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***Public Support for Artificial Intelligence Adoption
in European Enterprises: Industrial Policy,
Organisational Capacity and Human-Centred
Conditions for Economic Value***

Abstract [EN]: This essay examines public support for artificial-intelligence adoption by European enterprises from a law-and-economics and industrial-policy perspective. The expansion of European support for digitalisation, research, innovation, infrastructure and skills has increased the capacity of public intervention to accelerate technological diffusion, yet technological access does not by itself ensure effective organisational adoption or economic value. Drawing on the evolving European framework for industrial policy and State aid, and on recent evidence from Eurostat, the European Central Bank, the Bank for International Settlements and Banca d'Italia, the analysis identifies a conversion problem that runs between public support, enterprise capability, sustained use and measurable value. The effectiveness of support may therefore be assessed not only by expenditure, technology acquisition or the number of beneficiaries, but

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also by the complementary organisational and human conditions that allow supported technologies to become embedded in productive activity. Human-centred acceptance appears in this framework as one condition of effective economic intervention, alongside skills, data, integration capacity, legal certainty and organisational readiness. On that basis a five-stage conversion framework is set out, linking public support, organisational capability, human-centred acceptance, sustained adoption and economic, regulatory and human value. Particular attention is given to the Italian productive system and to the implications for the design and evaluation of support instruments directed at small and medium-sized enterprises.

KEYWORDS: artificial intelligence; public intervention; industrial policy; State aid; enterprise adoption; SMEs; organisational capability; European Union; human-centred AI

SUMMARY: 1. Public intervention, AI diffusion and the problem of effective support. – 2. AI diffusion within European industrial policy and the European legal framework. – 3. Enterprise adoption as an economic-policy problem: European and Italian evidence. – 4. Beyond technological acquisition: organisational capability and complementarity. – 5. Human-centred acceptance as a condition of effective public support. – 6. From public support to sustained adoption: a conversion framework. – 7. Public value and the assessment of supported AI adoption. – 8. Designing support instruments for effective and responsible adoption. – 9. The Italian productive system: implications for public intervention. – 10. Concluding observations.

1. Public intervention, AI diffusion and the problem of effective support

Artificial intelligence has moved within a short period from a specialised digital technology to a standing concern of European economic policy. The policy objective is no longer confined to supporting research and the development of frontier systems. Attention has shifted towards diffusion, and in particular towards the question whether enterprises, and above all small and medium-sized enterprises, can incorporate these technologies into production, services, administration and decision processes. That shift is visible in the AI Continent Action Plan and in the Apply AI Strategy, which place adoption, infrastructure, data, skills and trustworthy implementation within a single competitiveness agenda.¹ When presenting the Apply AI Strategy the Commission described the position in plain terms: despite a substantial industrial base and an active start-up ecosystem, the development and adoption of artificial intelligence within the Union remained limited, with only 13.5 per cent of businesses and 12.6 per cent of small and medium-sized enterprises using these technologies.²

More recent statistics record rapid movement without closing the gap. In 2025, 19.95 per cent of enterprises in the Union with ten or more employees used at least one artificial intelligence technology, against 13.5 per cent in 2024 and 7.7 per cent in 2021.³ Growth of that order is considerable, yet four enterprises in five remained outside any use at all, and the distribution across size classes was

¹ Communication from the Commission, *AI Continent Action Plan*, COM(2025) 165 final, 9 April 2025, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52025DC0165>; Communication from the Commission, *Apply AI Strategy*, COM(2025) 723 final, 8 October 2025, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52025DC0723>.

² *Apply AI Strategy*, cit. The same document records that small and medium-sized enterprises represent more than 90 per cent of European enterprises, and that many of them regard artificial intelligence as too complex or too costly, the offers available on the market being designed for larger organisations.

³ Eurostat, *Use of artificial intelligence in enterprises*, Statistics Explained, data extracted December 2025, online data code isoc_eb_ai, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises; dataset at https://ec.europa.eu/eurostat/databrowser/view/isoc_eb_ai/default/table?lang=en.

strongly skewed: 55.03 per cent among large enterprises against 17 per cent among small ones.⁴ The Digital Decade policy programme sets a target of 75 per cent of enterprises using artificial intelligence, cloud computing or big data by 2030, and the 2026 assessment of progress records adoption at 20 per cent against that target.⁵ Figure 1 places the recorded trajectory against that target. The diffusion problem, so described, is not a general absence of the technology. It is a concentration of use among organisations already well positioned to absorb it.

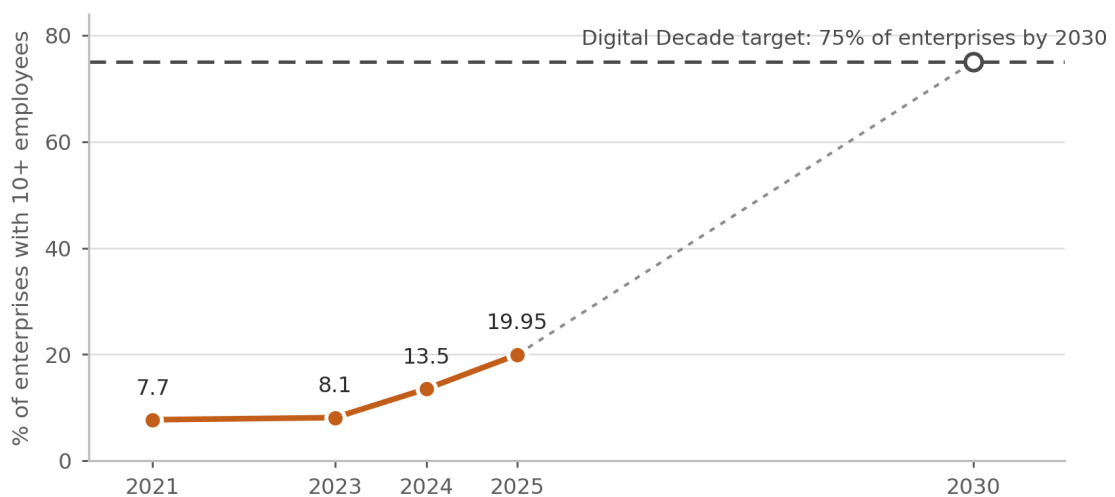


Figure 1. Use of artificial intelligence technologies by enterprises in the European Union, 2021 to 2025, against the Digital Decade target for 2030. Source: Eurostat, online data code isoc_eb_ai; Communication COM(2026) 288 final. The dotted segment marks the distance to the target rather than a projection.

The economic stake in that asymmetry is considerable. Firm-level evidence from European enterprises associates adoption with productivity gains while

⁴ Eurostat, cit. The corresponding figure for medium-sized enterprises was 30.36 per cent. Across Member States the range extended from 5.21 per cent in Romania to 42.03 per cent in Denmark.

⁵ Communication from the Commission, *State of the Digital Decade 2026: Closing structural gaps and mobilising investments for 2030 and beyond*, COM(2026) 288 final, 17 June 2026, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52026DC0288>. The Communication identifies, among the obstacles facing smaller enterprises, fragmented and poor-quality data, weak interoperability with legacy systems, the absence of in-house specialised skills, the complexity of compliance with the AI Act, and the absence of trusted intermediaries able to offer integrated technical, legal and business-transformation support.

indicating that such gains are in no sense automatic. A study matching more than 12,000 non-financial firms in the Union and the United States finds that adoption raises the level of labour productivity by approximately 4 per cent, attributes the gain to capital deepening rather than to labour displacement, and records that the benefits concentrate in medium and large firms and depend on complementary investment in software, data and workforce training.⁶ Evidence on Italian enterprises points in a similar direction: adoption raises labour productivity and profitability and reallocates employment towards higher-skilled occupations, without adverse effects on aggregate employment, yet remains concentrated among organisations with stronger knowledge and organisational resources.⁷ The policy problem is accordingly not a shortage of available technology. It concerns conversion: how technological availability and public support become organisational capability, sustained use and durable value.

That question acquires particular weight because public intervention has assumed a more structural role in European industrial policy. Luchena has traced an evolution in which State aid and related support measures increasingly operate as instruments of industrial policy and of multilevel economic planning, extending to technological innovation, strategic autonomy and the digital transition, while remaining subject to a legal framework that submits national measures to careful scrutiny.⁸ The same analysis bears directly on the present subject. Where public

⁶ I. ALDASORO, L. GAMBACORTA, R. PAL, D. REVOLTELLA, C. WEISS, M. WOLSKI, *AI adoption, productivity and employment: evidence from European firms*, BIS Working Papers, No 1325, Bank for International Settlements, January 2026, <https://www.bis.org/publ/work1325.pdf>. The same study circulates as European Investment Bank Working Paper 2026/02.

⁷ T. ROPELE, A. TAGLIABRACCI, *The economic impact of artificial intelligence: evidence from Italian firms*, Questioni di Economia e Finanza (Occasional Papers), No. 1005, Banca d'Italia, 2026, <https://www.bancaditalia.it/pubblicazioni/qef/2026-1005/>. The survey covers firms with at least fifty employees in industry and non-financial private services; in 2024 just over 10 per cent reported using artificial intelligence, while about one third expected to adopt within the following two years.

⁸ G. LUCHENA, *Politiche di sostegno delle imprese e recenti tendenze della legislazione tra programmazione della politica industriale e criteri di compatibilità (banche, IPCEI, sviluppo economico, innovazione tecnologica, ricerca)*, in *Rassegna di Diritto dell'Economia*, n. 1/2026, 63 ss., doi: 10.15162/rde.v1i1.2620. On the underlying framework see also G. LUCHENA, B. RAGANELLI (a

resources are deployed to accelerate enterprise adoption, a prior question arises as to what should count as successful adoption. A measure financing software acquisition may increase technological access without altering organisational practice. A training programme may raise skills without producing implementation where enterprises lack compatible data and workflows. A system may equally be deployed in technical terms and yet remain marginal, because those expected to use it do not regard it as useful, intelligible or appropriate to their work.

Technology-adoption research offers a complementary account of the same difficulty. The Technology Acceptance Model established perceived usefulness and perceived ease of use as central determinants of acceptance,⁹ and subsequent models widened the analysis to social, organisational and facilitating conditions.¹⁰ More recent research on artificial intelligence combines individual, organisational and environmental levels rather than treating adoption as a single decision, and identifies digital capability, innovation capability, human capital, firm size and institutional context among the relevant determinants.¹¹ The human-centred perspective sharpens that connection. The Human-Centred Technology Acceptance Model retains perceived usefulness and ease of use while incorporating considerations specific to artificial intelligence, among them transparency, efficiency, personalisation and ethical concern.¹² The model was

cura di), *Concorrenza e aiuti di Stato in Europa*, Torino, 2022, and, on the ambivalence of fiscal support instruments, C. BERGONZINI, G. LUCHENA, *Le tasse non sono per tutti. L'ambivalenza delle agevolazioni fiscali. Quanto tolgono allo Stato, quanto danno ai cittadini?*, Milano, 2020. <https://www.giappichelli.it/studenti/scienze-giuridiche/concorrenza-e-aiuti-di-stato-in-europa-9788892123090>; <https://www.francoangeli.it/Libro/Le-tasse-non-sono-per-tutti?Id=26289>.

⁹ F.D. DAVIS, *Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology*, in *MIS Quarterly*, vol. 13, n. 3/1989, 319 ss., doi: 10.2307/249008.

¹⁰ V. VENKATESH, M.G. MORRIS, G.B. DAVIS, F.D. DAVIS, *User Acceptance of Information Technology: Toward a Unified View*, in *MIS Quarterly*, vol. 27, n. 3/2003, 425 ss., doi: 10.2307/30036540.

¹¹ M.F. ARROYABE, C.F.A. ARRANZ, I. FERNANDEZ DE ARROYABE, J.C. FERNANDEZ DE ARROYABE, *Analyzing AI adoption in European SMEs: A study of digital capabilities, innovation, and external environment*, in *Technology in Society*, vol. 79/2024, 102733, doi: 10.1016/j.techsoc.2024.102733.

¹² S. AKRAM, P. BUONO, R. LANZILOTTI, *Recruitment chatbot acceptance in a company: a mixed method study on human-centered technology acceptance model*, in *Personal and Ubiquitous Computing*, vol. 28/2024, 961 ss., doi: 10.1007/s00779-024-01826-4.

developed for a particular organisational setting rather than as a general theory of enterprise adoption, and what it offers here lies less in the transfer of individual constructs than in a broader observation: the organisational availability of a system does not guarantee its acceptance, and acceptance may depend on qualities of the relationship between the system and its users that conventional investment indicators do not record.

Against that background the essay considers how public intervention may support the passage from access and investment to sustained adoption and value creation in European enterprises. The discussion separates technological uptake from sustained organisational adoption; it places policy-level and firm-level explanations of diffusion alongside the conditions of human-centred acceptance; and it draws from that reading a set of implications for the design and evaluation of enterprise-support instruments, with particular attention to the European and Italian contexts. The analysis proceeds on the view that public support may be assessed not only by the quantity of investment stimulated, but also by the quality of the adoption process that the investment makes possible.

The contribution is structured as a legal-economic policy essay rather than as an empirical evaluation of a particular aid scheme. It reconstructs the institutional and economic setting of public support for the diffusion of artificial intelligence, reads recent enterprise-level evidence in the light of that setting, and derives criteria for the design and ex post assessment of support instruments. The human-centred dimension accordingly appears not as an autonomous technological objective, but as one of the conditions through which public intervention may be converted into durable organisational use and economically relevant outcomes.

2. AI diffusion within European industrial policy and the European legal framework

The renewed role of public intervention provides the institutional setting for contemporary policy on artificial intelligence. European industrial policy has increasingly combined competition objectives with strategic interventions addressed to resilience, innovation, the ecological and digital transitions and technological sovereignty. The report on European competitiveness prepared by Draghi gave that reorientation a widely discussed formulation, locating the productivity gap of the Union less in the creation of new technologies than in their diffusion and commercial application across the productive structure.¹³ Luchena situates the same development within the evolution of State-aid law, observing that support measures have moved beyond a narrowly exceptional and compensatory function towards a more structural position within economic planning, while remaining constrained by the legal framework protecting competition and the internal market.¹⁴ Adoption of artificial intelligence sits within that transformation, since it combines a general-purpose technology, in the sense familiar from the economics of innovation,¹⁵ substantial complementary investment requirements, markedly uneven enterprise capabilities and strategic concerns about European competitiveness.

¹³ M. DRAGHI, *The future of European competitiveness. Part A: A competitiveness strategy for Europe; Part B: In-depth analysis and recommendations*, European Commission, 9 September 2024, https://commission.europa.eu/topics/competitiveness/draghi-report_en.

¹⁴ G. LUCHENA, *Politiche di sostegno delle imprese*, cit., 63 ss. The point is developed with reference to the interpretative evolution of Article 107(3)(b) of the Treaty on the Functioning of the European Union and to Important Projects of Common European Interest as bases for a broader legitimization of public intervention. On the more general reassessment of the State's role as an economic actor see G. NAPOLITANO, *Il nuovo Stato salvatore: strumenti di intervento e assetti istituzionali*, in *Giorn. Dir. Amm.*, n. 11/2008, 1083 ss.

¹⁵ T.F. BRESNAHAN, M. TRAJTENBERG, *General purpose technologies: "Engines of growth"?*, in *Journal of Econometrics*, vol. 65, n. 1/1995, 83 ss., doi: 10.1016/0304-4076(94)01598-T.

The legal architecture within which support operates has two layers of relevance. The first concerns the compatibility of national measures. Aid for research, development and innovation, for digital infrastructure and for the diffusion of enabling technologies falls to be assessed under the derogations of Article 107(3) of the Treaty on the Functioning of the European Union and under the frameworks and block exemptions that give them operational content: the general block exemption regulation, whose scope was widened in 2023 in support of the green and digital transitions;¹⁶ the framework for State aid for research, development and innovation, which governs aid for innovation activities and for the diffusion of results;¹⁷ and, for larger co-ordinated undertakings, the communication on Important Projects of Common European Interest.¹⁸ As Luchena observes, the expansion of the derogating provisions does not amount to an abdication of State-aid discipline, since national measures remain subject to careful and scrupulous scrutiny.¹⁹ The second layer concerns the regulation of the technology itself. Regulation (EU) 2024/1689 establishes a risk-based framework for artificial intelligence systems,²⁰ and its national completion in Italy took the

¹⁶ Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty, OJ L 187, 26 June 2014, as amended in particular by Commission Regulation (EU) 2023/1315 of 23 June 2023, OJ L 167, 30 June 2023, <https://eur-lex.europa.eu/eli/reg/2023/1315/oj>.

¹⁷ Communication from the Commission, *Framework for State aid for research and development and innovation*, 2022/C 414/01, OJ C 414, 28 October 2022, [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022XC1028\(03\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022XC1028(03)).

¹⁸ Communication from the Commission, *Criteria for the analysis of the compatibility with the internal market of State aid to promote the execution of important projects of common European interest*, 2021/C 528/02, OJ C 528, 30 December 2021, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=oj:JOC_2021_528_R_0002.

¹⁹ G. LUCHENA, *Politiche di sostegno delle imprese*, cit. On the earlier development of the notion of aid see G. LUCHENA, *La nozione giuridica di aiuto nell'ordinamento sopranazionale tra "intransigenza" e "resistenza"*, in AA.VV., *Il mercato: le imprese, le istituzioni, i consumatori*, Bari, 2002, 289 ss.

²⁰ Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence, OJ L, 12 July 2024, <https://eur-lex.europa.eu/eli/reg/2024/1689/oj>.

form of Law No. 132 of 23 September 2025, the first comprehensive domestic statute on the subject within the Union.²¹

The two layers interact in a manner that bears on adoption, since regulatory clarity reduces the uncertainty surrounding implementation decisions, and uncertainty about legal consequences is itself among the reasons enterprises most frequently give for not proceeding. That interaction has been visible in the recent revision of the regulatory calendar. The Digital Omnibus on artificial intelligence, proposed in November 2025, deferred the application of the rules governing high-risk systems; the measure completed its passage in 2026 and now sets those dates at 2 December 2027 for stand-alone high-risk systems and 2 August 2028 for those embedded in products.²² A deferral of that kind alters the timing of compliance costs, and in doing so alters the terms on which an enterprise weighs the cost of adoption against its expected return. The point is worth registering because it shows how closely the regulatory and the support dimensions are connected in practice: the same enterprise that is offered finance for adoption is also deciding when, and under what obligations, adoption will have to be documented.

²¹ Legge 23 settembre 2025, n. 132, *Disposizioni e deleghe al Governo in materia di intelligenza artificiale*, in force from 10 October 2025. Article 3(5) provides that the law creates no obligations beyond those already established by Regulation (EU) 2024/1689 for artificial intelligence systems and general-purpose models. The Agency for Digital Italy and the National Cybersecurity Agency are designated as national authorities; the national strategy under Article 19 is prepared with the participation, among others, of the Minister of Enterprises and Made in Italy for the industrial-policy and incentive profiles.
[https://www.gazzettaufficiale.it/do/atto/vediListaRettifica?codiceRedazionale=25G00143&dataPubblicazione=2025-09-](https://www.gazzettaufficiale.it/do/atto/vediListaRettifica?codiceRedazionale=25G00143&dataPubblicazione=2025-09-25&tipoSerie=serie_generale&tiporettifica=rettificato&tipovigenza=originario)

25&tipoSerie=serie_generale&tiporettifica=rettificato&tipovigenza=originario.

²² Regulation (EU) 2026/1744 of the European Parliament and of the Council of 8 July 2026 amending Regulations (EU) 2024/1689, (EU) 2018/1139 and (EU) 2023/1230 as regards the simplification of the implementation of harmonised rules on artificial intelligence (Digital Omnibus on AI), in force from 27 July 2026, <https://eur-lex.europa.eu/eli/reg/2026/1744/oj>. The measure originated in the proposal COM(2025) 836 of 19 November 2025; the text agreed in trilogue was approved by the European Parliament on 16 June 2026 and adopted by the Council on 29 June 2026.

The AI Continent Action Plan presents trustworthy and human-centric artificial intelligence as relevant at once to economic growth and to European values, and its architecture spans computing infrastructure, data, skills, adoption and regulatory simplification. The Apply AI Strategy moved subsequently from enabling conditions towards sectoral diffusion, seeking to accelerate use in strategic industries and in the public sector with particular attention to smaller enterprises. European Digital Innovation Hubs are to be refocused as Experience Centres, and the instruments identified include test-before-invest facilities, acceleration pipelines, regulatory sandboxes and workforce measures, supported initially by approximately one billion euro mobilised through existing Union programmes.²³ That architecture already indicates that adoption is not reducible to financial subsidy: it presupposes an ecosystem through which enterprises can reach expertise, experimentation, infrastructure and implementation support. The 2026 assessment of the Digital Decade puts the same observation in a form useful for the design of instruments, noting that the main barrier is not only technological availability but access, simplicity and organisational capacity for change.²⁴

Italian law has followed a comparable logic. Law No. 132/2025 authorises investment of up to one billion euro, through the asset management company provided for by Article 1, paragraph 116, of Law No. 145 of 30 December 2018, in support of enterprises operating in artificial intelligence, cybersecurity and enabling technologies, including through technology-transfer poles and acceleration programmes.²⁵ The instrument is of interest here less for its

²³ *Apply AI Strategy*, cit. The Strategy is accompanied by the AI in Science Strategy and complemented by the Data Union Strategy, and provides for an Apply AI Alliance and an AI Observatory alongside the AI Board.

²⁴ *State of the Digital Decade 2026*, cit.

²⁵ Legge 23 settembre 2025, n. 132, cit. Two schemes of legislative decree were preliminarily approved by the Council of Ministers on 10 June 2026 and transmitted to the Chambers for opinion, addressing respectively the use of artificial-intelligence systems in police activity together with profiles of civil and criminal liability, and the powers of the national authorities together with the use of artificial intelligence in training.

magnitude than for its form: capital participation combined with technology transfer and acceleration, rather than undifferentiated subsidy. That combination corresponds to the structure of the adoption problem described below, although its effects will depend on implementation and on the accompanying legislative decrees, which at the time of writing remain under parliamentary examination.

For the purposes of this essay, public support is understood broadly, so as to include financial incentives, public digital infrastructure, technology-transfer mechanisms, experimentation facilities, advisory services, skills programmes, procurement, regulatory guidance and other institutional measures that lower the cost or the uncertainty of adoption. The broader definition is necessary because adoption involves both tangible and intangible complementary assets. Computing resources can be purchased; data quality, workflow redesign, employee capability and organisational learning generally cannot be acquired through a single transaction. Public intervention can lower some of these barriers, and its effectiveness depends on the correspondence between the instrument and the stage and nature of the enterprise's adoption problem.

3. Enterprise adoption as an economic-policy problem: European and Italian evidence

The aggregate picture is one of rapid growth from a low base, combined with persistent stratification by enterprise size. The two dimensions are economically significant when read together: aggregate diffusion is accelerating, while the capacity to adopt remains concentrated among larger firms, and the smaller enterprises that dominate much of the European productive structure continue to face stronger capability and financing constraints. Figure 2 sets out the distribution across size classes.

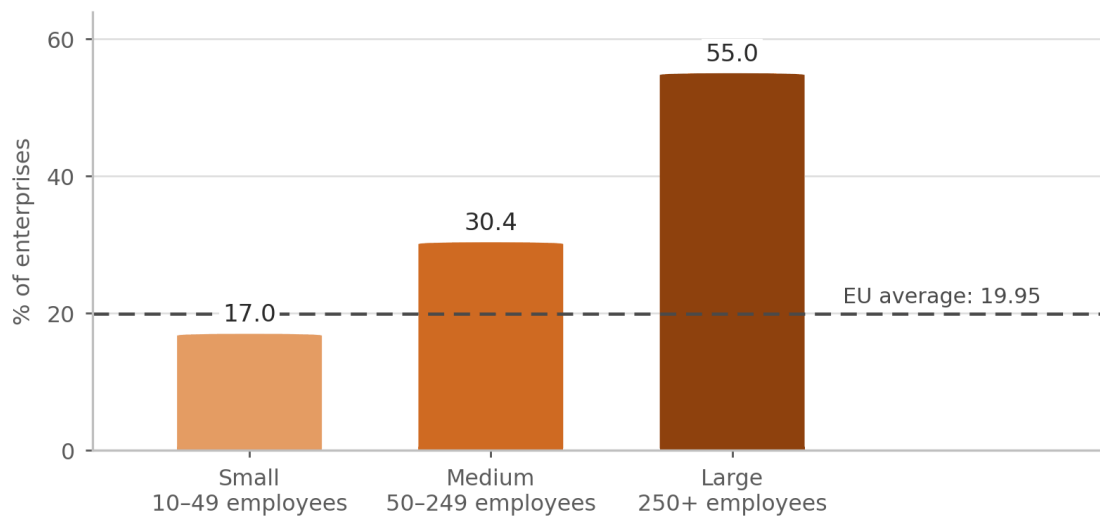


Figure 2. Enterprises using at least one artificial intelligence technology, by size class, European Union, 2025. The dashed line marks the average across all enterprises with ten or more employees. Source: Eurostat, online data code isoc_eb_ai.

Figure 2 repays a closer reading, because the three columns are not simply three points on a rising line. The distance between the small and the large class is 38 percentage points, and use among large enterprises is more than three times that among small ones. The position of the average is the more telling feature. At 19.95 per cent the European average sits above the small-enterprise figure of 17 per cent and far below the large-enterprise figure of 55.03 per cent, and it is drawn towards the lower end by the weight of small enterprises in the population: of the 1.53 million enterprises covered by the survey, approximately 83 per cent are small, 14 per cent medium and 3 per cent large.²⁶ An average constructed on that distribution conceals more than it conveys. It describes no actual group of enterprises, and it improves whenever adoption deepens among the large minority, whether or not anything has changed for the small majority.

²⁶ Eurostat, cit. In 2025, 157,000 of the 1.53 million enterprises in the Union were surveyed.

That observation has a direct bearing on the design and appraisal of support. A programme evaluated against movement in the European or national average can register progress that is concentrated among enterprises least likely to have needed assistance, while the constraint on the majority remains untouched. The same caution attaches to the Digital Decade target, since 75 per cent of enterprises cannot be reached by deepening use within the group that has already adopted: arithmetically, the target is a statement about small enterprises, whatever else it is about. Read in that light, Figure 2 is less a description of current diffusion than a statement of where the remaining distance lies.

Dispersion across Member States is of the same order as dispersion across size classes. The range extends from 5.21 per cent in Romania to 42.03 per cent in Denmark, a distance of some 37 percentage points, with Finland at 37.82 per cent and Sweden at 35.04 per cent following the leading position and Poland at 8.36 per cent and Bulgaria at 8.55 per cent preceding the lowest; twenty-six Member States recorded higher shares than in the previous year.²⁷ Two points follow for the present analysis. The first is that a common regulatory framework and a common set of Union instruments operate upon national productive structures of markedly different composition, so that identical instruments will not produce identical effects. The second is that movement has been general rather than confined to the leading group, which suggests that the conditions for diffusion are not fixed by structural characteristics alone. The territorial question returns below in connection with the Italian productive system.

The sectoral distribution is equally uneven. In 2025 the information and communication sector recorded use by 62.52 per cent of enterprises and professional, scientific and technical activities by 40.43 per cent, while every other activity remained below 25 per cent, construction closing the distribution at 10.79

²⁷ Eurostat, cit. The largest increases over 2024 were recorded in Denmark, at 14.45 percentage points, Finland, at 13.45, and Lithuania, at 12.54. A break in the time series affects the figures for the Netherlands.

per cent.²⁸ Use is also shallow in a further sense: no single technology predominates, the most frequent being the analysis of written language at 11.75 per cent of enterprises, followed by the generation of images, video and audio at 9.55 per cent and the generation of written or spoken language and programming code at 8.76 per cent.²⁹ The purposes for which systems are used differ markedly by size, the largest divergence concerning information and communication technology security, reported by 47.51 per cent of large adopters against 14.51 per cent of small ones.³⁰

Survey evidence from the euro area adds a dimension that aggregate uptake statistics do not capture, namely the intensity of use. The ad hoc module of the Survey on the Access to Finance of Enterprises for the fourth quarter of 2025 distinguishes advanced, early and non-adoption. Some 38 per cent of firms reported significant or moderate use, and a further 33 per cent remained at an infrequent or experimental stage.³¹ Among large firms and among listed or venture-capital-backed companies the advanced share rose to approximately 45 per cent, and among firms less than five years old to 56 per cent. The share reporting significant use was nonetheless similar across size classes and ownership types, which suggests that deep use is spreading within a core group of firms rather than

²⁸ Eurostat, cit., online data code isoc_eb_ain2.

²⁹ Eurostat, cit. Technologies enabling machines to move physically on the basis of autonomous decisions were used by 1.39 per cent of enterprises.

³⁰ Eurostat, cit. Corresponding divergences appear for the organisation of business administration processes, at 43.38 per cent against 28.49 per cent, and for production processes, at 33.46 per cent against 19.02 per cent.

³¹ A. FERRANDO, S. LAMBOGLIA, J. RARIGA, M. SCHMIDT, *Adopting and investing in AI: evidence from euro area firms in the SAFE*, in *ECB Economic Bulletin*, Issue 2/2026, 31 March 2026, https://www.ecb.europa.eu/press/economic-bulletin/focus/2026/html/ecb.ebbox202602_06~c9f485c478.en.html. Comparable orders of magnitude across countries are reported in I. YOTZOV et al., *Firm Data on AI*, NBER Working Papers, No 34836, February 2026, <https://www.nber.org/papers/w34836>, and, for Germany, Italy and Spain, in L. BENCIVELLI et al., *Embracing AI in Europe: New evidence from harmonised central bank business surveys*, VoxEU, 2026.

broadening across the population. Figure 3 sets out the resulting composition together with the investment that firms at each stage expect to commit.

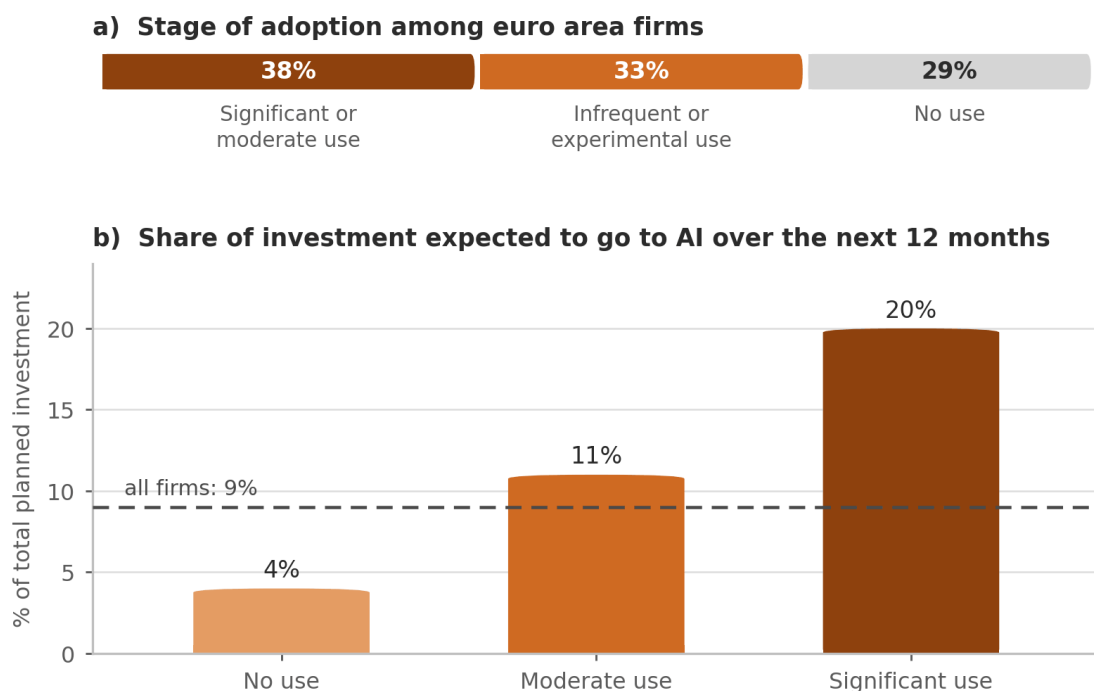


Figure 3. Intensity of adoption and expected allocation of investment among euro area firms. Source: European Central Bank, Survey on the Access to Finance of Enterprises, October to December 2025 round, as reported in ECB Economic Bulletin, Issue 2/2026.

The same evidence records a pattern of particular relevance to the design of support. Firms expect on average to allocate 9 per cent of total investment to artificial intelligence over the following twelve months, while the expected share rises with the intensity of existing use, from 4 per cent among non-users to 11 per cent among moderate users and 20 per cent among those making significant use.³² Adoption and investment appear in this respect to be cumulative: enterprises that have already developed the capability to use these technologies

³² A. FERRANDO et al., cit. Firms making significant use were also more likely to expect increases in turnover and in investment in fixed assets within three months, by 21 and 13 per cent respectively, conditional on size, sector and location.

are also better placed to commit further resources, whereas non-users remain comparatively distant from the investment frontier. Among firms making significant use, smaller enterprises reported the higher expected allocation, at 21 per cent against 17 per cent for large firms, which suggests that reluctance to commit resources is not the binding constraint once value has become visible within the organisation.

The reasons that enterprises give for not adopting are instructive precisely because they cross analytical levels. Evidence from Eurostat and from the European Central Bank points to a combination of expertise, legal, data, integration, financial and perceived-usefulness constraints. The two sources measure different populations and are not to be merged into a single distribution, yet read alongside one another, as in Figure 4, they indicate why a policy centred only on acquisition costs is unlikely to reach the principal obstacles to effective diffusion.

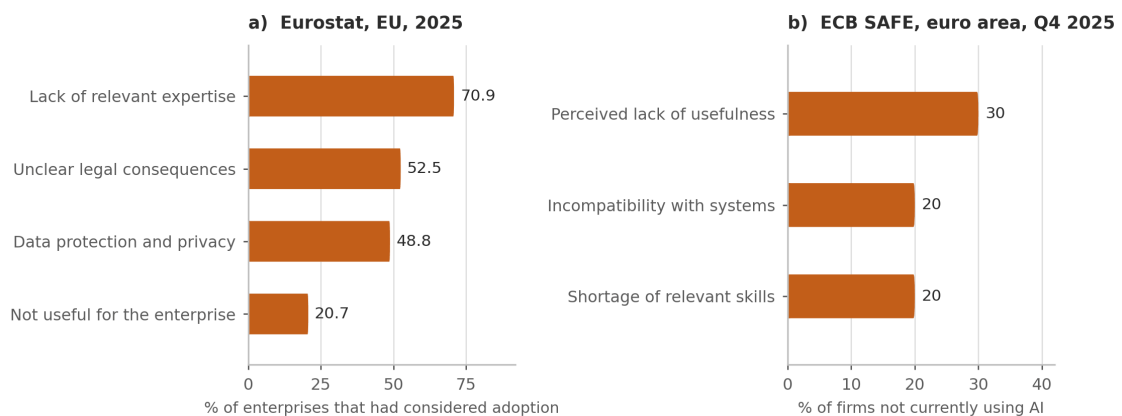


Figure 4. Reported reasons for not using artificial intelligence technologies, from two distinct populations. Sources: Eurostat, online data code isoc_eb_ai, referring to enterprises that had considered adoption; European Central Bank, Survey on the Access to Finance of Enterprises, fourth quarter of 2025, referring to firms not currently using these technologies.

The Eurostat distribution is dominated by a lack of relevant expertise, reported by 70.89 per cent of enterprises that had considered adoption, followed by a lack of clarity about legal consequences at 52.52 per cent and by concerns over data protection and privacy at 48.83 per cent; the view that the technologies were not useful for the enterprise was the least frequent response, at 20.68 per cent.³³ The euro area survey orders the same field differently, since it addresses all non-users rather than those that had actively considered adoption: there a perceived lack of usefulness stands first at approximately 30 per cent, with incompatibility with existing systems and a shortage of relevant skills each at approximately 20 per cent.³⁴ The two distributions are not in conflict. Enterprises that have examined the question in detail encounter expertise, legal and data constraints; enterprises that have not yet done so more often report that they see no purpose. The composition of barriers, in other words, varies with the stage that the enterprise has reached, which is itself a reason for differentiated instruments.

Italian evidence completes the picture. Banca d'Italia records adoption below the average for the Union and frequently confined to experimental uses, and considers that, on the hypothesis of broad and deep uptake, the effects on productivity could be significant over the medium term. The policy recommendations accompanying that assessment concern the reduction of uncertainty, technology transfer, specialised structures capable of integrating these technologies into business processes, and the strategic use of public procurement.³⁵ The distance between intention, experimentation and routinised

³³ Eurostat, cit. Among enterprises not using these technologies in 2025, 14.21 per cent had considered doing so, a share rising to 36.54 per cent among large enterprises and falling to 12.65 per cent among small ones.

³⁴ A. FERRANDO et al., cit. Large firms were less likely than smaller ones to regard artificial intelligence as lacking usefulness, while reporting implementation difficulties more frequently; younger firms cited ethical concerns and distrust of outputs more often than established ones.

³⁵ L. BELLOMARINI, F. BERTOLOTTI, L. CITINO, M.G. CASSINIS, F. D'AMURI, S. DEL PRETE, S. FORMAI, L. MIRENDA, M. RIGON, A. RUSSO, *Artificial intelligence adoption: productivity effects and supporting*

use emerges as the central difficulty: a third of Italian firms with at least fifty employees expected to adopt within two years, against just over one in ten already using these technologies in 2024.³⁶

4. Beyond technological acquisition: organisational capability and complementarity

A useful starting point is the separation of four states frequently collapsed under a single label. Access means that an enterprise can obtain the relevant technology, infrastructure, expertise or finance. Implementation refers to technical integration into organisational systems and workflows. Acceptance concerns whether the intended users regard the technology as sufficiently useful, usable and appropriate to incorporate into their work. Sustained use arises where the technology becomes embedded in routines and continues to generate value beyond pilots and isolated experiments. The distinction is analytical rather than strictly sequential, since feedback occurs between the states, and it assists in identifying why apparently successful support may fail to generate durable outcomes.

Evidence from European small and medium-sized enterprises supports that reading. An analysis of 12,108 such enterprises drawn from Flash Eurobarometer data finds that digital capabilities are the principal driver of adoption, that innovation capabilities exhibit synergistic effects alongside them, and that support from the business environment is less effective in isolation than in combination

policies, Questioni di Economia e Finanza (Occasional Papers), No. 1009, Banca d'Italia, June 2026, <https://www.bancaditalia.it/pubblicazioni/qef/2026-1009/>.

³⁶ T. ROPELE, A. TAGLIABRACCI, cit.

with internal capability.³⁷ A complementary study of 11,429 European small and medium-sized enterprises finds that adoption is positively associated with revenue growth, and that the association strengthens where these technologies are combined with the Internet of Things and with big-data analytics.³⁸ Both findings sit comfortably with a proposition long established in the economics of innovation, namely that returns from a new technology accrue to those who hold the complementary assets required to exploit it,³⁹ and that the capacity of an organisation to absorb external knowledge depends on prior related investment of its own.⁴⁰ Work on the productivity effects of general-purpose technologies gives that proposition an empirical form directly relevant here: measured productivity may fall before it rises, because the intangible complements on which the technology depends are built before their returns appear in the accounts, so that a period of apparent under-performance is consistent with, rather than evidence against, a productive investment.⁴¹ The productivity estimate from matched European and United States firm data points in the same direction, attributing gains to capital deepening and conditioning them on complementary investment in software, data and training.⁴²

³⁷ M.F. ARROYABE et al., cit. The authors combine classical regression with neural-network and tree-regression methods, drawing on dynamic-capabilities and resource-dependency perspectives.

³⁸ L. ARDITO, R. FILIERI, E. RAGUSEO, C. VITARI, *Artificial intelligence adoption and revenue growth in European SMEs: synergies with IoT and big data analytics*, in *Internet Research*, vol. 35, n. 4/2025, 1508 ss., doi: 10.1108/INTR-02-2024-0195. The data derive from Flash Eurobarometer 486.

³⁹ D.J. TEECE, *Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy*, in *Research Policy*, vol. 15, n. 6/1986, 285 ss., doi: 10.1016/0048-7333(86)90027-2.

⁴⁰ W.M. COHEN, D.A. LEVINTHAL, *Absorptive Capacity: A New Perspective on Learning and Innovation*, in *Administrative Science Quarterly*, vol. 35, n. 1/1990, 128 ss., doi: 10.2307/2393553.

⁴¹ E. BRYNJOLFSSON, D. ROCK, C. SYVERSON, *The Productivity J-Curve: How Intangibles Complement General Purpose Technologies*, in *American Economic Journal: Macroeconomics*, vol. 13, n. 1/2021, 333 ss., doi: 10.1257/mac.20180386. The observation bears on the design of evaluation windows, since a measure assessed too early may register as ineffective an investment whose complementary assets are still under construction.

⁴² I. ALDASORO et al., cit.

Two consequences follow. The first is that adoption is not readily treated as a binary indicator carrying a uniform economic effect, since the same nominal technology produces different outcomes according to the capabilities surrounding it. The second is that policy indicators resting solely on expenditure, on the number of enterprises supported or on initial deployment can mislead. Such measures retain their value for monitoring reach, while they do not establish whether a technology has become productive organisational capacity. A perspective oriented to the quality of adoption accordingly poses a second set of questions. Is the technology connected to a business problem that matters to the enterprise? Are data and systems compatible? Can employees use the outputs and evaluate them critically? Are responsibilities and escalation paths clear? Does use persist after the pilot or the subsidy period? Is value visible in productivity, service quality, innovation or organisational learning? These questions move evaluation from inputs and uptake towards conversion and outcomes.

5. Human-centred acceptance as a condition of effective public support

Adoption research offers a well-established account of why technically available systems may not become accepted tools. The Technology Acceptance Model proposes that perceived usefulness and perceived ease of use shape behavioural intention and subsequent use,⁴³ and the unified model broadens that account through performance expectancy, effort expectancy, social influence and facilitating conditions.⁴⁴ In research on enterprise adoption these individual-level

⁴³ F.D. DAVIS, cit.

⁴⁴ V. VENKATESH et al., cit.

mechanisms increasingly sit alongside organisational readiness, technology characteristics and environmental pressure.

Artificial intelligence nevertheless introduces acceptance problems that generic usability and utility do not fully capture. These systems generate probabilistic outputs, produce recommendations that may be difficult to explain, alter the allocation of decision authority and create uncertainty about accountability. For employees, adoption may therefore depend on whether the system is intelligible enough for the task at hand, whether its role is compatible with professional responsibility, whether interaction improves rather than obstructs the work, and whether the organisation supplies adequate guidance and skills. These are implementation conditions rather than attitudes towards novelty. Italian law addresses part of the same terrain in its own register, requiring that use in the workplace respect safety, reliability, transparency and human dignity, obliging employers to inform employees when such systems are deployed in work processes, and establishing a national observatory on artificial intelligence in the workplace.⁴⁵ Legal obligation and organisational acceptance are distinct, while the informational conditions that the law prescribes overlap substantially with those on which acceptance is known to depend.

The Human-Centred Technology Acceptance Model offers a useful lens for representing that layer. In its original application the model combined the core acceptance constructs with transparency, personalisation, efficiency and ethical concern.⁴⁶ The model was framed for a particular organisational setting, and three general implications are drawn from it here rather than its individual constructs. Usefulness and ease of use remain basic, because enterprises and employees

⁴⁵ Legge 23 settembre 2025, n. 132, cit. The transparency obligations extend to the logic and purpose of the systems, the nature of the data and parameters used, metrics of accuracy, robustness and cybersecurity, mechanisms of human oversight, impact assessment and updating protocols.

⁴⁶ S. AKRAM, P. BUONO, R. LANZILOTTI, cit.

must perceive a credible value proposition at the level of the task. Qualities specific to artificial intelligence, among them transparency and responsible implementation, can influence acceptance independently. And the relevant unit of analysis is not the technology alone but the interaction between the technology, the user and the organisational context.

That perspective helps to explain the prominence of perceived lack of usefulness among the reasons that non-adopting firms report.⁴⁷ Public policy can subsidise access; it cannot directly produce perceived usefulness. What it can do is improve the conditions under which usefulness becomes demonstrable, through support for problem diagnosis, sector-specific experimentation, test-before-invest facilities, integration expertise, workforce training and evaluation. Human-centred acceptance operates in this sense as a condition of conversion between organisational capability and sustained use.

Trust is relevant within that mechanism, and is better read as a condition than as an objective in itself. High trust is not synonymous with successful adoption, particularly where outputs may be erroneous or strongly context-dependent, and the observation that younger firms more frequently cite distrust of outputs among their reasons for abstaining suggests that the relationship is not linear.⁴⁸ Calibrated and informed reliance offers a more workable objective: users understanding enough about the role, the limits and the expected performance of a system to rely on it appropriately. Trust so understood is nested within responsible human-centred acceptance rather than positioned as a separate end-state.

⁴⁷ A. FERRANDO et al., cit.

⁴⁸ A. FERRANDO et al., cit.

6. From public support to sustained adoption: a conversion framework

The framework set out here treats enterprise adoption as a five-stage conversion chain: public and institutional support; readiness and organisational capability; human-centred acceptance; sustained organisational adoption; and the production of economic, regulatory and human value. The stages are connected without being mechanically deterministic. Weakness at one stage can interrupt or reduce conversion at those that follow, while experience generated at later stages can feed back into organisational capability and into the design of subsequent measures. The framework accordingly serves as an analytical device for considering the effectiveness of public intervention rather than as a causal model assumed to operate uniformly across enterprises. Figure 5 represents the chain and the feedback that runs back along it.

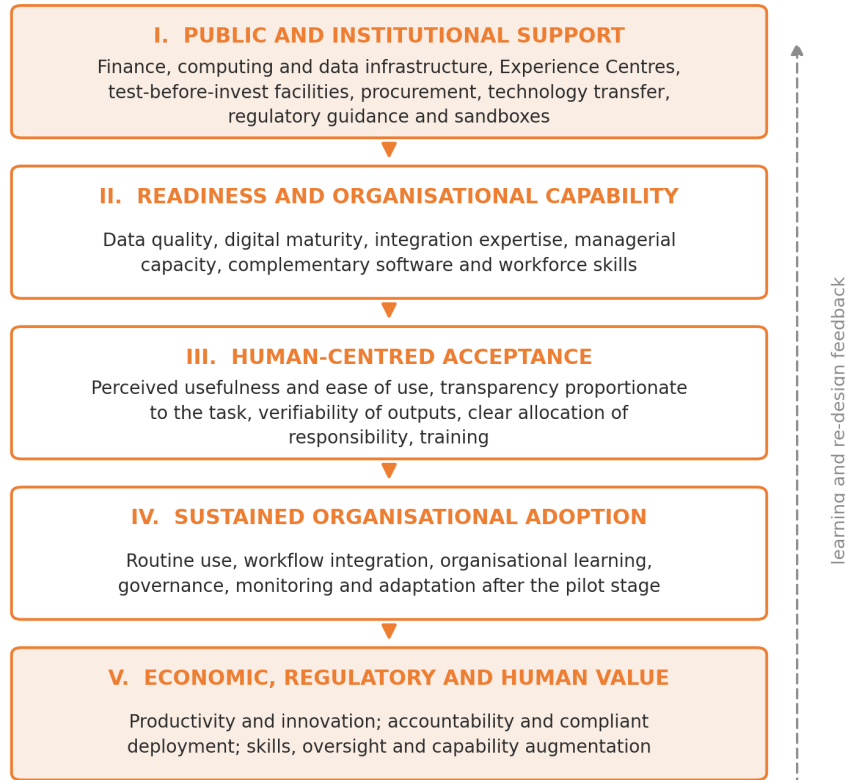


Figure 5. The conversion chain from public support to economic, regulatory and human value.

Table 1 sets out the same structure in the form of the question that each stage poses, the conditions on which it depends and the corresponding policy relevance.

Table 1. Stages of the conversion chain

Stage	Question posed	Representative conditions	Policy relevance
I. Public and institutional support	Can the enterprise reach the necessary resources and reduce the uncertainty of adoption?	Finance; computing and data infrastructure; Experience Centres; test facilities; procurement; regulatory guidance; technology transfer	Reduction of entry costs and uncertainty; widening of access
II. Readiness and organisational capability	Can the enterprise integrate the technology into data, systems and workflows?	Data quality; digital maturity; integration expertise; managerial capacity; skills; complementary technologies	Construction of absorptive and implementation capacity
III. Human-centred acceptance	Will the intended users regard the technology as useful, usable and	Perceived usefulness and ease of use; transparency proportionate to the task; verifiability; clear	Support for task fit, informed reliance and workforce capability

Stage	Question posed	Representative conditions	Policy relevance
	appropriate?	responsibility; training	
IV. Sustained organisational adoption	Does use persist and become embedded beyond the pilot?	Routine use; workflow integration; organisational learning; governance; monitoring; adaptation	Avoidance of pilot-only or subsidy- dependent adoption
V. Economic, regulatory and human value	Does adoption generate durable benefit across the three dimensions?	Productivity; innovation; service quality; accountability; safeguards; capability augmentation	Evaluation of outcomes, additionality and long-term value

The first stage concerns public and institutional support, and marks the point at which industrial policy can alter the cost, the availability and the perceived risk of adoption. Financial instruments retain their importance, particularly for enterprises with limited capital. The European policy landscape nevertheless combines finance increasingly with shared infrastructure, experimentation, advisory capacity and skills, consistent with the view that intervention should address the market and coordination failures surrounding a complex general-purpose technology rather than subsidise a single asset.

The second stage concerns readiness and organisational capability. Support can be converted into implementation only where enterprises possess, or can develop, the complementary resources that use requires. The evidence that digital and innovation capabilities interact with external support is material here, since it suggests that policy design may usefully distinguish enterprises constrained by finance from those constrained by capability. Extending the same instrument to both groups may produce unequal outcomes even where formal access is equal.

The third stage introduces human-centred acceptance. The question moves at this point from whether the organisation can install a system to whether the persons expected to use it can incorporate it into their work. Perceived usefulness and ease of use remain basic requirements, while factors specific to artificial intelligence, among them transparency, task fit, responsibility, training and the capacity to evaluate outputs, acquire independent relevance. Public programmes need not prescribe a universal model of acceptance. They can nonetheless ask supported projects to set out a credible plan for users and for workflow integration, particularly where adoption alters decision processes or employee roles.

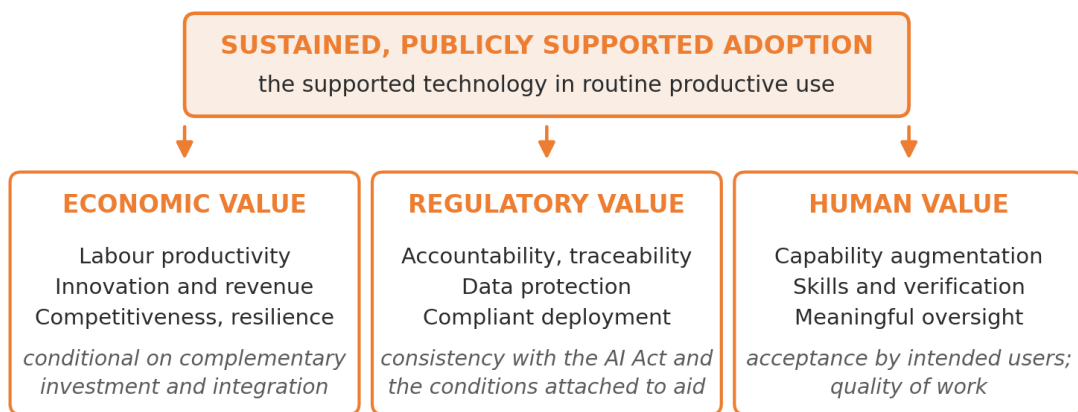
The fourth stage is sustained organisational adoption. A substantial share of enterprises currently occupies an experimental or infrequent-use category,⁴⁹ so that the transition requires mechanisms for organisational learning, monitoring and adaptation after initial implementation. This is the stage at which temporary public support may become durable private capability. Evaluation accordingly turns on whether use persists after the initial pilot, whether the system has been integrated into routine processes and whether employees and managers can modify practice as experience accumulates.

The fifth stage concerns value, and is treated separately in the section that follows. The chain permits failure to be diagnosed as well as success to be recorded. Where a supported system is not used, the relevant question is whether the difficulty arose from weak task fit, inadequate skills, poor integration, low acceptance or the technology itself, rather than from an insufficiency in the initial investment.

7. Public value and the assessment of supported AI adoption

⁴⁹ A. FERRANDO et al., cit.; L. BELLOMARINI et al., cit.

Productivity is the outcome most readily measured and most frequently invoked in the justification of support, and it does not exhaust the public value at stake where public resources are involved. At least three dimensions may be distinguished, as set out in Figure 6. Economic value concerns productivity, innovation, competitiveness, revenue and resilience. Regulatory value concerns the capacity to obtain those gains consistently with the legal framework governing artificial intelligence, data, accountability and the conditions attached to public intervention. Human and organisational value concerns the preservation and development of skills, meaningful oversight, a workable allocation of responsibility and the capacity of employees to use supported systems appropriately. These dimensions are analytically distinct, and they matter to policy precisely because public intervention can generate incomplete or fragile returns when one of them is neglected.



The three dimensions are read together: a measure that raises one while eroding another has not produced durable value.

Figure 6. Dimensions of value generated by publicly supported adoption.

The evidence surveyed above indicates that economic gains are real yet conditional, concentrated in medium and large firms and dependent on

complementary investment.⁵⁰ Regulatory value, for its part, is not an external constraint upon the economic objective but a component of it: a system that cannot be explained, audited or defended is a system whose use carries latent cost, and the frequency with which enterprises cite legal uncertainty and data protection among their reasons for abstaining suggests that the regulatory dimension operates as a determinant of diffusion rather than merely as a limit upon it.⁵¹ As to the human dimension, the finding that adoption reallocates employment towards higher-skilled occupations and raises wages, without reducing employment in the short run, suggests that the economic and human dimensions need not stand in opposition, although the longer-term position remains uncertain.⁵²

The practical implication is that the three dimensions are read together. A measure that raises measured productivity while eroding accountability, or while displacing expertise that the enterprise will subsequently need, has not produced durable value in the sense that public support is ordinarily intended to pursue. A measure that satisfies formal compliance requirements without producing use has not produced value either. Weighing the three against one another by a common metric would require a theory of substitution that the present state of evidence does not supply; recording all three, so that trade-offs become visible rather than implicit, is within reach of existing evaluation practice.

⁵⁰ I. ALDASORO et al., cit.; L. ARDITO et al., cit.

⁵¹ Eurostat, cit., recording lack of clarity about legal consequences at 52.52 per cent and concerns over data protection and privacy at 48.83 per cent among enterprises that had considered adoption.

⁵² T. ROPELE, A. TAGLIABRACCI, cit.; I. ALDASORO et al., cit., which records unchanged employment levels and higher wages in adopting firms in the short run while noting that longer-term effects remain uncertain.

8. Designing support instruments for effective and responsible adoption

8.1. From expenditure and uptake to the quality of adoption

Public programmes require simple and auditable indicators, and the number of enterprises supported, the expenditure mobilised and the technologies deployed are all intelligible measures. The framework set out here does not displace those indicators; it adds a dimension of quality alongside them. Indicators of that kind may include progression from experimentation to regular use, integration into core workflows, participation of the workforce in training, demonstrated usefulness at the level of the task, persistence after support ends and measurable organisational outcomes. The purpose is to distinguish nominal diffusion from diffusion that is economically meaningful.

8.2. Matching support instruments to the binding constraint

Enterprises face different bottlenecks. A digitally mature small enterprise may require principally finance or access to computing capacity. Another may hold sufficient capital while lacking clean data, integration expertise or a credible use case. A third may complete technical implementation and then encounter weak acceptance among employees or inadequate governance arrangements. Support instruments may accordingly be modular. Diagnostic assessment can precede funding, so that enterprises are routed towards finance, technology transfer, skills, test-before-invest services, integration assistance or combinations of these measures. Such differentiation sits with the evidence that external support operates more effectively when paired with internal capability, and with the observation of the 2026 Digital Decade assessment that smaller enterprises lack trusted intermediaries able to offer technical, legal and business-transformation

support in an integrated form.⁵³ Table 2 sets out the correspondence in schematic form.

Table 2. Binding constraints, matched instruments and indicators of adoption quality

Binding constraint	Matched instrument	Indicator of adoption quality
Capital and access to computing capacity	Finance, guarantees, shared infrastructure	Complementary private investment mobilised
Data, systems and integration capacity	Technology transfer, integration advisory services	Depth of workflow integration
Task fit, skills and employee acceptance	Test-before-invest, training, use-case design	Regular use by intended users; capacity to verify outputs
Legal uncertainty and compliance cost	Regulatory guidance, sandboxes, model documentation	Documented and auditable deployment
Post-pilot continuity and governance	Continuation criteria, longitudinal evaluation	Use persisting after support ends

8.3. Skills and organisational capability as adoption infrastructure

Skills policy is better understood as a component of the infrastructure of adoption than as a social accompaniment to it. The prominence of expertise constraints in the Eurostat distribution, where a lack of relevant expertise was reported by more than seven enterprises in ten among those that had considered adoption, indicates the scale of the difficulty.⁵⁴ Training may usefully extend

⁵³ *State of the Digital Decade 2026*, cit.

⁵⁴ Eurostat, cit.

beyond general literacy. For enterprise adoption it encompasses use specific to the task, verification of outputs, understanding of data and workflows, escalation where systems fail, and the capacity of managers to redesign processes around complementary human and machine strengths. Provision of that kind strengthens acceptance and productive use together, and corresponds to the training initiatives that the national observatory established by Italian law is charged with promoting.⁵⁵

8.4. Experimentation as a transitional, rather than final, policy objective

Experimentation facilities and pilots reduce uncertainty and allow enterprises to discover whether a technology is useful before committing substantial resources. Experimentation may nonetheless carry an explicit logic of transition. Public programmes can ask for a post-pilot adoption plan specifying the business process concerned, the complementary investment required, the implications for the workforce, the governance arrangements and the criteria for continuation or termination. An approach of that kind avoids treating every pilot as a success, while leaving enterprises free to conclude on rational grounds that a particular application does not create sufficient value. The distinction matters for the assessment of additionality, since support that funds a pilot which was going to be abandoned in any event has not altered the trajectory of the enterprise.

8.5. Human-centred conditions within economic-policy design

Human-centred adoption is of limited use as a list of abstract principles detached from business practice. The workable criteria are operational: whether users understand the role of the system, whether the system serves a genuine

⁵⁵ Legge 23 settembre 2025, n. 132, cit.

need at the level of the task, whether employees can challenge or verify outputs where that is appropriate, whether responsibility is clearly allocated, and whether the technology improves rather than merely relocates organisational burdens. Conditions of that kind sit comfortably with competitiveness, since systems that are poorly accepted or poorly integrated are unlikely to generate sustained returns. They are also largely coextensive with obligations that the regulatory framework already imposes, which suggests that the marginal administrative cost of incorporating them into support criteria is lower than it might at first appear.

9. The Italian productive system: implications for public intervention

Italy presents a setting of particular relevance to the framework, since the principal difficulty is not the availability of technology but its diffusion across a heterogeneous productive structure in which smaller enterprises predominate. The assessment by Banca d'Italia identifies adoption below the average for the Union and frequently confined to experimental use, and recommends stronger technology transfer, specialised structures for integration, reduction of the uncertainty and perceived risk borne by adopters, and the strategic use of public procurement.⁵⁶ Those recommendations correspond closely to the first two stages of the framework.

The human-centred layer adds a further consideration. Integration structures need not confine themselves to technical problems; they can assist enterprises in identifying suitable tasks, redesigning workflows and preparing employees for altered forms of interaction. For smaller enterprises without internal specialists, an external support ecosystem can supply temporary expertise while internal capability is under construction. European Digital Innovation Hubs and

⁵⁶ L. BELLOMARINI et al., cit.

comparable structures are therefore of potential importance less as points of access to technology than as intermediaries of adoption, and the refocusing of those hubs as Experience Centres under the Apply AI Strategy moves in that direction.⁵⁷

The territorial dimension cannot be set aside. Where productive structures differ markedly across regions, uniform instruments produce differentiated effects, and the administrative capacity to design and manage support is itself unevenly distributed.⁵⁸ A programme of technology transfer presupposes institutions capable of delivering it. Where such institutions are weak, support that assumes their presence will under-perform, and the resulting shortfall may be recorded as a failure of the enterprises rather than of the instrument.

A final implication concerns evaluation. Where public support is justified in part by objectives of productivity, competitiveness and strategic autonomy, evaluation may usefully follow supported enterprises beyond the award or the installation. A small set of longitudinal indicators, comprising regular use, depth of integration, complementary training, process outcomes and continuation after support, would yield a more informative account of additionality. It would also permit policy learning, since repeated failure at the same stage of the conversion chain would indicate whether future resources should move from finance towards integration, skills or technology-transfer capacity. The design of such an evaluation is itself subject to the compatibility requirements governing national measures, and the

⁵⁷ *Apply AI Strategy*, cit.

⁵⁸ On the relationship between policy and administration in this context see S. AMOROSINO, *Politica ed amministrazione per il Mezzogiorno*, in *Rassegna di Diritto dell'Economia*, n. 1/2026, 1 ss. On the use of regulatory instruments as means of promoting transition more generally see A. DAVOLA, *La responsabilità estesa del produttore come strumento di promozione della transizione sostenibile*, *ivi*, 122 ss. <https://doi.org/10.15162/rde.v1i1.2616>; <https://doi.org/10.15162/rde.v1i1.2634>.

evidence that it generates bears on the assessment of proportionality and of incentive effect.⁵⁹

10. Concluding observations

European policy on artificial intelligence has entered a phase in which the diffusion and productive use of technology matter alongside technological development itself. That development places enterprise adoption within the broader transformation of public intervention described by contemporary European industrial policy: public measures are increasingly expected not merely to correct temporary market failures, but to support strategic capabilities, innovation, resilience and competitiveness. In that setting, the relevant legal-economic question is not exhausted by whether support can be granted or whether investment is mobilised. It also concerns whether the supported investment is capable of becoming durable productive capacity.

The evidence gathered in these pages records both rapid movement and persistent unevenness. Adoption has risen from 7.7 per cent of enterprises in 2021 to 19.95 per cent in 2025, against a Digital Decade target of 75 per cent by 2030; a large share of enterprises remains outside use or confined to experimentation; and the reported barriers span perceived usefulness, expertise, legal uncertainty, system compatibility, data, finance and organisational capacity. Those barriers do not fall within the competence of a single instrument, and they do not present themselves in the same order to every enterprise.

On the reading proposed here, public support is better understood as the first stage of an adoption process than as its endpoint. The effectiveness of

⁵⁹ On the persistence of scrutiny notwithstanding the expansion of the derogating provisions see G. LUCHENA, *Politiche di sostegno delle imprese*, cit.

intervention depends on the conversion of financial, infrastructural and institutional support into organisational capability, appropriate human use and sustained integration. That perspective complements the legal assessment of compatibility and the economic assessment of additionality with an implementation question: whether the beneficiary enterprise possesses, or can develop, the complementary conditions required for the supported technology to produce the strategic effects invoked to justify intervention.

The framework is offered as a conceptual synthesis intended to organise existing evidence and to derive implications capable of being tested, rather than as a causal model already validated across European enterprises. Empirical work could operationalise the five stages using firm-level panel data or matched surveys of managers and employees, linking exposure to public support with measures of digital readiness, perceived usefulness, training, depth of integration and subsequent productivity. Research of that kind could establish whether human-centred acceptance mediates or moderates the relationship between organisational capability and sustained adoption, and whether the pathways differ by size, sector or national institutional environment.

For policy, the implication is not the abandonment of finance or infrastructure, but their closer connection with adoption capability. Support instruments directed at artificial intelligence may be designed to address the constraint that prevents a particular enterprise from progressing from access to effective use: finance, skills, data, integration, legal uncertainty, organisational redesign or the absence of a credible use case. Evaluation would correspondingly extend beyond expenditure and installation to the persistence, quality and effects of adoption. In this sense the human-centred conditions enter the law-and-economics analysis of public support not as an external ethical appendix, but as part of the institutional and organisational mechanism through which public resources may come to generate durable economic value.