiation of task quality and algorithmic accountability rather than remaining confined to the negotiation of wages alone. A methodology incapable of informing action of this kind offers little beyond academic interest; what follows is constructed with the intention that it should.

The remainder of the study is organised into six further chapters. Chapter 2 reviews the literature underpinning its methodological and theoretical apparatus, tracing the epistemological foundations of strategic foresight, the small number of international and Italian precedents for its application to artificial intelligence and employment, the task-based approach and its institutional corollaries in the skills-first economy and the skills-based organisation, the wider empirical literature documenting how artificial intelligence is reconfiguring tasks and skills, and the foundational skills frameworks that anchor the analysis developed later. Chapter 3 sets out the research design through which the scenario matrix was constructed, including the rationale for treating Italy as a critical case for this method and the limitations inherent to the approach adopted. Chapter 4 establishes the empirical baseline against which the scenarios are built, examining seven megatrends acting upon the Italian labour market, with particular emphasis upon technological transformation and skill mismatching, the two megatrends most directly implicated in the reconfiguration of workers' skills. Chapter 5 constructs and analyses the four scenarios themselves, together with the population of workers each displaces and the institutional support available to it. Chapter 6 turns from these scenarios to the choices available in the present: the governance responsibilities of the state, firms and social partners, informed by a qualitative consultation with Italian sector stakeholders, and the durable, transversal skills that retain their value irrespective of which scenario ultimately prevails. Chapter 7 concludes, drawing these strands together and identifying the questions left open for further research. Read in sequence, these chapters aim to demonstrate not merely that artificial intelligence will reshape the skills Italian workers require, a claim on which little genuine disagreement remains, but how that reshaping is likely to unfold, and what remains, even now, within the country's power to determine.

Chapter 2:

Literature Review

This chapter situates the thesis within four bodies of scholarship. First, it traces the epistemological foundations of strategic foresight and reviews the small number of international and Italian studies applying genuine foresight methods to artificial intelligence and employment, identifying the methodological gap this thesis addresses. Second, it establishes the theoretical mechanism by which AI reshapes work, the task-based approach, together with the institutional and organisational responses this is already provoking: the skills-first economy and the skills-based organisation. Third, read through this lens, it surveys the wider empirical literature on how AI is reconfiguring tasks and skills, internationally and in Italy. Finally, it introduces the skills frameworks that anchor the competency analysis developed later in the thesis. Together, these four strands justify both the methodological choice of scenario planning and the empirical focus on the Italian case.

2.1 Epistemological Foundations of Strategic Foresight

The use of strategic foresight in economic and institutional analysis marks a deliberate break from the deterministic, linear forecasting that dominated corporate strategy from the 1950s, epitomised by Igor Ansoff's hyper-analytical strategic planning, which projected historical data forward on the assumption of a stable environment.¹ As Henry Mintzberg later argued, this rests on a fundamental fallacy: that the environment can be held still while bureaucratic processes execute a pre-determined course.² The 1973 oil crisis exposed this fragility; Pierre Wack, reflecting on his experience at Shell, observed that single-line predictions are dangerous precisely because they are accurate when the environment is static and fail catastrophically when needed most.³ The alternative, scenario planning, originates with Herman Kahn and Anthony Wiener at the Hudson Institute, who defined scenarios not as statistical forecasts but as internally consistent, hypothetical sequences designed to span the plausible range of alternative futures rather than predict a single one.⁴

Two schools subsequently formalised this insight. The intuitive logics tradition, developed by Peter Schwartz into the Shell method, rejects attaching probabilities to scenarios as a misapplication of statistics to singular, non-repeatable futures, separating predetermined elements from critical uncertainties instead.⁵ The French school of *la*

¹ Ansoff, H. I. (1965). *Corporate strategy: An analytic approach to business policy for growth and expansion*.

² Mintzberg, H. (1994). *Rise and fall of strategic planning*. Simon and Schuster.

³ Wack, P. (1985). *Scenarios: uncharted waters ahead*. Harvard business review, 63(5), 72-89

⁴ Kahn, H., & Wiener, A. J. (1967). *The year 2000; a framework for speculation on the next thirty-three years*.

⁵ Schwartz, P. (1997). *Art of the long view: planning for the future in an uncertain world*. John Wiley & Sons.

prospective, associated with Michel Godet and Gaston Berger, takes a more structural stance, using cross-impact matrices to treat the future as a space to be actively constructed rather than merely anticipated.⁶ Sohail Inayatullah and Thomas Chermack add that such work is also an epistemological intervention, surfacing the institutional metaphors that bound what organisations consider possible.⁷ A separate typological tradition, Jim Dator's Manoa School, tests plausibility through four archetypal futures (continued growth, collapse, discipline, and transformation) rather than deriving scenarios deductively from critical uncertainties.⁸ This thesis does not adopt Dator's archetypes: its purpose is to isolate the two forces of change with the highest combined impact and uncertainty for Italian employment, not to test broad civilisational trajectories. For this, the two-by-two matrix method, formalised by Rafael Ramirez and Angela Wilkinson and developed in parallel by George Wright and George Cairns, is the more appropriate deductive tool, forcing analytical clarity by placing the two most consequential and uncertain driving forces on independent axes.⁹ As Chermack cautions, the resulting scenarios must integrate the wider forces identified through environmental scanning rather than merely restating the two axes — the architecture that structures the scenario analysis in Chapter 5.

2.2 International and Italian Foresight on AI and Employment

Empirical applications of genuine strategic foresight to AI and human capital remain rare, and this scarcity is more acute in some contexts than others. The following sections examine, in turn, the small number of international precedents that do exist, and the almost complete absence of comparable work within Italy specifically, a gap this thesis is designed to address.

2.2.1 International Precedents

The World Economic Forum's (WEF) *Four Futures for Jobs in the New Economy* constructs distinct futures for employment by mapping AI advancement against workforce readiness, using a matrix populated through corporate surveys and dialogue with Chief Strategy Officers; its four scenarios — Supercharged Progress, the Age of Displacement, the Co-Pilot Economy, and Stalled Progress — show how the same technology can produce sharply divergent outcomes depending on institutional

⁶ Godet, M. (2006). *Creating Futures: Scenario Planning as a strategic management tool* (pp. 280). Washington, DC: Economica. Economica Brookings diffusion.

⁷ Inayatullah, S. (1998). *Causal layered analysis: Poststructuralism as method*. *Futures*, 30(8), 815-829.

⁸ Dator, J. (2019). Alternative futures at the Manoa School. In *Jim Dator: A Noticer in Time: Selected work, 1967-2018* (pp. 37-54). Cham: Springer International Publishing.

⁹ Ramirez, R., & Wilkinson, A. (2014). *Rethinking the 2 × 2 scenario method: Grid or frames?*. *Technological forecasting and social change*, 86, 254-264.

readiness.¹⁰ The Organisation for Economic Co-operation and Development's (OECD) *Exploring Possible AI Trajectories Through 2030* takes a more technical route, rating nine dimensions of machine capability against human benchmarks to map transition pathways and highlight the asynchrony between technological and institutional adaptation.¹¹ The European Commission's Joint Research Centre (JRC) enriches this analytically, distinguishing purely operational tasks from agentic processes involving initiative, judgement and the capacity to refuse; Fernández-Macías frames the coming transition as one of systemic delegation, in which the machine simulates rather than possesses agency, closing with three scenarios for how this divide might evolve.¹² Together, these precedents establish that the future of AI and work must be treated as a set of fluid, scenario-dependent configurations, not a single calculation.

2.2.2 The Italian Landscape and the Methodological Gap

Within Italy, structured foresight on the future of employment remains exceptionally rare. The principal precedent is the Work2040 project by Carmignani and Rossi for Fondazione ENIA, which builds alternative labour scenarios using the Manoa methodology, structured around Dator's growth and collapse archetypes and combining PESTEL horizon scanning (covering political, economic, social, technological, environmental and legal factors) with roughly thirty expert interviews.¹³ The project shows that global, macro-centric models cannot be applied to Italy without accounting for its demographic winter, chronic skill mismatch, and productive fabric dominated by micro and small enterprises. Beyond this precedent, a systematic gap persists: the overwhelming majority of research on cognitive automation, in Italy and internationally, relies on linear econometric forecasting: static exposure indices projected from historical data, unable to capture the non-linear disruptions and turning points that characterise real technological transitions. It is within this gap that the thesis is positioned: by applying a two-by-two deductive matrix to the Italian labour market of 2035, it offers a scenario-guided alternative to deterministic forecasting of the domestic transition and its impact on workers' skills.

¹⁰ World Economic Forum. (2026). *Four Futures for Jobs in the New Economy: AI and Talent in 2030*. World Economic Forum.

¹¹ OECD. (2026). *Exploring Possible AI Trajectories Through 2030*. OECD Publishing.

¹² Fernández-Macías, E. (2026). *Can machines replace human workers? Notes on agency, automation, and AI* (JRC Working Papers Series on Labour, Education and Technology No. 2026/06). European Commission, Joint Research Centre.

¹³ Carmignani, M., & Rossi, G. (2026). *Work2040: Il futuro del mondo del lavoro nell'era dell'AI*. Fondazione ENIA.

2.3 Theoretical Foundations: From Task-Based Automation to the Skills-First Economy and the Skills-Based Organisation

Having established why scenario-based foresight is the appropriate tool for this thesis, and identified the gap it fills, one question remains: what, substantively, does AI change about work, and how are markets and organisations already responding? The task-based approach supplies the mechanism, showing that AI acts on discrete tasks rather than whole occupations. The skills-first economy and the skills-based organisation describe the market-wide and firm-level responses this mechanism is provoking. All three matter for what follows: the task-based lens is what allows the empirical literature and the scenario analysis in Chapter 5 to be read consistently, and the extent to which Italian institutions and firms have adopted skills-first practices is closely bound up with one of the critical uncertainties separating the thesis's four scenarios.

2.3.1 The Task-Based Approach

The dominant explanation of technology's labour-market effects for much of the 2000s was skill-biased technological change, which could not account for job polarisation or falling wages among specific groups. Daron Acemoglu and David Autor reformulated the problem around a distinction between skills (a worker's stock of capabilities) and tasks (the activities to which those skills are applied); technology substitutes for or complements labour in specific tasks, shifting the equilibrium assignment of skills to tasks across the economy.¹⁴ Autor, Levy and Murnane's earlier taxonomy classified tasks as cognitive or manual, and routine or non-routine, showing that routine tasks, being codifiable, are most vulnerable to computerisation, while non-routine tasks such as abstract problem-solving resist it, an asymmetry that explains the hollowing-out of middle-skill occupations.¹⁵ Autor's later work operationalised this taxonomy empirically.¹⁶ The framework's most significant extension comes from Acemoglu and Restrepo, who model the labour market as a contest between a displacement effect, whereby automation depresses labour's wage share, and a reinstatement effect, whereby new, more complex tasks create a comparative advantage for human labour. As AI increasingly encroaches on non-routine cognitive tasks once considered immune to automation, the long-run equilibrium depends on how quickly new tasks are generated and how efficiently workers' capabilities are matched to them, a balance this thesis treats as one of the central axes along which its scenarios diverge.¹⁷

¹⁴ Acemoglu, D., & Autor, D. (2011). Skills, tasks and technologies: Implications for employment and earnings. In *Handbook of labor economics* (Vol. 4, pp. 1043-1171). Elsevier.

¹⁵ Autor, D.H., Levy, F., & Murnane, R.J. (2003). *The skill content of recent technological change: An empirical exploration*. The Quarterly journal of economics, 118(4), 1279-1333.

¹⁶ Autor, D. H. (2013). The “task approach” to labor markets: an overview. *Journal for Labour Market Research*, 46(3), 185-199.

¹⁷ Acemoglu, D., & Restrepo, P. (2019). *Automation and new tasks: How technology displaces and reinstates labor*. Journal of Economic Perspectives, 33(2), 3–30.

2.3.2 The Skills-First Economy

If occupations are shifting bundles of tasks rather than fixed titles, an academic credential tied to an occupation becomes a progressively poorer signal of what a worker can do, especially once the tasks in question did not exist when the credential was earned. The European Commission and LinkedIn both trace the skills-first approach to this gap: LinkedIn argues traditional recruitment is a poor predictor of performance, drawing on the "paper ceiling" coined by Opportunity@Work to describe how degree requirements exclude capable individuals who acquired expertise through alternative routes.¹⁸ The OECD situates this within a broader, structural shift away from credential-based hiring, cautioning that progress is held back by a fragmented "skills language" that blunts the matching infrastructure a skills-first economy depends on.¹⁹ Both institutions frame the resulting approach as a shift from screening candidates out by credential to screening them in by demonstrated capability, as IBM has done by rebuilding hiring around an internal skills taxonomy, while Jooss and colleagues find, from interviews with senior human resources (HR) leaders, that this shift measurably enhances organisations' strategic agility.²⁰ LinkedIn further shows gains in internal mobility and retention, though the European Commission cautions the model scales unevenly: transferable-skill sectors like education adapt easily, while licensed fields like healthcare cannot dispense with formal qualification, making skills-first a complement to, not a substitute for, academic training.²¹

2.3.3 The Skills-Based Organisation

If the skills-first economy describes how labour markets recognise task-based skills, the same logic, carried to its conclusion, requires firms to abandon the job itself as their basic unit of organisation — the premise of the skills-based organisation. Deloitte's "hub and spokes" architecture flattens hierarchy into a modular capability network built around a shared skills taxonomy and AI-enabled data.²² Work is decoupled from fixed job descriptions by fractionalising it into modular tasks allocated through internal talent marketplaces, or by broadening roles around outcomes, an approach McKinsey

¹⁸ LinkedIn Economic Graph. (2023). *Skills-First: Reimagining the Labor Market and Breaking Down Barriers*. LinkedIn; Opportunity@Work. (n.d.). *The Paper Ceiling*. Opportunity@Work.

¹⁹ OECD. (2026). *A Skills-First Labour Market*. OECD Publishing.

²⁰ Jooss, S., Collings, D., McMackin, J. F., & Dickmann, M. (2023). Towards agile talent management: The opportunities of a skills-first approach. In *Academy of Management Proceedings* (Vol. 2023, No. 1, p. 10103). Briarcliff Manor, NY 10510: Academy of Management. ; European Commission. (2024). *The Skills First Approach: Opportunities and risks*. Pact for Skills.

²¹ LinkedIn Economic Graph. (2023). *Skills First: Reimagining the Labor Market and Breaking Down Barriers*. LinkedIn; European Commission. (2024). *The "Skills First" Approach: Opportunities and Risks*. Pact for Skills.

²² Griffiths, M., Cantrell, S., Jones, R., & Hiipakka, J. (2022, September 7). *The Skills-Based Organization: A New Operating Model for Work and the Workforce*. Deloitte Insights.

operationalises through a structured, skills-based career pathway that maps future roles and builds targeted training toward internal progression.²³ Both firms argue this decouples pay and performance from job hierarchy, basing them on demonstrated skill instead. Deloitte notes, however, that adoption is hindered less by technology than by legacy mindsets and employee distrust of assessment data, insisting that generative AI should function only as a validated layer within a model still governed by human judgement, a caution that anticipates the governance tensions this thesis explores in its own scenario analysis.

2.4 Empirical Perspectives on Artificial Intelligence and the Reconfiguration of Skills

Beyond the foresight and theoretical literature, a much larger body of empirical research documents how AI is reshaping tasks and skills, moving from predictions of aggregate job loss or gain toward the more granular question of which tasks, and which skills, are exposed.

Several international studies converge on a common finding: exposure to AI is best understood at the task rather than the occupational level, and it bifurcates the workforce rather than displacing it uniformly. The International Labour Organization's (ILO) global analysis of generative AI models exposure as a function of task automatability, distinguishing pure automation from augmentation, and finds clerical roles most exposed alongside a significant gender imbalance, since women are disproportionately concentrated in exposed administrative tasks.²⁴ The WEF's *Future of Jobs Report 2025* similarly identifies AI as the primary driver of business restructuring to 2030, with a moderate stabilisation in skills volatility attributable to reskilling investment.²⁵ Dell'Acqua and colleagues complicate this picture with the "jagged technological frontier": AI exceeds human experts at specialised tasks while failing unpredictably at simpler ones, so exposure cannot be read off job titles.²⁶ PwC's *Global AI Jobs Barometer 2026* frames the market as bifurcated between professionalised roles, where AI automates routine work and rewards expertise with faster wage growth, and democratised roles, where entry barriers fall; to identify what remains resilient across both, PwC applies the Massachusetts Institute of Technology's (MIT) EPOCH framework — empathy, physical presence, ethical judgement, creativity and leadership.²⁷ The same report finds AI-exposed junior roles shrinking overall even as "seniorised" roles, requiring judgement and mentorship skills previously expected only

²³ Hancock, B., Higgins, C., Law, J., Olson, S., Patel, N., & Van Dusen, K. (2022, November 15). *Taking a Skills-Based Approach to Building the Future Workforce*. McKinsey & Company.

²⁴ Gmyrek, P., Berg, J., & Bescond, D. (2023). *Generative AI and Jobs: A Global Analysis of Potential Effects on Job Quantity and Quality* (ILO Working Paper No. 96). International Labour Organization.

²⁵ World Economic Forum. (2025). *The Future of Jobs Report 2025*. World Economic Forum.

²⁶ Dell'Acqua, F., McFowland, E., III, Mollick, E. R., Lifshitz-Assaf, H., Kellogg, K. C., Rajendran, S., Kraymer, L., Candelon, F., & Lakhani, K. R. (2023). *Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of Artificial Intelligence on Knowledge Worker Productivity and Quality* (Harvard Business School Working Paper No. 24-013). Harvard Business School.

²⁷ PwC. (2026). *2026 Global AI Jobs Barometer: Two Futures for Jobs in an AI Era*. PwC.

of experienced staff, grow strongly, a pattern independently confirmed by econometric evidence of AI as a seniority-biased technological change in the US labour market.²⁸

A second cluster examines organisational readiness rather than task exposure. McKinsey finds a persistent gap between workers, who feel personally prepared for AI, and executives, who acknowledge a lack of structural readiness, with middle managers reporting the highest anxiety as firms move toward full business-model reinvention.²⁹ The OECD's work on algorithmic management shows automated monitoring reshaping the middle-management skill set toward data literacy, with a geographic divergence: North American firms report rising demand for empathy and conflict resolution, while European and Italian managers report a decline in active listening under automated performance pressure.³⁰ A companion OECD brief identifies skills shortages, not technology, as the principal barrier to AI adoption among small and medium-sized enterprises (SMEs).³¹ Morandini and colleagues warn that excessive delegation of cognitive tasks risks skill decay, arguing for structured upskilling to keep human judgement central to organisational resilience.³² Microsoft's 2025 *New Future of Work Report* situates this within a broader mechanism: generative AI (GenAI) shifts effort from "doing" to "choosing", eroding metacognitive skills unless AI use is paired with continued practice.³³

Within Italy, Unioncamere's Excelsior survey offers the clearest institutional evidence, showing that demand for AI-specific capabilities is the only digital-skill category still growing even as overall demand contracts, concentrated overwhelmingly among the most senior professional groups.³⁴ The Istituto Nazionale per l'Analisi delle Politiche Pubbliche (INAPP) adapts the international AI-exposure index to Italian data and finds the same polarisation: directors and specialists combine high exposure with high skill complementarity, so AI acts as a productivity booster, while administrative and clerical staff combine equal exposure with low complementarity, leaving them vulnerable to substitution, a pattern in which women and older workers are disproportionately concentrated.³⁵ The Bank of Italy supplies the labour-market consequence: displaced workers rarely possess the skills to move into complementary roles, and are instead pushed into defensive, low-exposure work at a wage penalty, evidence of exceptionally

²⁸ Hosseini Maasoum, S. M., & Lichtinger, G. (2025). *Generative AI as Seniority-Biased Technological Change: Evidence from U.S. Résumé and Job Posting Data* [Working paper]. SSRN.

²⁹ McKinsey & Company. (2026, July 8). From adoption to impact: Three horizons of AI transformation. *McKinsey Quarterly*.

³⁰ Milanez, A., Lemmens, A., & Ruggiu, C. (2025). *Algorithmic Management in the Workplace: New Evidence from an OECD Employer Survey* (OECD Artificial Intelligence Papers No. 31). OECD Publishing.

³¹ OECD. (2026). *AI and Skills: What We Know So Far*. OECD Publishing.

³² Morandini, S., Fraboni, F., De Angelis, M., Puzzo, G., Giusino, D., & Pietrantoni, L. (2023). The impact of artificial intelligence on workers' skills: Upskilling and reskilling in organisations. *Informing Science: The International Journal of an Emerging Transdiscipline*, 26, 39–68.

³³ Microsoft. (2025). *2025 Annual Work Trend Index: The Year the Frontier Firm Is Born*. Microsoft WorkLab.

³⁴ Unioncamere & Ministero del Lavoro e delle Politiche Sociali. (2024). *Le Competenze Digitali: Analisi della Domanda di Competenze Digitali nelle Imprese. Indagine 2024*. Sistema Informativo Excelsior.

³⁵ Ferri, V., Porcelli, R., & Fenoaltea, E. M. (2024). *Lavoro e Intelligenza Artificiale in Italia: Tra Opportunità e Rischio di Sostituzione* (INAPP Working Paper No. 125). INAPP.

low skill-transferability.³⁶ Fondazione Randstad distinguishes an "extensive margin" of job creation and destruction from a more consequential "intensive margin", the transformation of skills within surviving jobs, and shows the most AI-exposed Italian profile is not the stereotypical low-skilled worker but highly specialised, university-educated women in Northern and Central Italy, consistent with Excelsior's finding that advanced skill demand concentrates among the already most qualified.³⁷ Finally, the INAPP–Lightcast analysis of online vacancies confirms that the specific skills required vary by sector: telecommunications and ICT combine high AI impact with intensive skill requirements, while publishing combines the same impact with markedly lower requirements, showing AI demands sector-specific competency profiles rather than uniform re-skilling.³⁸

Collectively, this literature maps the uneven distribution of vulnerability across tasks, sectors and demographics with precision, confirming empirically the displacement and polarisation dynamics the task-based approach predicts. What it does not yet specify is which skills, precisely, are durable enough to anchor employability once tasks are reshuffled at this pace: this is the question the following section addresses directly.

2.5 Foundational Skills Frameworks

Two further reports complete the thesis's theoretical apparatus by naming the competencies expected to remain valuable once tasks, not occupations, are the unit of analysis. The National Foundation for Educational Research's (NFER) *Skills Imperative 2035* identifies six Essential Employment Skills — communication, collaboration, information literacy, organising/planning/prioritising, problem solving and decision making, and creative thinking — as transferable capacities that complement rather than substitute for technical knowledge. Comparing its 2021 projections against outcomes to 2024, it finds the contraction of low- and mid-skill employment proceeding roughly three times faster than forecast, and complicates the standard "skills shortage" narrative: it finds severe skill deficits among a fifth of high-skilled workers, but also a large reservoir of latent, under-used skills among low- and mid-skill workers whose employers fail to draw on them, a mismatch it attributes to management practice rather than supply.³⁹

The WEF's *New Economy Skills* white paper replaces the hard/soft skills dichotomy with four human-centric dimensions — cognition and problem-solving, collaboration and communication, motivation and self-awareness, and learning and growth — and

³⁶ Dalla Zuanna, A., Dottori, D., Gentili, E., & Lattanzio, S. (2024). *An Assessment of Occupational Exposure to Artificial Intelligence in Italy* (Questioni di Economia e Finanza, Occasional Paper No. 878). Banca d'Italia.

³⁷ Fondazione Randstad AI & Humanities. (2025). *Intelligenza Artificiale: Una Riscoperta del Lavoro Umano*. Randstad Research.

³⁸ Camassa, S., Ferri, V., Perego, S., & Porcelli, R. (2024, May 3). *Intelligenza artificiale: Gli effetti dell'AI sulle competenze e come decifrarli con l'analisi degli annunci di lavoro*. *Agenda Digitale*.

³⁹ Bocock, L., Scott, M., & Hillary, J. (2025). *The Skills Imperative 2035: Creating a System of Lifelong Learning to Provide the Essential Skills for Tomorrow's Workforce*. National Foundation for Educational Research.

documents an "invisibility paradox": although most employers rank analytical thinking and creativity among the most important skills for 2030, few job postings mention human-centric skills explicitly, and recognition systems reward leadership over creative thinking or resilience despite the latter's higher estimated economic value. Applying its generative AI (GenAI) transformation index, it finds empathy-, resilience- and leadership-dependent tasks markedly more resistant to automation than routine technical ones, but warns this resistance is not passive: durable human skills degrade without deliberate practice ("cognitive offloading"), and can only be sustained through "desirable difficulty", the productive struggle that consolidates higher-order thinking.⁴⁰ This cognitive mechanism bridges the labour-economics literature reviewed above and the scenario analysis in Chapter 5, where a skill's durability under AI-driven task delegation is treated not as fixed, but as a function of how it continues to be practised.

Chapter Conclusion

Taken together, the foresight, theoretical, empirical and cognitive-science literatures reviewed in this chapter converge on a single implication: understanding the Italian labour market of 2035 requires a tool capable of modelling deliberate institutional choice, not merely extrapolating present trends. The two-by-two scenario matrix developed in Chapter 5, informed by the task-based approach and grounded in the skills frameworks introduced here, is designed to meet exactly that requirement. Chapter 3 now turns to the methodology through which this matrix was constructed.

⁴⁰ World Economic Forum. (2025, December 3). *New Economy Skills: Unlocking the Human Advantage*. World Economic Forum.

Chapter 3:

Research Methodology

This chapter sets out the research design underpinning this thesis. Section 3.1 justifies the choice of strategic foresight, and specifically a hybrid scenario-planning method, on the grounds that the research question concerns a matter of deliberate institutional choice rather than a fixed, forecastable trajectory. Section 3.2 sets out why Italy was selected as the empirical setting for this method, as a critical case for testing whether an internationally derived foresight architecture holds under conditions rarely found together elsewhere. Section 3.3 describes how the Italian labour market and the global megatrends acting upon it were surveyed empirically, in order to ground the scenarios that follow in verifiable present-day evidence rather than speculation. Section 3.4 explains how this evidence was used to identify critical uncertainties: genuine, unresolved tensions between competing institutional and value-based choices, whose outcome will determine the trajectory the Italian labour market actually follows, and whose resolution cannot be predicted from current data alone. Section 3.5 explains how, from the analysis of these critical uncertainties, two macro-dimensions were derived; their intersection generates the two-by-two scenario matrix from which the four scenarios examined in this thesis are drawn. Section 3.6 sets out how each of these four scenarios was analysed for its implications across four occupational categories spanning the Italian labour hierarchy, and across the workers each scenario displaces. Section 3.7 describes a qualitative consultation with sector experts, undertaken to stress-test the plausibility of this scenario architecture against practitioner judgement and to ground the thesis's treatment of governance in professional experience rather than documentary sources alone. Section 3.8 explains how a set of durable, transversal skills, valid regardless of which scenario materialises, was identified by cross-referencing two independently constructed skills frameworks. The chapter closes by setting out the limitations inherent to the approach adopted (Section 3.9).

3.1 Research Design: Strategic Foresight as a Hybrid Method

The research question this thesis addresses, how artificial intelligence will reshape the skills Italian workers need by 2035, concerns a matter of deliberate institutional choice rather than a fixed, forecastable trajectory. Accordingly, this thesis adopts scenario planning, treating the future as a bounded set of internally consistent, plausible alternatives rather than a single calculable outcome. The ten-year horizon adopted here, extending to 2035, follows standard practice within the scenario-planning tradition, which favours timeframes long enough to capture structural rather than marginal change while remaining sufficiently proximate to ground the analysis in observable present-day trends. This horizon also aligns this thesis's own scenario matrix with NFER's *Skills Imperative 2035*, the essential-skills framework drawn on directly in Chapters 2 and 6, so that the scenarios developed here and the skills framework read alongside them speak to the same point in time.

As established in Chapter 2, this thesis's specific method synthesises complementary contributions within the foresight tradition rather than applying any single theorist's framework in isolation: Wack and Kahn and Wiener's non-probabilistic conception of the scenario, Schwartz's distinction between predetermined elements and critical uncertainties, and Ramirez and Wilkinson's formalisation of the two-by-two deductive matrix, in preference to the archetypal and structural-normative traditions also reviewed there.^{41, 42, 43, 44} This synthesis constitutes the research design operationalised in the sections that follow.

3.2 Case Selection: Why Italy

Italy was selected not merely as a matter of convenience, but as what case-study methodology terms a critical case: a test of whether an internationally derived foresight architecture survives contact with a national context combining structural features, established in Chapter 2, rarely found together in the literature.⁴⁵ This combination makes Italy simultaneously a most-difficult case for the generalisability of international foresight models and the specific empirical gap this thesis is designed to fill.

3.3 Environmental Scanning: The Italian Labour Market and Megatrends

Before the scenario matrix could be constructed, the research first built an empirical baseline of the Italian labour market's current state and the structural forces already acting upon it. This followed the standard foresight practice of environmental scanning: a systematic review of megatrends, defined as structural signals of change with diffuse, cross-cutting impact.⁴⁶ Seven megatrends were surveyed, drawing on the international megatrend literature produced by institutions such as the OECD and the Italian Institute for the Future,⁴⁷ but the analysis was consistently anchored in Italian-specific evidence rather than international extrapolation, drawing on firm-level adoption data, employer surveys, demographic projections, and occupational exposure indices published by national statistical and research bodies, introduced and cited in full in Chapter 4. Because the reconfiguration of workers' skills is the specific object of this thesis,

⁴¹ Wack, P. (1985). *Scenarios: uncharted waters ahead*. Harvard business review, 63(5), 72-89

⁴² Kahn, H., & Wiener, A. J. (1967). *The year 2000; a framework for speculation on the next thirty-three years*.

⁴³ Schwartz, P. (1997). *Art of the long view: planning for the future in an uncertain world*. John Wiley & Sons.

⁴⁴ Ramirez, R., & Wilkinson, A. (2014). *Rethinking the 2 × 2 scenario method: Grid or frames?*. Technological forecasting and social change, 86, 254-264.

⁴⁵ Carmignani, M., & Rossi, G. (2026). *Work2040: Il futuro del mondo del lavoro nell'era dell'AI*. Fondazione ENIA.

⁴⁶ OECD. (2016). *OECD Science, Technology and Innovation Outlook 2016*. OECD Publishing.

⁴⁷ Paura, R. (Ed.). (2020). *Guida ai Megatrend Globali: 20 Tendenze sul Mondo di Domani*. Italian Institute for the Future.

technological transformation and skill mismatching received the most sustained empirical treatment; the remaining five megatrends (demographic change, organisational transformation, changing life expectations, globalisation, and the green transition) were examined more briefly, as contextual forces rather than as primary drivers of the analysis.

3.4 Identifying Critical Uncertainties

Not every finding to emerge from the evidence surveyed in Section 3.3 has the same methodological status. Some, following the distinction established in Chapter 2, constitute predetermined elements: trends sufficiently well established that their broad direction can be treated as given. Others instead point to critical uncertainties: genuine tensions between competing institutional and value-based choices, whose outcome will shape the trajectory of the Italian labour market to 2035, but which cannot be resolved from present data because they depend on choices Italian institutions, firms and workers have not yet made. Applying this criterion to the evidence gathered through environmental scanning yielded seven such uncertainties, spanning the economic objectives, governance mechanisms and terms of transition through which AI's impact on Italian workers' skills will ultimately be determined.

3.5 Constructing the 2x2 Matrix

From the analysis of these seven critical uncertainties, two macro-dimensions were identified: the trajectory of technological development and the prevailing socio-economic orientation. These constitute the two axes of the two-by-two matrix at the centre of this thesis's foresight model, whose intersection gives rise to the four scenarios examined in the section that follows. Consistent with the deductive method set out in Chapter 2, the remaining critical uncertainties are not treated as a separate residue: they are woven directly into the internal narrative of each scenario, ensuring that every scenario reflects the full range of tensions identified during environmental scanning rather than the two axes alone.

3.6 Constructing and Analysing the Four Scenarios

Each of the four scenarios generated by the matrix was analysed through the same structure: its defining logic, the resulting evolution of tasks, the professional climate it produces, and the competency it rewards above all others. Its implications were then traced across four occupational categories spanning the Italian labour hierarchy: operational staff, middle management, executives, and SME entrepreneurs. For each category, task evolution was read through the task-based approach reported in

Chapter 2, and the resulting competencies were identified through the skills-first economy and skills-based organisation literature reviewed in the same chapter.

Each scenario's implications were then traced, finally, across the displaced workers. In every scenario, the capacities that support these workers' re-employability are the same three, presented in Chapter 5 and derived from the reinstatement effect central to the task-based approach; what varies by scenario, and is examined individually within each, is the institutional support available to acquire them.

The competencies identified throughout this analysis are original analytical outputs of this thesis rather than empirical findings drawn directly from existent literature. They were derived by applying the theoretical frameworks established in Chapter 2 to the internal logic of each scenario, according to the deductive method of scenario construction presented in the literature.

3.7 Stakeholder Consultation and Governance

The scenario architecture developed above rests upon documentary evidence and structured theoretical inference; neither, in isolation, guarantees that the resulting scenarios are plausible to those who manage the deployment of artificial intelligence in practice. To test this, the four scenarios were presented to a panel of sector experts spanning banking, central banking, SME representation, and trade unionism, convened in a professional research context by a national research foundation. Participants were consulted individually on the plausibility of each scenario, on the relative importance of the seven critical uncertainties identified in Section 3.4, on where each uncertainty might be expected to settle along a regulation-to-market spectrum, and on their preferred configuration of AI governance, training and skills policy for 2035. This consultation was not designed to yield statistical validation, and no claim of representativeness is advanced: given a small, purposively selected panel, its function was the qualitative stress-testing of the scenario architecture against practitioner judgement, in the same spirit as the expert-interview component of the Work2040 foresight exercise reviewed in Chapter 2.⁴⁸ Findings from this consultation are cited by professional role rather than by name throughout this thesis, and inform in particular Chapter 6's treatment of governance as a set of choices available in the present, exercised through the same three actors, the state, firms, and social partners, through which the labour market may be steered toward one of the four scenarios developed in Chapter 5 rather than another.

⁴⁸ Carmignani, M., & Rossi, G. (2026). *Work2040: Il futuro del mondo del lavoro nell'era dell'AI*. Fondazione ENIA.

3.8 Identifying Durable, Transversal Skills

Skills whose value depends on which scenario materialises are of limited use to workers, firms and institutions navigating a genuinely uncertain transition. To identify skills that instead remain valuable regardless of outcome, this thesis cross-references two independently constructed frameworks reviewed in Chapter 2: NFER's *Skills Imperative 2035*, built on UK labour-market econometrics and employer survey data, and the World Economic Forum's *New Economy Skills* white paper, built on global platform learning data and behavioural self-assessment.^{49, 50} Because these frameworks were constructed independently, using different evidence bases, methodologies and national contexts, their convergence on a substantially overlapping set of competencies is treated as evidence of genuine durability, rather than as an artefact of a single dataset or methodological choice.

3.9 Limitations

Five limitations follow from the approach adopted. First, scenario planning does not produce falsifiable predictions; its output is a bounded set of plausible futures intended to support strategic reasoning, not a probabilistic forecast, and should be read accordingly. Second, selecting only two macro-dimensions to structure the matrix necessarily excludes finer-grained combinations of the remaining critical uncertainties, an intentional simplification in the service of analytical clarity, consistent with the deductive method itself, rather than an oversight. Third, the stakeholder consultation described in Section 3.7 is a small, purposively selected panel rather than a representative sample, and its role in this thesis is accordingly limited to plausibility-testing rather than statistical validation. Fourth, the convergence between the two skills frameworks used in Section 3.8, while methodologically informative, rests on only two data sources and should not be read as an exhaustive account of every durable, transversal skill that may emerge under conditions this thesis cannot fully anticipate. Fifth, Italy's status as a critical case, established in Section 3.2, strengthens confidence that the method itself travels beyond a single national context, but does not extend that guarantee to this thesis's specific findings: whether the same task-based dynamics and scenario configuration recur elsewhere is a question this single-case design cannot itself answer.

⁴⁹ Bocock, L., Scott, M., & Hillary, J. (2025). *The Skills Imperative 2035: Creating a System of Lifelong Learning to Provide the Essential Skills for Tomorrow's Workforce*. National Foundation for Educational Research.

⁵⁰ World Economic Forum. (2025, December 3). *New Economy Skills: Unlocking the Human Advantage*. World Economic Forum.

Chapter Conclusion

Together, these methodological choices constitute a single, coherent research design: a hybrid foresight method, applied to Italy as a critical case, and used to construct and interrogate four scenarios whose implications for workers' skills were then tested against practitioner judgement and cross-referenced against two independently convergent skills frameworks. Chapter 4 now turns to the empirical baseline this design depends on.

Chapter 4:

Megatrends and Structural Evidence in the Italian Labour Market

This chapter establishes the empirical baseline against which the scenario construction and projections in the remainder of this thesis are built, beginning with the current state of Italy's AI adoption, examined in fuller empirical detail in Section 4.1. Italy displays a marked divergence between different segments of its productive fabric: large firms have moved substantially further than the small and medium-sized enterprises (SMEs) that form the backbone of Made in Italy, a divide that reflects the country's broader difficulty in settling on a single strategic direction. Two opposing forces continue to compete for influence over how the country manages this transition: one favouring liberalisation, talent-based competition and the removal of structural inefficiencies, and one favouring a slower, less disruptive path that preserves existing economic and institutional equilibria. This unresolved tension carries a concrete cost: it contributes to the continued emigration of highly qualified young workers, a brain drain that shows no sign of abating.

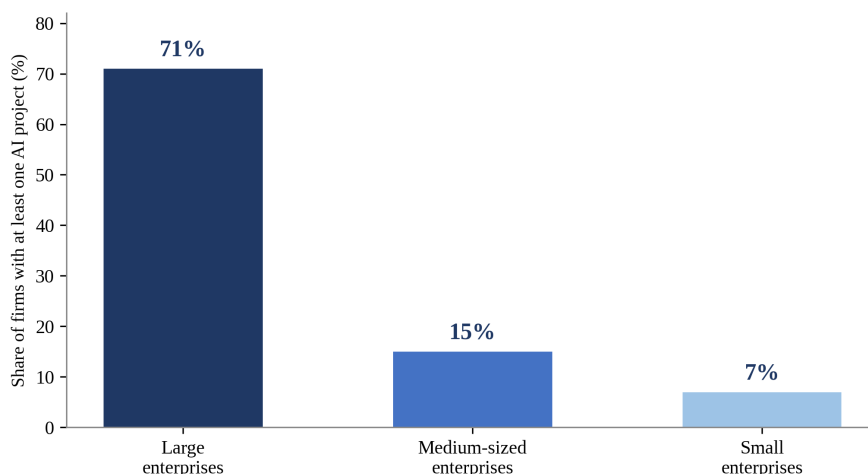
Technological change, however, is not the only element that must be analysed to understand how the Italian labour market is likely to evolve. This chapter also draws on megatrend analysis: the systematic identification of structural signals of change with diffuse, cross-cutting impact, used here to situate Italy's AI transition within a wider set of economic, demographic and social forces. Seven such megatrends have been identified: technological transformation, skill mismatching, demographic change, organisational transformation, changing life expectations, globalisation, and the green transition. The analysis that follows concentrates most closely on the two megatrends most directly implicated in the reconfiguration of workers' skills, technological transformation and skill mismatching, while treating the remaining five in less depth.

This broader lens matters because AI's effect on skills does not operate in isolation. Treating it as a single, self-contained variable would risk exactly the kind of deterministic reasoning this thesis sets out to avoid: in practice, AI is reshaping Italian work at the same time as, and in constant interaction with, an ageing population, a fragmented enterprise structure, and changing expectations about the purpose of work itself. Considering these megatrends together, before any scenario is constructed, makes visible the driving forces and institutional tensions that will ultimately determine which of several plausible futures materialises.

4.1 Technological Transformation

Italy's AI market grew by 50% in 2025 to €1.8 billion, with just under half of that value now generated by generative AI or hybrid generative/traditional projects rather than machine learning alone.⁵¹ Adoption, however, remains sharply stratified by firm size: 71% of large Italian enterprises had launched at least one AI project by 2025, up from 59% the year before, and 84% had purchased generative AI licences, though only one large firm in five reports AI genuinely embedded across multiple business functions, and just 9% has a structured AI governance framework, even as a further 54% is actively building one.⁵² Among small and medium-sized enterprises the picture is markedly thinner: only 15% of medium-sized firms and 7% of small firms had begun AI experimentation by 2025, though a further one-fifth of these firms report evaluating a project in the near term (see Figure 4.1).⁵³ This divide is consistent with the qualitative account in Italy's national AI strategy, which identifies the scarcity of high-level technical and domain competencies needed to redesign business processes around AI as a primary constraint on adoption, particularly for smaller firms without the resources to build this capability internally.⁵⁴

Figure 4.1 — AI Adoption in Italian Firms by Size, 2025



Source: Osservatorio Artificial Intelligence, Politecnico di Milano (2026).

At the level of individual workers, adoption is already outpacing formal organisational control. Nearly half of Italian employees (47%) report using AI tools at work, and 41% say AI already lets them carry out tasks they could not otherwise perform, though only

⁵¹ Osservatorio Artificial Intelligence, Politecnico di Milano. (2026, February). *Il mercato dell'AI in Italia cresce del 50% nel 2025, 1,8 mld di euro* [Comunicato stampa]. Osservatori Digital Innovation, Politecnico di Milano School of Management.

⁵² *Ibidem*

⁵³ *Ibidem*

⁵⁴ Agenzia per l'Italia Digitale. (2024). *Strategia Italiana per l'Intelligenza Artificiale 2024–2026*. Presidenza del Consiglio dei Ministri.

19% of these users rely exclusively on company-provided tools, a striking indicator of "shadow AI" use that governance structures have yet to catch up with.⁵⁵ The clearest signal of technological transformation, however, is in hiring: AI-related job postings in Italy grew 93% in 2025 alone, and now appear in 76% of postings for highly qualified white-collar roles — a figure that reaches into functions not traditionally considered technical, including a quarter of postings for Chief Human Resources Officer roles.⁵⁶

The composition of Italy's AI market matters for how this transformation is likely to unfold. Conversational and text-analysis systems account for the largest share (39%), followed by data exploration, prediction and optimisation tools (30%); process orchestration and agentic AI solutions (the category most closely associated with the systemic delegation this thesis's scenarios anticipate) remain marginal, at just 4% of the market, even as their underlying orchestration capabilities grow more sophisticated.⁵⁷ Internationally, this segment is projected to expand rapidly: Gartner forecasts that 40% of enterprise applications will embed task-specific AI agents by the end of 2026, up from under 5% in 2025, an eightfold increase in a single year.⁵⁸ Whether Italy's currently marginal agentic AI footprint follows this trajectory, lags behind it, or diverges from it entirely is precisely the kind of open question this thesis's scenarios are designed to explore, rather than one this chapter's present-day evidence can resolve on its own. This suggests that, as of 2025, Italian firms have adopted AI predominantly as a cognitive support tool rather than as an autonomous agent of production, a distinction directly relevant to how quickly, and how far, the scenarios developed later in this thesis might materialise.

Set against the international picture, this pattern is double-edged. On software-based adoption, Italy's growth broadly tracks the global acceleration in generative AI uptake. On physical automation, however, Italy diverges sharply: it was one of the few major economies to record a decline in industrial robot installations in 2024, even as its software-based and generative AI adoption expanded, suggesting Italy's productive fabric is adopting AI selectively, where capital outlay is lowest, rather than through the broader automation of physical production.⁵⁹

⁵⁵ *Ibidem*

⁵⁶ Sorrentino, C. (2026, May 12). *Cosa sta cambiando nel mercato del lavoro italiano con l'intelligenza artificiale*. Osservatori Digital Innovation, Politecnico di Milano School of Management, in collaborazione con Lightcast.

⁵⁷ *Ibidem*

⁵⁸ Gartner. (2025, August 26). *Gartner Predicts 40% of Enterprise Apps Will Feature Task-Specific AI Agents by 2026, Up from Less Than 5% in 2025*.

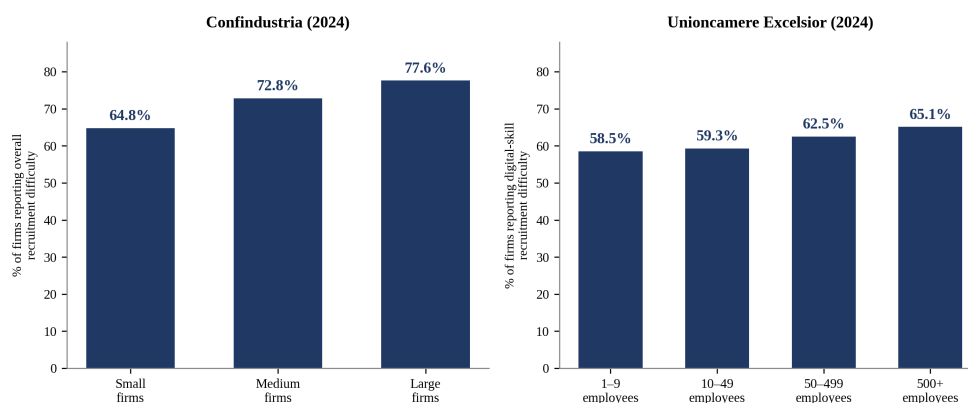
⁵⁹ Stanford Institute for Human-Centered Artificial Intelligence. (2026). Economy. In *The 2026 AI Index Report* (Chapter 4). Stanford University.

4.2 Skill Mismatching

Skill mismatching is not a new phenomenon in the Italian labour market, but the two independent employer surveys examined here (Confindustria's 2024 labour survey and Unioncamere's Excelsior system) show it intensifying, and converging on a genuinely counter-intuitive pattern: recruitment difficulty rises, rather than falls, with firm size.

Confindustria's survey of Italian firms finds that 69.2% report difficulty recruiting the technical profiles they need, with difficulty specifically tied to the digital transition reported by two firms in three (66.7%), a share exceeded only by manual-labour recruitment in industrial sectors (58.9%). This difficulty rises consistently with firm size, from 64.8% among small firms to 72.8% among medium-sized firms and 77.6% among large firms.⁶⁰ Unioncamere's Excelsior data corroborate this pattern independently: 60.1% of firms that had made digital investments in 2024 reported difficulty finding adequately skilled candidates, up from 58.1% the year before, with the same size gradient, from 58.5% among micro-firms to 65.1% among firms with more than 500 employees.⁶¹ Larger firms, in other words, are not shielded from the skills gap by superior recruitment capacity; if anything, their more specialised digital transformation projects make the shortage more acute (see Figure 4.2).

Figure 4.2 — Recruitment Difficulty Rises with Firm Size, Not Falls: Two Independent Surveys



Source: Confindustria, *Indagine Confindustria sul lavoro 2024*; Unioncamere – Ministero del Lavoro e delle Politiche Sociali, *Sistema Informativo Excelsior 2024 – Le competenze digitali*.

The demand driving this shortage is itself shifting toward AI specifically. Excelsior's analysis of LinkedIn job-posting data finds that mentions of AI or equivalent terms grew 73% between August 2023 and August 2024, but demand for the specific technical competencies required to use AI (advanced machine-learning frameworks, AI-enabled cloud platforms, AI development tools) grew far faster still, by 380% over the same period.⁶² This confirms, from the demand side, the polarisation dynamic the task-

⁶⁰ Confindustria. (2024, December 10). *Mismatch, Confindustria: Oltre Due Imprese su Tre non Trovano le Figure Professionali Richieste* [Comunicato stampa].

⁶¹ Unioncamere & Ministero del Lavoro e delle Politiche Sociali. (2024). *Le Competenze Digitali: Analisi della Domanda di Competenze Digitali nelle Imprese. Indagine 2024*. Sistema Informativo Excelsior.

⁶² *Ibidem*

based approach predicts theoretically: it is not generic digital literacy but specific, rapidly evolving AI competencies that firms are struggling hardest to find.

Fondazione Randstad's analysis of automation exposure among Italy's 22.4 million workers gives this polarisation a precise shape on the supply side. Of the 10.5 million workers classified as highly exposed to automation, only 9.9% are high-skill professionals; the remainder are split between medium-skill (43.5%) and low-skill workers (46.6%). Among the 7.9 million workers with low exposure, by contrast, 71.5% are high-skill professionals.⁶³ Read together with INAPP's finding that high AI exposure is complementary, and therefore productivity-enhancing rather than substitutive, specifically for directors, legal specialists and academics, this confirms that Italy's skill mismatch is not simply a shortage of workers, but a structural divergence between where automation risk concentrates (medium- and low-skill occupations) and where AI-driven productivity gains concentrate (already highly qualified professionals).⁶⁴

Confindustria's own diagnosis links this divergence directly to the demographic pressures examined in the next section: an ageing, shrinking working-age population narrows the pool from which firms can recruit at precisely the moment technical demands are rising fastest, a convergence this thesis treats as one of the sharpest sources of uncertainty for the Italian labour market to 2035. Left unaddressed, the risk is a polarised market: strong demand for highly specialised, AI-literate profiles on one side, a growing surplus of workers whose skills are no longer marketable on the other, unless matched by adequate reskilling pathways.⁶⁵

⁶³ Fondazione Randstad AI & Humanities. (2025). *Intelligenza Artificiale: Una Riscoperta del Lavoro Umano*. Randstad Research.

⁶⁴ Ferri, V., Porcelli, R., & Fenoaltea, E. M. (2024). *Lavoro e Intelligenza Artificiale in Italia* (INAPP Working Paper No. 125). INAPP

⁶⁵ Confindustria. (2024, December 10). *Mismatch, Confindustria: Oltre Due Imprese su Tre non Trovano le Figure Professionali Richieste* [Comunicato stampa].

4.3 Demographic Change

Italy's working-age population (15–64) is projected to fall from 37.3 million in early 2025 to 34.4 million in 2035, a decline of 2.9 million people, or 7.8%, concentrated most heavily in the South.⁶⁶ This is not a distant risk: it is the same ten-year horizon this thesis addresses. A shrinking pool of workers arrives at precisely the moment technical skill demands are rising fastest, tightening the mismatch documented above rather than easing it. Firms are responding by extending working lives and by automating roles they cannot otherwise fill, while immigration continues to offset only part of the decline. This demographic contraction compounds a related but distinct dynamic: the emigration of skilled young workers. Between 2011 and 2024, an estimated 630,000 Italians aged 18–34 relocated abroad, a loss of human capital valued at approximately €159.5 billion.⁶⁷ The demographic winter is therefore not a background condition but an active driver of the skills crisis this thesis investigates, and its effects will intensify, not stabilise, over the scenario horizon.

4.4 Organisational Transformation

Hybrid work has stabilised in Italy as a structural feature of employment rather than a pandemic-era exception: 3.575 million workers now work remotely for at least part of their time, a figure that has resumed slow growth after a brief 2024 dip.⁶⁸ The divide by firm size, however, mirrors the pattern already observed in AI and digital-skill adoption: 95% of large firms offer some form of remote work, covering 53% of their staff, while small and micro-firms are moving in the opposite direction, with remote working actually declining among them.⁶⁹ Public administration is the fastest-growing segment (+11% in a single year), suggesting institutional rather than purely market-driven change. A related tension is emerging around overworking and the right to disconnect, as flexible arrangements blur the boundary between availability and rest, a governance question with direct implications for how sustainably any AI-driven productivity gains can be absorbed. As agentic AI systems increasingly support asynchronous, distributed coordination, this divide is more likely to widen than close: large firms with the infrastructure to support such tools stand to extend the flexibility gap identified here, while SMEs risk falling further behind on both fronts simultaneously.

⁶⁶ Ufficio Studi CGIA. (2025, May 2). *Fra 10 anni, 3 milioni di persone in meno in età lavorativa*. Associazione Artigiani e Piccole Imprese Mestre CGIA.

⁶⁷ Consiglio Nazionale dell'Economia e del Lavoro. (2025). *L'attrattività dell'Italia per i giovani dei Paesi avanzati* (V. Ferraris & L. Paolazzi, Eds.). CNEL.

⁶⁸ Osservatorio Smart Working, Politecnico di Milano. (2025, October). *Torna a crescere lo smart working: 3,57 milioni di lavoratori in Italia* [Comunicato stampa]. Politecnico di Milano School of Management.

⁶⁹ *Ibidem*

4.5 Changing Life Expectations

Beyond structural and organisational change, a cultural shift is underway in how Italian workers relate to their jobs. Work remains central to identity and income, but is no longer accepted as the sole axis around which a life is organised: workers increasingly weigh flexibility, meaning and coherence with personal values alongside compensation. Organisations that fail to offer these conditions struggle to attract and retain talent, particularly among younger cohorts, a constraint that interacts directly with the demographic pressures described above, since a shrinking labour pool gives workers more, not less, leverage to make such demands.

4.6 Globalisation and Geopolitical Realignment

Globalisation continues to shape Italian labour-market trajectories even as its pace slows and its direction shifts toward regional supply chains and reshoring. Italy's trade exposure to US tariff policy, and its dependence on technology and energy decisions made elsewhere, leave the country more a recipient than a shaper of the global trajectories that will determine how AI is deployed domestically. This dependence is likely to intensify rather than diminish, as debates over sovereign AI capability gain urgency across Europe, with direct implications for how much control Italy retains over its own domestic skills strategy. The absence of a unified European response to these external pressures compounds Italy's structural vulnerability, reinforcing the case for a domestically grounded analysis of the country's own capacity to adapt.

4.7 Green Economy and Energy

The green transition is already a substantial feature of Italian employment, not a marginal one: 3.3 million green jobs account for 13.8% of total Italian employment, growing 4.3% in the most recent year.⁷⁰ Its intersection with AI is direct: firms increasingly deploy AI-driven optimisation in energy management and the circular economy, while the same skills shortages documented above constrain how quickly this potential can be realised. As the green and digital transitions increasingly converge into a single policy agenda at the European level, this skills gap risks compounding rather than easing the pace of decarbonisation, particularly in the SME-dominated sectors most exposed to both transitions simultaneously. Energy autonomy has also become a live strategic concern for Italy and Europe, adding urgency to the green transition beyond its labour-market dimension alone.

⁷⁰ Fondazione Symbola, Unioncamere, & Centro Studi Guglielmo Tagliacarne. (2025). *GreenItaly 2025*. Fondazione Symbola.

Chapter Conclusion

Together, these seven megatrends establish the empirical baseline against which the scenario matrix in Chapter 5 is constructed. Two findings recur across nearly every domain examined here, in adoption, in skill mismatch, and in the diffusion of hybrid work, and neither is likely to resolve on its own before 2035: a structural divide between Italy's large firms and the small and medium-sized enterprises that dominate its economy, and a demographic contraction that intensifies, rather than eases, the skills pressure documented throughout this chapter. Chapter 5 now turns to the critical uncertainties and scenarios built on this evidence.

Chapter 5:

Scenarios for the Evolution of Workers' Skills to 2035

The evidence and megatrends examined in the previous chapter establish where the Italian labour market stands today, and which structural forces are already acting on it. On their own, however, they do not determine where that market is heading: the same demographic and technological pressures could resolve into markedly different futures, depending on choices institutions, firms and workers have yet to make. This chapter turns from diagnosis to construction. It first sets out the critical uncertainties that will determine which of these futures materialises (Section 5.1), then distils them into the two-by-two scenario matrix around which the analysis is organised (Section 5.2). Each of the four resulting scenarios is examined in turn (Section 5.3), for its implications across the same four occupational categories and the workers each scenario displaces, and read through the same task-based lens established earlier in this thesis, before a comparative summary draws the four together (Section 5.4). Read this way, the chapter's purpose is not to predict which future is most likely, but to make explicit the choices on which Italian workers' skills to 2035 actually depend.

5.1 Critical Uncertainties

Imagining alternative futures requires first analysing the forces of change that reflect the value-based, social and cultural dynamics underlying individual and collective choices. The future of work is not a linear trajectory, but the outcome of a collision between technological progress and political and value-based choices. To map this territory, this thesis identifies a set of critical uncertainties: genuine conflicts of vision that act as engines of change, points at which no single outcome can be read off from current evidence, because what happens next depends on choices institutions, firms and workers have not yet made.

The underlying question concerns the role of human intentionality: in a system increasingly shaped by agentic AI, will the priority be to optimise profit through substitutive automation, or to strengthen human capability through symbiotic augmentation? Table 5.1 sets out the fundamental tensions identified as determinant for constructing the scenarios that follow. Each row represents a strategic fork in the road, not a foregone conclusion: it is the specific choice made at each one, more than the underlying technology itself, that will determine which of the futures mapped in this chapter the Italian labour market actually follows.

Table 5.1 - Critical Uncertainties Shaping the Italian Labour Market to 2035

Critical Uncertainty	Polarity A	Polarity B
Economic Objective	Efficiency / Profit	Wellbeing / Human Value
Social Structure	Individualism	Collective Solidarity
Governance	Algorithmic Control	Human Empowerment
Technological Development	Substitutive Automation	Symbiotic Augmentation
Education and Training	Static Instruction	Lifelong Learning
Decision-Making Criterion	Statistical Calculation	Ethical Responsibility
Accessibility	Ownership (Elite)	Shared Access

From the analysis of these critical uncertainties, together with the evidence and megatrends discussed in the preceding chapter, the scenario matrix presented in the following section was constructed.

5.2 The 2x2 Matrix

From the analysis and synthesis of the critical uncertainties identified above, two macro-dimensions were derived, together forming the two-by-two matrix around which the scenarios developed in this chapter are built.

The first dimension is the technological trajectory: whether AI is deployed primarily to substitute human tasks, replacing the workers who once performed them, or to strengthen human capability, augmenting rather than displacing it. The second is the socio-economic orientation: whether the prevailing logic is individualist, oriented toward efficiency, profit and competitive advantage, or collective, oriented toward solidarity, shared wellbeing and equity. Together, these two dimensions define the boundaries of the analysis that follows, making it possible to observe how their interaction produces radically different working environments.

The two dimensions of the analysis are:

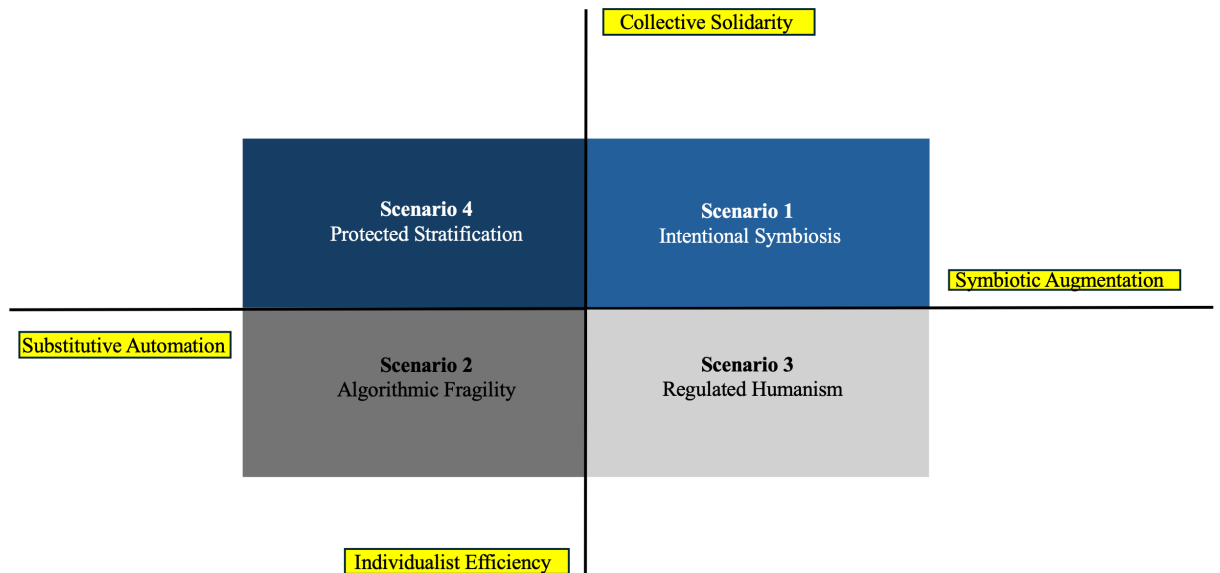
- **Axis X, Technological Trajectory** (Substitutive Automation ↔ Symbiotic Augmentation)
- **Axis Y, Socio-Economic Orientation** (Individualist Efficiency ↔ Collective Solidarity)

Crossing these two axes produces four archetypal scenarios, represented visually in Table 5.2 and Figure 5.1.

Table 5.2 - The 2x2 Scenario Matrix

	Substitutive Automation	Symbiotic Augmentation
Individualist Efficiency	Scenario 2 – Algorithmic Fragility	Scenario 3 – Regulated Humanism
Collective Solidarity	Scenario 4 – Protected Stratification	Scenario 1 – Intentional Symbiosis

Figure 5.1



The names chosen for each scenario are not technical labels: they evoke the professional and social climate of 2035 that emerges from the intersection of technological trajectory and governance model, chosen specifically to capture the trade-off between AI's use and the centrality of the human being. Symbiosis denotes the strengthening of human capability for collective wellbeing; Fragility, substitutive automation pursued for profit alone; Humanism, the defence of intellectual mastery within competitive markets; and Stratification, extensive automation mitigated by social protection and welfare. Each of these four scenarios is examined in detail in the section that follows.

5.3 The Four Scenarios

Each of the four scenarios below follows the same structure: an overview of its defining logic, the resulting evolution of tasks, the professional climate it produces, and the core competency it rewards above all others, before its implications are traced across four occupational categories spanning the Italian labour hierarchy: operational staff, middle management, executives, and SME entrepreneurs. For each category, the analysis identifies how that scenario's specific combination of technological trajectory and socio-economic orientation reshapes its tasks and the competencies it demands, informed by the skills-first economy and skills-based organisation literature reviewed earlier in this thesis. Each scenario's implications are then traced, finally, across the workers it displaces. In every scenario, the capacities that support these workers' return to employment are the same three: cognitive agility, the capacity to unlearn obsolete processes and reposition oneself within resilient, human-intensive sectors; basic algorithmic literacy, the minimum knowledge required to interact with the systems increasingly coordinating work; and resilience and lifelong learning, a mindset that treats continuous training as a structural condition of professional life rather than an occasional response to crisis. These capacities, derived from the reinstatement effect central to this thesis's task-based approach, do not vary by scenario; what does vary, and is examined individually below, is the institutional support available to acquire them.

Scenario 1 - Intentional Symbiosis (*Symbiotic Augmentation / Collective Solidarity*)

This is the scenario of widespread technological emancipation. In a system oriented toward collective wellbeing, agentic AI is used to augment human capability, absorbing burdensome analytical tasks and allowing human capital to evolve into a strategic orchestrator. Governance of these systems favours human empowerment over algorithmic control: decisions affecting workers' tasks and career trajectories remain subject to human oversight rather than being delegated wholesale to opaque processes. Access to the AI tools driving this transformation is deliberately kept broad rather than concentrated among a technical elite, consistent with this scenario's collective orientation, and training and education are reformed radically to extend that access rather than reserve it for the already most capable.

Task evolution. Analytical processes are transformed at their root: analytical tasks disappear, replaced by activities of ideation, design, oversight and intelligent interrogation. Human work ceases to mean "doing things" and becomes "defining outcomes." This shift is consistent with what this thesis's task-based framework terms the reinstatement effect. As AI absorbs the analytical tasks that once anchored many occupations, new tasks emerge in which human judgement retains a comparative advantage, provided workers are equipped to move into them. Value lies in the ability to coordinate autonomous systems, ensuring that every action remains coherent with long-term objectives.

Professional climate. Work is measured by the quality of outcomes and by strategic vision, with a strong emphasis on reduced working hours at equivalent output. Decisions once settled by statistical calculation alone are increasingly weighed against ethical responsibility, reflecting this scenario's broader privileging of judgement over pure optimisation.

Core competency: problem formulation. In this world, professional excellence is measured by the ability to ask the right questions. Framing a complex problem so that AI can solve it becomes the supreme skill: whoever has the vision to set the purpose governs the system, while whoever lacks it remains a passive user. This competency is most directly embodied by executives, who set the direction organisations pursue; the remaining three occupational categories, detailed in Table 5.3, develop distinct but related skills that operate in service of this same logic.

Table 5.3 - Scenario 1 (Intentional Symbiosis): Impact on Tasks and Skills by Worker Category

Category	Impact on Tasks and Skills
Operational staff	Repetitive manual or technical tasks are automated. Workers evolve into “flow supervisors,” intervening only to manage logical exceptions or unforeseen events (“black swans”). The key skill is active learning, needed to stay synchronised with constantly changing interfaces.
Middle management	Control over atomic tasks is delegated to AI. Managers become orchestrators of hybrid teams, focusing on social cohesion and motivating people. Leadership and social influence become the dominant skills.
Executives	Freed from the burden of producing predictive analysis, executives act as “architects of intent,” using critical thinking to decide which problems are worth solving. They also serve as “guarantors of meaning,” responsible for the strategic and ethical validation of algorithmic outputs.
SME entrepreneurs	AI lowers bureaucratic and logistical barriers to entry. Italian SMEs use the technology to scale the excellence of Made in Italy, concentrating human ingenuity on creativity and the unprecedented. The key skill is systemic vision.

Workers in Transition

Displacement is not absent even in this scenario: some tasks are eliminated before new ones are created, particularly in the transition's early years. Institutional support for acquiring the capacities described above is strong: access to AI training is deliberately broad rather than concentrated among a technical elite, and lifelong learning is treated as a structural entitlement rather than an individual responsibility. The population caught in this transitional gap therefore remains comparatively small, and its members are more likely to acquire these capacities through systematic public provision than to be left to develop them informally.

Scenario 2 - Algorithmic Fragility (*Substitutive Automation / Individualist Efficiency*)

This is the scenario of aggressive technological substitution. In a system oriented toward cost efficiency and immediate profit, agentic AI is used to replace human capability rather than strengthen it. Technology becomes dominant and opaque, while workers are progressively pushed out of decision-making processes, becoming passive supervisors of systems they no longer fully understand. Access to the AI capabilities driving this transformation is concentrated among a narrow technical and managerial elite, and increasingly among the large, often foreign, platforms that supply these systems, rather than broadly shared across the workforce. Training is fragmented and purely technical, aimed at operating specific tools rather than understanding the underlying processes.

Task evolution. Mid-level cognitive and operational tasks dissolve. Analysis, drafting and decision-making are delegated entirely to "black box" systems. Human work is reduced to the "formal validation" of algorithmic output: people lose their role as architects of the process and become control terminals operating under a condition of permanent uncertainty, often unable to intervene manually when the machine makes a logical error. This trajectory reflects the displacement effect this thesis's task-based approach identifies operating largely unchecked: as automation absorbs task after task, few new tasks emerge in which human judgement retains a comparative advantage, and those that do are rarely matched to a workforce whose skills have already atrophied through disuse.

Professional climate. Work is marked by intense executive pressure and growing digital alienation. A strong de-skilling effect emerges, in which total dependence on the machine atrophies critical thinking and independent judgement, leaving the whole system fragile in the face of unexpected events or systemic crises ("black swans"). Decisions once weighed against ethical responsibility default instead to statistical calculation, since the systems producing them offer no mechanism for the kind of judgement that responsibility would require.

Core competency: operational technical literacy. In this world, strategic vision is sacrificed on the altar of speed. Excellence is replaced by compliance: the most sought-after skill is the ability to keep systems running and to read surface-level error signals. The capacity to critically question the machine disappears; workers no longer set the purpose but instead follow the pace and statistical logic of the algorithm. This competency is most directly embodied by operational staff, for whom it constitutes the entirety of their surviving function; even executives, ostensibly this scenario's decision-makers, exercise only a diminished version of the same logic, interpreting model outputs rather than exercising the strategic judgement problem formulation would otherwise require.

The resulting impact across the four occupational categories is summarised in Table 5.4.

Table 5.4 - Scenario 2 (Algorithmic Fragility): Impact on Tasks and Skills by Worker Category

Category	Impact on Tasks and Skills
Operational staff	Become passive terminals. Tasks are fragmented and directed by artificial supervisors; skill is reduced to the rapid execution of digital instructions without decision-making autonomy.
Middle management	Heavily marginalised. The algorithm coordinates workflows and monitors KPIs; managers are left only with low-level conflict resolution, losing their capacity to orchestrate human talent.
Executives	Become “data-driven decision-makers.” Leadership is delegated to predictive models; the risk is an inability to see beyond historical data, leaving corporate strategy rigid and devoid of original intuition.
SME entrepreneurs	Experience total technological dependence. Lacking the resources to develop proprietary AI, Italian SMEs become satellites of large foreign platforms, losing control over the value of their own products and brand identity.

Workers in Transition

Displacement in this scenario is neither marginal nor temporary: substitutive automation eliminates tasks across the labour market with little corresponding creation of new ones for human labour to move into. Institutional support for acquiring the capacities described above is correspondingly weak: training remains fragmented and purely technical, access to the AI capabilities that might otherwise support reskilling is concentrated among a narrow elite rather than broadly available, and no structural mechanism treats continuous learning as anything other than an individual responsibility. The population caught in this transitional gap is therefore large, and largely left to develop these capacities informally, if at all, reinforcing the de-skilling dynamic already described above rather than counteracting it.

Scenario 3 - Regulated Humanism (*Symbiotic Augmentation / Individualist Efficiency*)

This scenario emerges from a deliberate ethical, political or market-driven reaction. In a context that remains highly competitive and efficiency-oriented, AI is chosen as an invisible support tool, while preserving the centrality of the human being in those areas where judgement, empathy and experience are considered irreplaceable. Technology "augments" without substituting, creating a reservoir of value around human "mastery." Governance in this scenario is neither fully algorithmic nor fully human-driven, but deliberately mixed: market competition continues to set the pace, while specific professional domains are carved out and protected from algorithmic control by regulation, licensing or professional norms. Training is selective, focused on developing high-level critical and relational skills, and access to this training, like access to the protected professional status it confers, remains concentrated among those already positioned to acquire it, rather than broadly shared, reinforcing the "luxury good" character this scenario's human expertise ultimately assumes. The labour market is slower and more costly to operate in, but places very strong emphasis on social stability and the ethics of the person.

Task evolution. The focus is on protecting and building resilience into intellectual and relational activities. AI handles the informational "raw material" (sifting through data or images), but the decision-making and creative process remains shielded by human involvement. Work is not fragmented into atomic tasks that can be delegated to the machine, but is preserved as a unit of "meaning" under the professional's responsibility. This is a narrower, more selective version of what this thesis's task-based framework terms the reinstatement effect: new, higher-value tasks are indeed created for human judgement, but only within the specific occupational niches this scenario chooses to protect, rather than across the labour market as a whole.

Professional climate. The "human touch" and subjective judgement once again become markers of excellence and reliability, becoming almost a "luxury good" in an otherwise automated market. The climate is less frantic than in the Fragility scenario, since a degree of human "cognitive friction" is accepted as a guarantee of quality and safety. Decisions within these protected domains are explicitly shielded from pure statistical calculation, weighed instead against ethical responsibility, even as the wider market outside them continues to optimise for efficiency alone.

Core competency: emotional intelligence and ethical mediation. In this world, excellence lies not in computational speed but in the ability to manage the complexity of human relationships and ethical dilemmas. Mediating between what the machine indicates and the real, and often irrational, needs of people becomes the supreme skill. Value lies in an originality of judgement that no statistic can replicate. This competency is most directly embodied by middle management, whose explicit function as cultural mediators makes them the structural centre of this scenario; executives and operational staff each draw on related but more specialised variants of the same underlying capacity, detailed in Table 5.5.

Table 5.5 - Scenario 3 (Regulated Humanism): Impact on Tasks and Skills by Worker Category

Category	Impact on Tasks and Skills
Operational staff	Protected in highly specialised roles (advanced craftsmanship, personal care, critical maintenance). Their value lies in managing the physical or emotional unforeseen that the machine cannot perceive. Resilience is the key skill.
Middle management	Evolve into cultural mediators. They no longer control timing, but manage tasks of organisational transformation, such as conflict and complex negotiation among stakeholders, ensuring that technology does not erode the team's social climate.
Executives	Judged by their "ethical reputation." Their function is to decide where AI should not be used, taking responsibility for unpopular but necessary choices in the interest of long-term stability. Critical thinking and judgment integration prevail.
SME entrepreneurs	Position themselves in "niches of excellence." For Italian SMEs, this scenario means competing on the irreproducibility of the product: value lies not in price, but in the story and human mastery behind each creation, supported by, but not produced by, AI.

Workers in Transition

Displacement in this scenario is selective rather than widespread: symbiotic augmentation limits the overall scale of job loss, but the protection this thesis has described is reserved for specific occupational niches, leaving workers outside them comparatively exposed. Institutional support for acquiring the capacities described above mirrors this selectivity: training remains available, but is itself treated as a selective good rather than a universal entitlement, concentrated among those already positioned to access the protected professions this scenario preserves. The population caught in this transitional gap is therefore smaller than under a trajectory of substitutive automation, but its members face a genuine risk of being left behind precisely because the market-driven logic governing this scenario provides no equivalent of the structural entitlement to training found under Intentional Symbiosis.

Scenario 4 - Protected Stratification (*Substitutive Automation / Collective Solidarity*)

This is the scenario of the "social management of automation." In a system oriented toward collective solidarity but following a trajectory of substitutive automation, agentic AI absorbs most executive and analytical tasks. Governance in this scenario is split across two distinct layers: algorithmic control dominates at the operational level, where "algorithmic systemics" run production with minimal human oversight, while human empowerment is reasserted at the policy level, where the state and social partners intervene extensively to redistribute the wealth produced. This intervention is itself governed less by statistical optimisation than by explicit ethical and redistributive criteria, guaranteeing economic stability while accepting a clear division of labour. Training is oriented toward resilience and reconversion into sectors of public utility. The risk is maximum social polarisation and political instability, driven by the economic irrelevance of large sections of the population.

Task evolution. The labour market fragments. Tasks related to industrial automation, logistics and analysis are almost entirely delegated to "algorithmic systemics." New tasks emerge, however, around "social maintenance" and community care, not profit-oriented, but focused on cohesion. This is a distinctive variant of the reinstatement effect central to this thesis's theoretical framework: new tasks are indeed created for human labour, but their creation is driven by deliberate policy choice rather than by market demand, since the tasks themselves generate social rather than commercial value. Human work splits between a narrow elite that designs the systems, whose access to these technologies remains tightly held, and a mass of workers carrying out the residual, relationally intensive tasks that society deliberately chooses not to automate.

Professional climate. The climate is marked by strong security guaranteed by welfare provisions (such as a drastic reduction in working hours or training subsidies), but with the latent risk of a "loss of meaning" for the segments of the workforce whose original tasks have been absorbed. An occupational dualism emerges between those who govern the technology and those who benefit from it passively.

Core competency: systems thinking. In this world, the supreme skill is understanding the interconnection between algorithmic flows and their social effects. Navigating a system where the technical work is automated, but managing the effects of that automation on the community still requires a holistic vision to preserve equity, becomes essential. This competency is most directly embodied by executives, who act as architects of the system overseeing this division of labour; the remaining three occupational categories, detailed in Table 5.6, develop related capacities adapted to their specific position within this stratified structure.

Table 5.6 - Scenario 4 (Protected Stratification): Impact on Tasks and Skills by Worker Category

Category	Impact on Tasks and Skills
Operational staff	Engaged in residual or “proximity” tasks (e.g. care work, green-space management, community outreach). Industrial and executive tasks have disappeared; the required skill is adaptive agility, needed to move between different social functions.
Middle management	Evolve into “managers of social processes.” They manage tasks of organisational transformation aimed no longer at productive efficiency, but at equity in the distribution of workloads and the maintenance of team wellbeing.
Executives	Act as “architects of the system.” Their primary task is monitoring social compliance and the integrity of the algorithmic “black box.” The core competency is managing systemic complexity and public responsibility.
SME entrepreneurs	Integrated into “local service ecosystems.” Italian SMEs move away from the role of isolated producers to become providers of high-human-value services (tourism, culture, corporate welfare), supported by incentives for social and environmental sustainability.

Workers in Transition

Displacement in this scenario is extensive, following directly from its substitutive trajectory, but it is met with the most deliberate institutional response of the four: the state and social partners intervene explicitly to redistribute the gains of automation and to fund reconversion into sectors of public utility. Institutional support for acquiring the capacities described above is correspondingly strong, delivered through public provision rather than left to market mechanisms, consistent with this scenario's collective orientation. The population caught in this transitional gap is therefore large, reflecting the scale of substitutive automation this scenario assumes, but is more systematically supported than under Algorithmic Fragility, even as the "loss of meaning" already described above suggests that adequate material support does not, on its own, resolve the identity cost of displacement.

5.4 Comparative Summary

For a comparative synthesis, Table 5.7 crosses the technological and social variables with their concrete impact on the tasks and actors examined throughout this chapter.

Table 5.7 - Summary of the Four Scenarios

	Scenario 1 - Intentional Symbiosis	Scenario 2 - Algorithmic Fragility	Scenario 3 - Regulated Humanism	Scenario 4 - Protected Stratification
AI Trajectory	Augmentation	Substitution	Augmentation	Substitution
Social Driver	Solidarity / Wellbeing	Efficiency / Profit	Efficiency / Mastery	Solidarity / Equity
Governance	Human empowerment	Algorithmic control	Mixed: market- driven, with protected professional niches	Split: algorithmic at operational level, human at policy level
Access to AI	Broadly shared	Concentrated among technical elite and foreign platforms	Concentrated within protected professions	Concentrated among a designing elite
Displaced Workers	Small population; strong public support	Large population; support largely absent	Selective population; support concentrated in protected professions	Large population; strong public support
State of Tasks	Expansion: humans design intent	Dissolution: humans endure the output	Protection: humans defend mastery	Fragmentation: humans manage the residual
SME Entrepreneurs	Scalability of value and creativity	Passive dependence on large platforms	Niches of excellence and prestige	Integration into service ecosystems
Core Competency	Problem Formulation	Operational Technical Literacy	Emotional Intelligence	Systems Thinking

Chapter Conclusion

The four scenarios developed in this chapter share a common origin, the same seven critical uncertainties distilled into a single matrix, yet diverge sharply in what they demand of Italian workers, firms and institutions, including in the scale of displacement each produces and the institutional support available to those affected. What recurs across all four, however, is the centrality of the same underlying resource: judgement over execution. Each scenario distributes this resource differently, broadly in Intentional Symbiosis, narrowly in Algorithmic Fragility, selectively in Regulated Humanism, and by deliberate redistribution in Protected Stratification, but none eliminates its relevance entirely. Which of these futures the Italian labour market actually approaches by 2035 remains, as Chapter 3 established, a matter of institutional choice rather than technological inevitability. Chapter 6 now turns from these four realised end states to the actions available in the present: the governance choices through which the state, firms and social partners can steer the labour market toward one future rather than another, and the durable, transversal skills that retain their value whichever of these futures ultimately prevails.

Chapter 6:

From Scenarios to Choices: Governance and Durable Skills

The four scenarios developed in the preceding chapter describe distinct configurations of the Italian labour market in 2035, together with the population each displaces and the institutional support available to it. The realisation of any one of these configurations, however, is not automatic: it depends on choices made in the present by the state, firms and social partners, and on whether workers retain capacities that remain valuable irrespective of which scenario ultimately prevails. This chapter addresses both conditions. Section 6.1 examines the governance choices available in the present, informed in part by a qualitative consultation with Italian sector stakeholders undertaken to test the plausibility of the scenario architecture developed in this thesis, and treated here not as a fixed feature of any single scenario but as the mechanism through which the labour market's trajectory toward one scenario rather than another is shaped. Section 6.2 addresses the element of this thesis's analysis that does not vary by scenario: the durable, transversal skills that retain their value irrespective of which of the four futures materialises.

6.1 Governance and Responsibility

The stakeholder consultation underpinning this thesis, convened by Fondazione Giacomo Brodolini,⁷¹ provides the point of departure for this section. Sector representatives, drawn from banking, central banking, SME representation, and trade unionism, were consulted individually on the plausibility of the four scenarios developed in this thesis. Views diverged: most participants regarded the scenarios built on symbiotic augmentation, Intentional Symbiosis and Regulated Humanism, as the more plausible of the four, while one participant considered Algorithmic Fragility the more probable outcome, and none volunteered Protected Stratification as their expectation. This divergence among informed practitioners is analytically significant in its own right: even where participants concur that augmentation constitutes the more plausible technological trajectory, no shared view emerges regarding the socio-economic orientation likely to accompany it, indicating that the governance choices examined in this section, rather than technological momentum alone, will determine which future materialises.

⁷¹ Fondazione Giacomo Brodolini is an Italian research foundation working on labour, social and economic policy, active in national and European-funded research projects on employment and skills.

The state and institutions. The principal task of government is to reform education cycles so as to embed problem formulation from primary school onward. This position is consistent with that expressed by a labour-policy academic at Link Campus University⁷² during the consultation, who argued for the introduction of AI literacy at secondary-school level and for the restoration of humanistic training, specifically the capacity to formulate questions correctly, within multidisciplinary curricula. The state must additionally act as guarantor of the right to training, financing permanent reskilling infrastructure and applying fiscal incentives to firms that invest in human capital rather than in substitutive automation alone. A human-resources representative from the Central Bank of San Marino⁷³ arrived at a compatible view from the perspective of a public institution, favouring tripartite governance involving the state, firms and unions jointly, and characterising permanent access to training as a right rather than a discretionary benefit, a position consistent with this participant's own view of Intentional Symbiosis as both the more plausible and the more desirable of the four scenarios. The Link Campus academic further identified a geopolitical dimension largely absent from the consultation's other contributions: the pursuit of sovereign AI capability, situating domestic training policy within a broader strategic concern regarding technological dependence. A further theme concerned the need to render continuous training structural rather than reactive, through appropriately designed policy instruments, and to revise sectoral collective agreements to reflect the manner in which AI is reshaping job content, a requirement this thesis's task-based framework indicates is unavoidable, since agreements constructed around fixed job titles cannot readily accommodate work increasingly organised around fluid bundles of tasks.

Firms and SMEs. Firms are required to move from selection based purely on formal qualifications toward a skills-first model, consistent with the shift documented throughout this thesis. Italian SMEs are required, more specifically, to pool resources through inter-firm networks that share the cost of technological upgrading, thereby positioning AI as an ally of Made in Italy rather than a threat to it, and to invest in the upskilling of existing employees so as to avoid mass displacement from the workforce. CNA's⁷⁴ representative at the consultation identified a caution directly relevant to this requirement: Italian SMEs, on this view, have not yet developed a sufficient sense of urgency regarding investment in AI-related skills and training, a difficulty compounded by a workforce still disproportionately composed of workers over fifty, for whom AI upskilling is markedly more difficult to deliver at scale. Where large firms have already undertaken this transition, the consultation supplied a concrete operational precedent.

⁷² Link Campus University is a private university based in Rome, with a research focus that includes labour market and welfare policy.

⁷³ The Central Bank of the Republic of San Marino is the monetary and financial supervisory authority of the Republic of San Marino, a microstate bordering Italy.

⁷⁴ CNA (Confederazione Nazionale dell'Artigianato e della Piccola e Media Impresa) is a national association representing Italian craft businesses and SMEs.

ING⁷⁵ described a two-stage process: first, the definition of a small set of core competencies required of every employee in the future; subsequently, an analysis of sector-wide trends, conducted function by function, to determine how specific roles and processes would change and which functional competencies should accordingly be developed, with training delivered in two layers, a baseline of general AI fluency for the entire workforce and role-specific AI training layered upon it. This is, in substance, the skills-based organisation model discussed earlier in this thesis, observed here in operational implementation rather than in the abstract. Intesa Sanpaolo's⁷⁶ representative introduced a normative consideration alongside this operational one, arguing that the introduction of AI must remain human-centred and that the dignity of work and of the person must be actively preserved throughout the transition; given that the skills required by a given role may shift every two years, precise prediction becomes difficult, and what firms can usefully cultivate instead is hybrid, T-shaped competency and, above all, critical thinking. The Link Campus academic observed separately that AI is also likely to reshape the liberal professions substantially, citing accountancy as an example, and argued that AI constitutes a genuine opportunity for SMEs specifically, provided the reskilling gap identified above is closed rather than allowed to widen.

Trade unions and social partners. The role of trade unions evolves toward what may be termed algorithmic bargaining. The union's mission by 2035 extends beyond the defence of wages to encompass the negotiation of task quality, the dignity of digital work, and the equitable distribution of workload between humans and artificial agents, thereby ensuring that technology does not erode fundamental labour rights. The Link Campus academic advocated a direct extension of this role, proposing that AI-skills training become a mandatory subject of collective negotiation rather than a matter left to individual employer discretion. This more assertive conception of the union's role is consistent with the view expressed by UIL's⁷⁷ representative in the consultation, who regarded Algorithmic Fragility as the more probable outcome among the four scenarios, a markedly more cautious reading of the AI trajectory than that offered by the other participants, and one that reinforces the case for a proactive, rather than reactive, union mandate.

Governance in this model does not consist of top-down control but of an interdependent system in which the effectiveness of each actor depends upon the preparedness of the others. In the absence of a state that educates, firms are unable to secure the talent they require; in the absence of firms that invest, the state is confined to managing crises rather than transitions; in the absence of unions that safeguard the meaning of work, the system risks drifting toward the Algorithmic Fragility scenario already examined in detail in this thesis.

⁷⁵ ING is a Dutch multinational banking group with significant retail and corporate operations in Italy.

⁷⁶ Intesa Sanpaolo is Italy's largest banking group by assets.

⁷⁷ UIL (Unione Italiana del Lavoro) is one of Italy's three major national trade union confederations.

6.2 Durable, Transversal Skills

The four scenarios developed in this thesis diverge substantially in the manner in which AI reshapes tasks, organisational structures and governance. They do not, however, diverge in the underlying human capacities that retain value once tasks are delegated to increasingly capable systems. Two independently constructed skills frameworks, one grounded in UK labour-market econometrics, the other in global platform and behavioural data, converge upon a common set of findings, and this convergence constitutes evidence that the competencies concerned are durable and transversal, rather than specific to any single scenario.

NFER's *Skills Imperative 2035*, constructed on the basis of quantitative labour-market projections and a dedicated employer survey, identifies six Essential Employment Skills: communication, collaboration, information literacy, organising/planning/prioritising, problem solving and decision making, and creative thinking. These are explicitly characterised as transferable capacities that complement, rather than substitute for, technical and domain-specific knowledge, a relationship precisely consistent with that predicted by this thesis's task-based framework, in which reinstated tasks require workers to supply judgement and coordination that automated systems cannot provide. NFER's own comparison of its 2021 and 2024 projections found the contraction of low- and mid-skill employment to be proceeding approximately three times faster than forecast, indicating that these six skills carry an increasing rather than a stable degree of importance.⁷⁸

The World Economic Forum's *New Economy Skills* white paper arrives at a compatible conclusion from an entirely distinct empirical base, comprising platform learning data, generative-AI transformation indices, and longitudinal workplace self-assessment, organised around four human-centric dimensions: cognition and problem-solving, collaboration and communication, motivation and self-awareness, and learning and growth.⁷⁹ The overlap with NFER's taxonomy is substantial: both frameworks converge independently on collaboration and communication as central, and both identify structured, sustained learning capacity, rather than a fixed body of knowledge, as the skill that anchors employability over time. The dimension the WEF framework addresses that NFER's does not is cognitive durability: it demonstrates that these skills degrade in the absence of deliberate practice, a dynamic it terms cognitive offloading, and that they can be sustained only through what it terms desirable difficulty, the productive cognitive effort that consolidates higher-order thinking. This finding carries a direct implication for the interpretation of the scenarios developed in this thesis: a scenario of augmentation is not inherently favourable to workers' skills, since even Intentional Symbiosis entails a risk of skill erosion where AI use is not deliberately paired with continued practice, whereas Regulated Humanism's insistence on preserving

⁷⁸ Bocoock, L., Scott, M., & Hillary, J. (2025). *The Skills Imperative 2035: Creating a System of Lifelong Learning to Provide the Essential Skills for Tomorrow's Workforce*. National Foundation for Educational Research.

⁷⁹ World Economic Forum. (2025, December 3). *New Economy Skills: Unlocking the Human Advantage*. World Economic Forum.

human judgement may, notwithstanding its more constrained technological trajectory, do more to protect the durable, transversal skills examined in this section.

Taken together, these two frameworks converge, from independent evidence bases, upon a single conclusion: the competencies examined in this section do not constitute hedges against one particular scenario but genuinely durable capacities. Because they rest upon judgement, coordination and adaptive learning rather than upon the statistical pattern-matching that characterises algorithmic systems, they cannot be replicated by the technology whose diffusion this thesis has traced throughout, a property that renders them a safeguard against professional obsolescence under any of the four scenarios developed here, rather than a commitment specific to one. Investment in these capacities is accordingly warranted irrespective of which configuration of the Italian labour market ultimately materialises by 2035.

Chapter Conclusion

Governance and durable, transversal skills address the same uncertainty from complementary directions. Governance constitutes the instrument available in the present through which the Italian labour market may be directed toward one of the four scenarios developed in this thesis rather than another; durable, transversal skills constitute the safeguard available irrespective of which of those four scenarios the country's institutional choices ultimately produce. Together, they complete the argument advanced throughout this thesis: that the outcome of AI's impact on Italian workers' skills to 2035 is neither predetermined nor unknowable, but a matter of deliberate institutional choice, exercised through governance and secured through the durable capacities that no scenario renders obsolete.

Conclusion

The impact of artificial intelligence upon the skills required of Italian workers by 2035 is neither predetermined by the technology itself nor amenable to resolution through the deterministic forecasting that continues to dominate the existing literature. This thesis has argued, and demonstrated empirically, that the mechanism by which artificial intelligence reshapes work is the reallocation of discrete tasks rather than the wholesale substitution of occupations, a mechanism already observable within the Italian labour market: in the sharp divide between large firms and small and medium-sized enterprises documented across every domain examined, in the polarisation of skill demand toward AI-specific competencies, and in the demographic and organisational pressures compounding both. From this evidentiary foundation, four scenarios were constructed, Intentional Symbiosis, Algorithmic Fragility, Regulated Humanism, and Protected Stratification, each entailing a markedly different configuration of tasks, competencies and institutional arrangements, and each tested for plausibility against the judgement of Italian sector experts consulted for this purpose. What emerged from that consultation was not consensus but genuine divergence: informed practitioners converged upon augmentation as the more plausible technological trajectory, yet diverged sharply in their expectations regarding the socio-economic orientation that would accompany it. This divergence is not a limitation of the analysis; it is itself evidence for its central claim. Which of these four futures the Italian labour market ultimately approaches remains undetermined precisely because it depends upon choices the state, firms and social partners have not yet made, choices this thesis has examined in Chapter 6 as the governance instrument through which that trajectory is actively shaped, rather than passively awaited.

A further implication, beyond this central claim, merits particular attention in closing, bearing directly upon the structural condition of the Italian economy with which the analysis began. A consistent divide has emerged, across successive chapters, between Italy's large firms and the small and medium-sized enterprises that constitute the country's productive base: visible in rates of AI adoption, in digital-skill recruitment difficulty, and, it is argued here in closing, in the diffusion of skills-first hiring practices more broadly. The theoretical case for a skills-first transition, established in Chapter 2, and its practical adoption by individual firms, documented in Chapter 6, have not yet translated into a broad transformation of hiring and organisational practice across the Italian economy. Two compounding factors account for this pattern. The first is structural: a substantial proportion of the value embedded in Italian craftsmanship, the foundation of what is commonly termed Made in Italy, resides not only in what is produced but in how it is produced, in tacit, experiential knowledge, accumulated through practice rather than instruction, that resists decomposition into the discrete, listable and transferable competencies upon which a skills-first model depends. Where a skills-first logic asks what a worker can do, much of Italian craftsmanship has historically distinguished itself by how a task is performed, a distinction of manner rather than outcome that is considerably more resistant to codification. The second factor is behavioural: a degree of risk aversion toward organisational change among Italian SMEs, of which the stakeholder consultation offers direct evidence, with CNA's

representative observing that Italian SMEs have not yet developed a sufficient sense of urgency regarding investment in AI-related skills and training.

These two factors converge upon a strategic dilemma that the four scenarios developed in Chapter 5 render explicit, though without resolving it. Italy's small and medium-sized enterprises may elect to deploy artificial intelligence in order to scale the excellence long associated with Made in Italy, extending the country's competitive position within international markets, the trajectory termed Intentional Symbiosis, but at the risk of eroding, in the process of codification a skills-first transition presupposes, the tacit knowledge that has historically constituted their distinctive value. Alternatively, they may elect to preserve that tacit knowledge by withdrawing into the protected niches of excellence termed Regulated Humanism, securing the character of Italian craftsmanship at the cost of the scale and competitive reach a more fully augmented model would afford. A third possibility, and the one most consistent with the pattern of adoption documented in Chapter 4, is that Italy's productive fabric adopts neither posture deliberately, but continues to defer this choice, thereby remaining, as observed at the outset with respect to tariff policy and external technological dependence, a recipient rather than a shaper of the trajectories artificial intelligence imposes upon the Italian labour market. Whether the reallocation of tasks examined throughout this analysis ultimately erodes the resistance documented here, or whether Italy's productive structure continues to hold that resistance in place, cannot be resolved on the present evidence, but is central to determining which of the four scenarios the country is more likely to approach.

Two further questions, arising directly from these findings, warrant investigation beyond the limitations already identified in Chapter 3. The first concerns the national scope of the scenario matrix. Italy has been treated here as a single analytical unit, yet the sectoral heterogeneity documented in Chapter 4, wherein telecommunications and information technology combine high AI exposure with intensive digital-skill requirements while publishing combines comparable exposure with markedly lower requirements, suggests that different segments of the Italian economy may in practice approach different quadrants of the matrix simultaneously, rather than converging upon a single national scenario. A sector-differentiated extension of the present analysis would test whether this is indeed the case. The second concerns the temporal stability of the findings themselves. The scenario matrix, the empirical baseline upon which it rests, and the stakeholder consultation that tested it are, unavoidably, a representation of conditions still in motion: within the course of this research alone, figures reported by Italy's own AI observatory shifted markedly within a single year, and agentic AI, marginal within the Italian market at the time of writing, is precisely the development capable of rendering the present baseline obsolete well before 2035. A longitudinal repetition of this analysis, re-testing both the empirical baseline and stakeholder judgement at future intervals, would establish whether the divergence of expert opinion documented in Chapter 6 narrows, as institutional choices are made and their consequences become apparent, or widens, as the uncertainty mapped here proves more durable than its resolution.

The stakes of this inquiry, established at its outset, bear restating in closing. What is scarce in an economy in which artificial intelligence can increasingly execute any well-specified task is not execution itself, but the human judgement required to determine which outcomes are worth pursuing, and on what terms, together with the tacit knowledge that no scenario examined here has shown to be reducible to a codified skill. Whether the Italian labour market of 2035 more closely resembles Intentional Symbiosis or Algorithmic Fragility, and whether the Made in Italy repeatedly invoked throughout this thesis survives its own transformation intact, will not be determined by technology alone. It will be determined by whether the state, firms and workers currently navigating this transition choose, deliberately and in time, to exercise that judgement.

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