Unlocking Europe's AI Potential in the Digital Decade 2025

Overview

This report represents the latest in our annual series examining Europe's journey toward realising the European Commission's Digital Decade and competitiveness goals through widespread artificial intelligence (AI) adoption.

Building on 2024's report, which established AI's central role in Europe's digital transformation, and its great economic potential, our 2025 report analyses current adoption trends, barriers to implementation, and pathways to inclusive innovation.

About the study

As AI reshapes the global economy, Europe faces a crucial moment. The past year has witnessed widespread adoption of AI, popularised by generative AI and large language models (LLMs), with our research suggesting Europe could achieve near-universal business adoption of AI by 2030.

This report reveals that Europe is at a critical juncture. While businesses and citizens show growing enthusiasm for AI's potential, startups are ahead in driving innovation and business transformation with AI. In contrast, larger companies remain primarily focused on early experimentation and the lowest-hanging fruit of efficiency gains at the expense of deeper adoption. This divergence risks creating a two-tier AI economy that could limit Europe's potential to leverage the benefits of digital transformation, be a global leader, and simultaneously deepen the productivity gap that threatens its global competitiveness.

This report crucially builds on Mario Draghi's report on *The future of European competitiveness* (2024) prepared for the European Commission, offering complementary insights into how digitalisation and AI can drive innovation and economic growth across the continent. By expanding on Draghi's emphasis on digital transformation, upskilling the European workforce, and promoting an innovation-friendly landscape, this report highlights the critical role AI plays in achieving these goals and positioning Europe as a leader in the digital economy. This report also compliments the aim of the EU Competitiveness Compass, which places competitiveness at the core of the mission for businesses and governments alike.

The findings presented here align closely with Ursula von der Leyen's vision for the European Commission's 2024-2029 term, which calls for a new European Prosperity Plan. This plan aims to boost competitiveness through digital transformation, research, and innovation, with key initiatives including an "Apply AI Strategy," a European AI Research Council, and a Union of Skills to address the digital skills gap.

Our research draws on independent studies conducted by Strand Partners, encompassing over 15,000 citizens and 15,000 businesses across the European Union, UK, and Switzerland. The breadth and depth of this research provides unprecedented insights into the state of AI adoption and its implications for Europe's future competitiveness.

Foreword

Europe stands on the brink of an AI revolution. The "Unlocking Europe's AI Potential 2025" report reveals AI's potential to transform businesses and public sector organisations, empower citizens, and fuel economic growth. AWS has been at the forefront of this transformation, providing the infrastructure, services, and applications which support innovation across sectors.

AI adoption in Europe has grown rapidly, with startups leading the charge. These companies are creating solutions that redefine industries, from healthcare breakthroughs to advanced manufacturing processes. In contrast, despite AWS working with a number of large enterprises in exciting digital transformation projects, across Europe established enterprises often remain in early adoption stages, and many citizens lack access to essential AI skills and opportunities.

This report underscores the pressing need to both accelerate and deepen technology adoption across the continent. Without decisive action, Europe risks falling behind agile challengers that are shaping the future of AI-driven business.

At AWS, our investments in Europe's digital landscape - spanning cloud computing capabilities, localised AI tools, and dedicated training programs - helps organisations of all sizes move from AI experimentation to impact. In 2024 alone, we supported thousands of startups to scale their AI solutions globally and, alongside Amazon, committed to train over a million citizens on digital skills.

The road ahead is not without challenges. The cost of regulatory complexity, a critical AI skills gap, and fragmented public-private collaboration are hurdles we must collectively overcome. Policymakers have a unique opportunity to create a unified framework within a pro-growth Single Market that fosters innovation and ensures responsible AI development. Education systems must adapt, integrating AI literacy and advanced skills development into curriculums to prepare the workforce of tomorrow.

The recommendations in this report are based on the feedback and experiences of European businesses and citizens. I urge European governments, enterprises, and civil society to embrace them. AWS remains committed to our partnership with Europe. Together, we can make AI accessible to all, unlocking economic potential, improving lives across the continent and helping everybody prosper through the digital transformation that will define the next decade.

Tanuja Randery
Managing Director,
Europe, Middle East & Africa (EMEA)

Executive summary

The Digital Decade Vision

The European Commission's Digital Decade initiative sets ambitious targets to make Europe a digital global leader by 2030. These targets align with four key areas: skills, public administration, infrastructure, and business transformation.

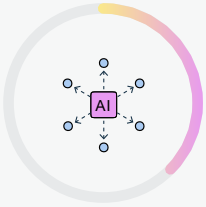
Our research suggests European businesses are on track to meet the Digital Decade target that **75%** of EU companies use AI in their business practices. Yet, beneath this headline figure lies a more complex reality; startups[1] are pulling ahead in innovation and most larger businesses[2] are stuck in shallow adoption, focusing on incremental gains.

The AI revolution takes hold, but a two-tier economy is beginning to emerge

- **42%** of European businesses are now consistently using AI; adoption has grown by **27%** in only twelve months.
- Every minute, somewhere across the continent, more than five businesses adopt AI for the first time. This remarkable pace equates to nearly three million businesses across the continent in the past year.
- For businesses that have adopted AI, a striking majority (**93%**) say their revenue has increased.
- On average, these businesses have seen an average **31%** boost in revenue, demonstrating the tangible benefits of integrating AI into operations.
- Impressively, **95%** of businesses have seen significant productivity gains thanks to AI. The technology has also enhanced automation and efficiency (**44%**), improved customer experience (**43%**), and improved decision-making and insights (**38%**).
- Our research reveals two distinct paths emerging in Europe's AI journey. Only **13%** of larger businesses are harnessing AI's deeper potential to deliver an entirely new product or service, lagging behind startups (**37%**).
- The growth in adoption is matched by growing public enthusiasm for AI. Citizens across Europe are increasingly aware of the technology's transformative potential: **78%** believe it will transform education, **61%** see it revolutionising healthcare, and **64%** anticipate its transformative impact on agriculture.

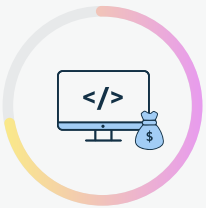
A growing digital divide could shape Europe's future, with large businesses focusing on efficiency ahead of innovation

Our research reveals that while **53%** of large businesses are consistently using AI, only **14%** have implemented the most advanced operations.



Startups report that AI plays a central part in their business operations, with **38%** reporting that their business proposition is based around AI or that they are heavily reliant on it for their core service.

Our report identifies three stages of adoption from first steps to strategic reinvention. Currently, **73%** of large businesses and **56%** of startups are at the most basic stage of AI adoption, compared to **14%** of large businesses and **26%** of startups who are at the most advanced stage.



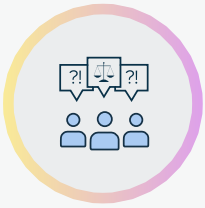
This two-tier pattern is clearly visible in AI investment strategies: Currently, **72%** of startups report having a dedicated AI budget, compared to just **58%** of large businesses, highlighting a clear distinction in resource allocation.

Startups are leading in innovation, harnessing AI to deliver new products for their customers, but require further support to continue thriving

- Startups look for direction from public sector organisations - **92%** of startups are more likely to adopt AI when the public sector does, compared to only **46%** of small businesses.
- Startups in particular require clear pathways to venture capital and funding options, with **56%** of startups identifying it as a critical factor for faster growth.
- **92%** of startups believe Europe is competitive as a global startup hub compared to other regions, such as the US or Japan.
- The key features of the European landscape that make it competitive as a global hub for startups are high levels of education and a skilled workforce (**64%**), strong legal protections for data privacy and security (**59%**), and access to a large and diverse consumer market within the EU (**48%**).
- While **37%** of adopters report that they source capabilities and expertise from internal development, almost a third (**32%**) work with external providers or consultants. The most common support provided by these external partners is more advanced AI capabilities (**56%**), improved cybersecurity (**54%**), and support with data handling (**43%**).
- Startups reported that the UK was the European country with the most start-up-friendly business environment, closely followed by Estonia and Germany.

Breaking down barriers to accelerate depth and breadth of AI adoption will enable Europe to compete on a global stage

Our research reveals four critical barriers that are restricting Europe's AI transformation:



Businesses report regulatory uncertainty as a key barrier: 44% of European businesses cite regulatory uncertainty as their primary barrier to AI adoption, with fragmented rules across borders creating particular challenges Businesses estimated that €40 out of every €100 their company spends on IT is reserved to compliance related costs.

There is a critical AI skills gap: 40% of businesses report a lack of digital skills to be an AI adoption barrier, and **13%** report it as the main barrier holding them back. The digital skills barrier hinders innovation for **56%** of businesses; a further **53%** see this barrier increasing operational costs, and **46%** see it slowing growth.

For many businesses, especially SMEs, the perception around the cost of implementation holds some back: 31% of SMEs cite high implementation cost as a major barrier.

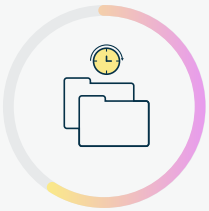
While European citizens show growing enthusiasm for AI, concerns remain: Over **10%** of citizens reported that the fact that many everyday technologies use AI without their knowledge makes them feel less positively about the technology. This group pinpoints specific concerns, including questions about privacy and data collection (**66%**), the technology feeling invasive (**63%**), and worries about manipulation or being presented with biased content (**48%**).

Cloud computing

88% of businesses are aware of cloud computing - of these, **59%** are very familiar with the technology. The most common business uses for cloud computing are:

Working in online documents (reported by **74%** of businesses)

Online data storage or file sharing (**70%**)



Data back-up and disaster recovery (**59%**)

The adoption trends outlined above show that European businesses are on track to meet the Digital Decade targets ahead of schedule, including **75%** of businesses using AI by 2030.

However, while adoption figures continue to rise, a gap is emerging between large, established businesses and startups, with startups leading the way in innovation and depth of adoption. In order to fully realise the benefits promised by AI, this report outlines a set of recommendations aimed at creating the right conditions to encourage companies of different sizes and levels of technological sophistication to use AI and transform their sectors and businesses.

Summary recommendations: Three-point plan

01.

Create a pro-growth regulatory environment that incentivises adoption and innovation

By addressing European businesses' concern about the cost and compliance complexity associated with new regulations, Europe can overcome a key barrier to digital transformation.

02.

Accelerate digital transformation across European industry

To accelerate private sector digital adoption, Europe needs to establish a virtuous cycle of investment and growth, centred around digital transformation and a skilled workforce. A renewed emphasis on updating business processes, applying innovations commercially and investing in R&D can help European companies recapture their start-up zeal and drive European competitiveness globally.

03.

Turn European governments into leading adopters of digital technology

European governments must evolve from technology followers to digital leaders. While public administrations are respected for their democratic values, they lag behind global peers in the adoption of cutting-edge technology. Taking the lead on digital transformation will meet citizens' expectations regarding how new technologies can improve their daily lives and catalyse technology adoption and innovation in the wider economy.

The AI revolution takes hold

Europe stands at the dawn of an AI revolution. Every minute, somewhere across the continent, more than five businesses adopt AI for the first time. This remarkable pace equates to nearly three million businesses across the continent in the past year.[3]

This isn't just steady growth - it's a transformation happening at breakneck speed. AI adoption has grown by **27%** in only twelve months, marking a **68%** rate of growth since the first release of this report three years ago. Close to half of all European businesses have now begun to harness AI's potential, putting universal adoption within reach by 2030.

This outpaces the early growth rate of adoption of game-changing technologies like mobile phones in the 2000s.[4]

Emerging divides: Two-tier AI adoption

Beneath these headline figures lies a more complex story. Our research reveals two distinct paths emerging in Europe's AI journey:

01.

In startup hubs from Nice to Naples, companies are reimagining entire industries. Take Latitudo 40, an Italian company harnessing AI to address one of the most challenging problems of our time and empowering cities to tackle climate challenges. These companies are not simply using AI – they're being built around it, using the transformative technology to create entirely new products and business models that would have been impossible just years ago.

02.

Meanwhile, in corporate headquarters across the continent, a different pattern emerges. While adoption numbers among large businesses are promising, many larger enterprises remain focused on incremental gains - using AI to streamline existing processes and to drive efficiencies, rather than exploring more advanced AI uses to transform their businesses. The contrast is stark: while just **3%** of large businesses have fully integrated AI, **18%** of startups have brought AI into the heart of their business. While the vibrant startup community is a cause for celebration, risks remain: although large businesses represent less than a percent of the EU market (**.2%**), they employ over a third of the European workforce (**35%**) and generate half of European turnover (**50%**).[5] Full integration of AI across the market will bolster productivity and economic gains to new levels. Recent research estimates that cloud adoption in Europe stands to add nearly $2.6 trillion to Europe by 2030, and cloud-enabled AI could alone add nearly $434 billion.[6]

Beyond tech: AI's widening reach

The AI revolution isn't confined to tech hubs. Our research reveals AI spreading into unexpected corners of European economies:

An app for farmers in Italy using AI to predict insect population and crop health months in advance

A non-governmental organisation in the UK using drone imagery and AI to identify unexploded landmines

A software company in Lyon using generative AI to bring pharmaceutical treatments to market faster

These examples showcase how AI is transforming businesses far beyond Silicon Valley stereotypes - making waves across the tech and non-tech industries alike.

Case study: Swindon Borough Council: using AI to help meet accessibility needs[7]

In the UK, the local government in Swindon, a town of 180,000 people two hours west of London, is working to make AI tools that it has used to improve residents' access to public services open-source and available for other local governments to use, license-free.[8] This includes releasing the prompts and parameters they have curated so that others in the public sector and civil society can customize them rather than starting from scratch. Government departments that lead networks of local services and authorities could boost diffusion by pursuing similar initiatives to promote knowledge transfer and help scale up local innovations to the national level:

The Swindon case study shows how local governments can use cloud-based AI tools to make content more accessible for residents who have special needs, such as low literacy levels (1 in 5 UK citizens do not have high school level literacy), cognitive impairment, or learning difficulties (affecting **15%** of the global population). It typically costs public-service providers around $250 to transform a single page of content into an easy read format that is more easily accessible to these populations. Using software tooling available through Amazon Bedrock, Swindon Council has reduced that cost to around $0.10 per page. As the head of Swindon Council's digital initiatives notes, "cloud-based technology has enabled this service innovation. The cloud is a place where we can experiment and explore fast, securely, and at low cost. And our teams don't need to know Python or have a PhD in AI. We can simply focus on realising our ideas for new service improvements."

The public's perspective

Perhaps most striking is the growing public enthusiasm for AI. Citizens across Europe increasingly consider AI not as a distant technology, but as a solution to pressing challenges:

78% believe it will transform education, making personalised learning accessible to all

81% see it revolutionising healthcare, from early disease detection to personalised treatment plans

64% anticipate its transformative impact on agriculture, helping to feed a growing population sustainably

This is particularly the case in healthcare, where **60%** of citizens call for increased AI adoption in the public sector, outpacing other high-priority areas including education (**38%**), social security (**23%**) and public transportation (**23%**).

This strong demand underscores the public's recognition of AI's transformative potential in revolutionising healthcare delivery, improving patient outcomes, and addressing critical challenges in the sector which is facing increasing obstacles to rolling out technology, making it a clear focus for investment and innovation.

Across the continent, there are significant opportunities to enhance the relationship between public administration and citizens and deliver on public desire for digitalisations. EU initiatives, such as the Commission's European action plan to strengthen hospital and healthcare cybersecurity and the implementation of the European Health Data Space (EHDS) will address the strong interest in healthcare digitalisation, while the upcoming reform of public procurement rules,[9] will continue to boost the productivity and quality of public services and meet citizens' expectations.

Case study: Yseop is accelerating the delivery of new medicines with AI

Yseop is revolutionising regulatory medical writing with generative AI, significantly reducing the time it takes to bring life-saving treatments to market. Leveraging Amazon Bedrock and Anthropic's Large Language Model Claude 3.5, Yseop automates the generation of complex regulatory documents, transforming months of manual work into a streamlined, efficient process.

By maintaining a critical "human-in-the-loop" approach, Yseop ensures regulatory accuracy, expert oversight, and compliance with global standards. Its AI-driven solutions have saved pharmaceutical companies thousands of hours in document preparation time—accelerating drug approvals, improving patient access, and enabling faster medical breakthroughs.

Yseop features in AWS Pioneers Project: a spotlight on the pioneers behind Europe's groundbreaking innovations shaping the future of AI.

Discover more about Yseop's AI-driven solutions at www.yseop.com.

The growing digital divide

As Europe's AI revolution accelerates, a concerning pattern emerges. While overall adoption numbers paint an encouraging picture, they mask a deepening divide that could shape Europe's economic future for decades to come.

The innovation gap

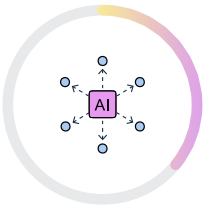
Picture two European businesses: a three-year-old startup in Stockholm and a century-old manufacturer in Lyon. Both use AI, both would count towards Europe's digital targets, but the similarity ends there. The Digital Decade targets do not capture the nuances between the two; thus, they risk giving Europe a false sense of security from rising adoption figures.

The startup has embedded AI into its very DNA - using it to create new products, reinvent customer experiences, and pioneer entirely new business models. Meanwhile, the manufacturer, despite its rich history and deep expertise, uses AI primarily for basic automation and efficiency gains.

This isn't an isolated example. Our research reveals that while **53%** of large businesses are consistently using AI, only **14%** have implemented the most advanced operations. The contrast does not end there:

Only one out of every ten (**13%**) large businesses are using AI to deliver a new product or service for customers, while startups are driving change in this area (**37%**)

Startups are far more optimistic than large businesses - **25%** more startups see launching a new product in the next three years as a realistic goal using AI if their business had the right capabilities



Startups report that AI plays a central part in their business operations, with **38%** reporting that their business proposition is based around AI or that they are heavily reliant on it for their core service

Beyond simple adoption

The divide goes deeper than just adoption rates - it's about the very ambition of how AI is used. We've identified three distinct stages of AI maturity:

Stage 1: First steps

Most large enterprises (73%) currently focus their use of AI on improving efficiency or productivity, i.e. the early steps of adoption for incremental gains, compared to 56% of startups.

These businesses are primarily using AI for:

Basic automation of existing processes: In the past year, **58%** of businesses have undertaken AI to improve internal processes / existing processes using AI. This rises to **63%** among large businesses.

Customer service chatbots: In the past year, **56%** of businesses have undertaken AI to implement new AI-based customer service solutions, such as chatbots.

Simple data analysis: In the past year, **54%** of businesses (and **52%** of large businesses) have been using AI to analyse large datasets.

While valuable, these applications only scratch the surface of AI's potential. In order to truly harness the unique potential of the technology, large businesses must consider how they can use the technology to truly transform their business and drive innovation, including looking toward the vibrant ecosystem partnerships with technology providers and government incentives — which are currently driving adoption.

Stage 2: Transformation begins

This is where businesses start to scale and deploy uses of AI across business functions. Currently, only 12% of large enterprises are in this phase, compared to 17% of startups.

At this stage, businesses can:

Use AI to automate workflows: **47%** of adopters report that they are harnessing AI for this purpose.

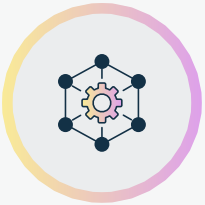
Reimagine customer experiences: **18%** of businesses that are using AI report that this is their most advanced AI process.

Stage 3: Strategic reinvention

This is where the magic is happening for 14% of large businesses and 26% of startups. Businesses, at this stage, harness the most advanced AI systems that combine multiple types of AI tools or models to perform complex tasks.

At this stage, they are:

Creating entirely new business models: **35%** believe that AI will completely transform the industry through the creation of new business models in the process.



Fully integrating AI: Crucially, only **3%** of large enterprises have fully integrated AI in their processes and in the centre of their strategies for growth and innovation, compared to **18%** of startups.

Developing their own custom AI solutions: Only **4%** of businesses that are using AI say this is their most advanced AI process.

Despite growing AI adoption, most businesses remain in the early integration stages. While European startups are pioneering growth and innovation, large businesses risk falling behind and remaining in the early stages of adoption. The majority of businesses (**61%**) remain at Stage 1, a figure which rises to **73%** among large established businesses. **26%** of startups operate at Stage 3, compared to only **14%** of large businesses.

This critical divide is a competitive disadvantage for individual large companies, and a threat to Europe's economic future. While large businesses, which generate over half of the turnover in Europe,[10] continue to lag in digital adoption, Europe misses a significant opportunity to build on its existing leadership across industries, undermining its competitive position.

Investment patterns reflect the divide

This two-tier pattern is clearly visible in AI investment strategies:

Currently, **72%** of startups report having a dedicated AI budget, compared to just **58%** of large businesses, highlighting a clear distinction in resource allocation.

Furthermore, large businesses allocate only **15%** of their IT budget to their AI development on average, a figure that rises to **20%** among startups. This indicates a gap in priorities, where Europe's largest companies need to increase R&D investment to match startups' more intensive adoption of AI.

This investment gap risks widening the innovation divide.

This distribution highlights the untapped potential of AI, with significant room for growth as businesses progress toward more transformative stages of adoption and look to integrate the technology more deeply into their operations.

Despite sustained rapid growth in AI adoption, a two-tier AI economy is emerging, with many larger businesses remaining focused on the first stage of adoption, covering basic data analysis and driving efficiencies. By progressing through all stages of AI integration, from basic efficiency to strategic reinvention, businesses are able to move beyond surface-level benefits and become leaders in innovation. Prioritising all three stages to achieve the deepest level of integration enables long-term business growth, drives revenue, and ensures businesses remain competitive in a rapidly evolving, digitalised global economy. With cloud-enabled AI having the potential to add nearly $434 billion to the European economy - these ambitions toward full integration are pivotal.[11]

Case Study: The HALO Trust is helping eradicate the dangers of landmines

The HALO Trust is speeding up clearing landmines in conflict areas to save lives and empower local communities.

The non-governmental organisation is using AWS cloud infrastructure to analyse thousands of drone images of minefields securely using AI, significantly reducing analysis time from days to hours. This allows HALO to work more efficiently in heavily mined areas around the world, including Ukraine.

The HALO Trust features in AWS Pioneers Project: a spotlight on the pioneers behind Europe's groundbreaking innovations shaping the future of AI.

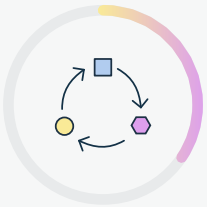
To read more about The HALO Trust's work, click here.

Startups pioneering adoption

Startups are at the forefront of Europe's AI revolution, driving innovation by adopting and integrating cutting-edge technologies into the heart of their mission, pushing boundaries of what technology can achieve both in business and society.

Leading the innovation charge

Startups are European leaders in AI adoption in both breadth and depth, with **26%** using AI for advanced use cases, such as combining multiple AI models or creating their own custom AI system or app.



Startups also are notably optimistic about the potential impact of AI. **44%** of startups say they believe that AI will completely transform their business operations, compared to only **31%** of large businesses.

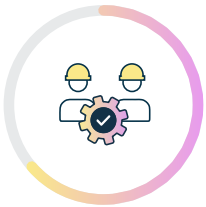
Creating a supportive ecosystem

While European startups drive innovation with AI, they require specific support to unlock their full potential:

- Startups require clear pathways to venture capital and funding options, with **56%** of startups identifying it as a critical factor for faster growth.
- Startups also look to the public sector as a key enabler of growth, with **35%** citing public adoption of new technologies and innovation-friendly procurement policies as instrumental.
- Also important to startups is an increased availability of specialised office spaces and research facilities (**24%**), enhanced technology-specific education programmes (**21%**), and more collaboration opportunities with established companies and leaders (**21%)**.

Together, these factors create a thriving ecosystem where startups can fully realise their potential and contribute to Europe's leadership in AI innovation. Given this, Europe is generally viewed as a competitive hub for startups, yet some hurdles remain. Ninety-two per cent of startups believe Europe is competitive as a global startup hub compared to other regions, such as the US or Japan.

The key features of the European landscape that make it competitive as a global hub for startups are:



High levels of education and a skilled workforce (**64%**)

Strong legal protections for data privacy and security (**59%**)

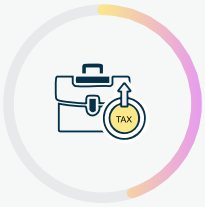
Access to a large and diverse consumer market within the EU (**48%**)

In order to continue driving growth and fostering European competitiveness, regulators and policymakers must focus on growing these strengths as well as addressing the limitations stifling competitiveness.

Those startups that found Europe uncompetitive reported three main obstacles to growth:

A complex regulatory landscape (**55%**)

High operational and labour costs (**55%**)



High taxation on startups and tech businesses (**45%**)

Startups reported that the UK was the European country with the most start-up-friendly business environment, closely followed by Estonia and Germany.

The critical role of partners in the AI journey

01.

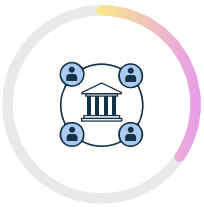
While **37%** of adopters report that they source capabilities and expertise from internal development, almost a third (**32%**) work with external providers or consultants. The most common support provided by these external partners is more advanced AI capabilities (**56%**), improved cybersecurity (**54%**), and support with data handling (**43%**).

02.

Adopters rely on partners to tackle key barriers to adoption, harnessing these external providers to train and upskill their staff (**45%**), support them with regulatory compliance (**36%**), and to address cost management and optimise solutions (**33%**).

The public sector connection

Government adoption proves crucial for broader AI uptake:



35% of startups cite public sector adoption as critical for scaling

78% of businesses overall say government AI adoption makes them more likely to adopt AI themselves

This figure rises to **92%** among startups

This report demonstrates that public procurement plays a powerful role as a multiplier for technology adoption. Furthermore, the 2023 European Investment Bank (EIB) Investment Report notes that a key external factor shaping firms' digitalisation is the extent to which governments and municipalities embrace digitalisation themselves - 'this implies a coherent approach to digital governance, guided by the needs of people and firms.'[12]

Case study: How xFarm uses AI to protect farmers' crops

xFarm Technologies is looking to digitalise farming with an AI-enabled app that is helping over 500,000 farmers across 100+ countries manage challenges like unpredictable weather and rising costs. Using AWS capabilities, xFarm processes vast amounts of agricultural data securely, enabling real-time decision-making for farmers. AI plays a crucial role enabling features like disease identification through photo analysis, predictive models for crop protection, and insect monitoring. The tech company aims to expand globally and its collaboration is key to scaling its business and working towards a more sustainable future for agriculture.

xFarm features in AWS Pioneers Project: a spotlight on the pioneers behind Europe's groundbreaking innovations shaping the future of AI.

To read more about xFarm's work, click here

Breaking down the barriers

While the potential impact of AI for European businesses is clear, the path to realising it isn't always smooth. Our research reveals the critical barriers that threaten to slow Europe's AI transformation - but also points to promising solutions.

The regulatory maze

For a startup founder in Munich or a CTO in Paris, navigating AI regulations can feel like solving a puzzle where the pieces keep changing. **44%** of European businesses cite regulatory uncertainty as their primary barrier to AI adoption, with fragmented rules across borders creating particular challenges. The numbers tell the story - regulation and compliance create resistance to AI adoption:

Almost seven-in-ten (**68%**) businesses struggle to understand their responsibilities under the AI Act

Businesses estimate that **40%** of their tech spend goes towards compliance with regulation, a figure which rises to **45%** among startups

59% of startups report delaying AI plans due to regulatory concerns, while those that are uncertain about regulation are planning to reduce their AI investments by **28%** next year

Yet there's cause for optimism. European businesses are broadly supportive of the AI Act's goals, with **71%** believing it will positively impact their business. This shows the challenge is in creating a predictable regulatory environment that is clear and consistent across borders.

The skills emergency

"We have the technology, we have the vision, but we can't find the people to make it happen." This refrain echoes across Europe, with **40%** of businesses citing the AI skills gap as a critical barrier to unlocking the benefits of AI, and **56%** saying it is hindering innovation. Additionally, just **35%** of businesses find it easy to train employees in new digital skills. This shortfall affects both organisations and the broader population, limiting Europe's ability to fully leverage AI's potential.

The impact of the skills gap is clear:

5.5 months: Average time to fill AI-related positions

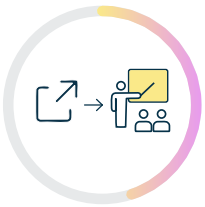
44% of projects delayed due to skills shortages

46% see slower business growth and **53%** find increasing operational costs due to their workforce's level of digital skills

But this challenge is also creating opportunities. Forward-thinking organisations are responding creatively, implementing a range of training initiatives to upskill their staff:

49% are using online learning platforms

48% have set up in-house training programmes



45% report that they are training staff using external training courses

Looking ahead, businesses estimate that **49%** of future jobs will require AI literacy, and **47%** will demand AI expertise within the next three years. As a result, companies are increasingly willing to offer higher salaries to attract skilled talent—by up to **42%** for candidates with strong AI skills. Among startups, this premium rises to **47%**.

The investment challenge

Businesses have leveraged various sources of funding to drive growth, including **59%** who have sought bank loans or lines of credit, **44%** government or private grants, and **37%** angel investors or venture capital. However, for many businesses, especially SMEs , the financial barriers to AI adoption remain significant:

01.

31% of SMEs cite high implementation costs as a major barrier.

02.

Over a fifth (**22%**) of SMEs report that increased access to government grants or funding for AI projects would be helpful in enabling them to adopt the technology.

03.

18% cite the cost of regulatory compliance as a barrier to adoption. Three-quarters of businesses (**75%**) indicate their associated tech spending on these compliance costs has increased in the last three years, and **75%** expect this spending to continue to increase.

Yet those who overcome these barriers see quick returns:

01.

76% find transformative or significant productivity gains.

02.

93% report an increase in revenue.

03.

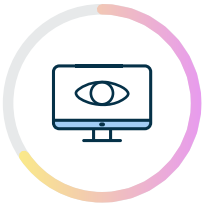
Of those **93%**, businesses find an average revenue increase of **31%**.

The trust factor

While European citizens show growing enthusiasm for AI, concerns remain. **44%** reported that the use of AI in everyday technologies, such as algorithms in social media, streaming platforms, and shopping recommendations made them feel more positively about the technology. However, for just over 1 in 10 (**11%**), this made them view AI more negatively.

This 11% pinpointed specific concerns, including:

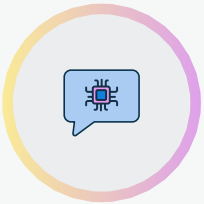
Questions about privacy and data collection (**66%**)



The technology feeling invasive (**63%**)

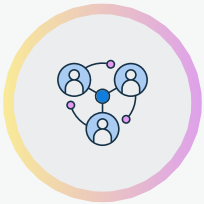
Worries about manipulation or being presented with biassed content (**48%**)

Leading organisations are showing how to build trust through:



Clear communication about AI use

Strong data protection practices



Proactive engagement with stakeholders

This report notes that in order to harness AI's transformative power, these barriers must be addressed head-on. Regulatory clarity, investment in upskilling, increased government support, and fostering consumer trust are all essential to unlock AI's full potential for businesses and society alike. With coordinated action, Europe can position itself as a global leader in AI innovation while ensuring that the benefits of AI are shared broadly, deeply, and equitably.

Unlocking Europe's AI future

Realising the Digital Decade targets can make considerable contributions to enhancing European global competitiveness. Cloud adoption has the potential to unlock an additional $12 trillion in economic value to the global economy by 2030, including $2.6m trillion in Europe, while it is estimated that cloud-enabled AI could add nearly $434 billion to Europe's GDP, presenting a significant growth opportunity.[14] Achieving this requires concerted action across three fronts:

Create a pro-growth regulatory environment that incentivises adoption and innovation

The Single Market remains essential for European competitiveness[15] and startups agree: **48%** of startups that view Europe as competitive cite access to the EU's consumer market as a key factor driving this competitiveness.

Nevertheless, European businesses launching new products or services report that they must navigate a complex web of laws. New regulations (such as the AI Act, the Cyber Resilience Act, and the Data Act, all introduced in the previous three years) can create additional complexity and drive increases in compliance costs.

Businesses report that regulatory uncertainty can significantly impact their growth:

Companies spend **€40** of every €100 in their tech spend on compliance

75% report an increase in their compliance costs since 2022, and **75%** expect these costs to rise through 2027

68% don't understand their roles and responsibilities under the AI Act

However, **over a fifth** of businesses have adopted or plan to adopt AI to automate regulatory compliance, creating opportunities to reduce costs and allow authorities to analyse data at scale more easily. To foster a pro-growth regulatory environment, Europe should:

- Prioritise realising the opportunities of the Single Market, giving startups, scale-ups and innovators access to all 448M Europeans by removing national barriers that contribute to a complex EU regulatory landscape.
- Streamline EU regulations, focusing on unified frameworks, and centralised and harmonised implementation and enforcement, to align regulatory approaches across EU countries and create efficiencies that reduce the cost of compliance.
- Align on common international standards and legal definitions with international partners, driving compliance costs down at a global level, not only in Europe.
- Integrate digital compliance tools with EU policies, building on the "once-only" principle, leveraging the efficiencies technologies can deliver and helping regulators gain insight from compliance data.[16]

Accelerate digital transformation across European industry

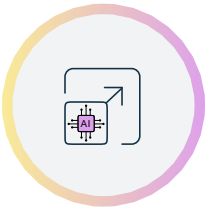
Accelerating digital adoption among businesses will create a virtuous cycle of investment and growth. Businesses who have invested in AI are seeing the benefits: **76%** of AI adopters report productivity gains and **93%** report increased revenues.

Yet barriers to adoption are preventing businesses of all sizes from completing their digital transformation:

- High regulatory costs
- **Almost half** say improved access to financing, including private funding or grants supporting AI uptake, will help them adopt
- **40%** believe a better understanding of how AI can benefit them would accelerate their transformation
- Skills gap – **82%** believe AI skills will be important by 2029, but only **25%** have them

To close these gaps Europe must:

Implement supportive economic policies that widen access to needed capital and act to encourage investment in R&D, incentivising adoption and development of new technologies by European business.



Facilitate access to private sector digital transformation partners through national and European schemes focused on sectors where AI adoption is low, helping companies and industries with scope to scale their AI usage to maximise the value of technology.

Partner employers with educational institutions to build industry-relevant digital skills training for AI and non-AI focused roles, widening the pipeline of working-level AI talent available to European companies.

Turn European governments into leading adopters of digital technology

European citizens want to see investment in digital government services within healthcare (**60%**) and education (**38%**) as priority areas.

While these sectors are often subject to specific national (rather than European) rules that make it challenging to re-use successful solutions pioneered elsewhere, modernising them would both serve public needs and encourage private sector technology adoption:

- **78%** of businesses report that they are more likely to adopt AI following public sector adoption.
- **35%** of startups cite innovation-friendly procurement policies as growth drivers.

To use public adoption and procurement as a lever to support businesses and citizens, European governments must:

01.

Invest in digital renewal of public services, overhauling legacy systems and improving the delivery of services and capitalising on the spin-off effects in the private sector.

02.

Prioritise innovative procurement policies, creating a dynamic market that attracts and deploys the best technologies into national and local governments across Europe.

03.

Create technology test-beds and enable cross-border collaboration, including public-private partnerships specifically designed to drive small-scale, collaborative innovation between EU countries and thereafter sharing ideas to bring new services to European citizens.

To unlock the full potential of AI for businesses, citizens, and public sector organisations across Europe, this report is urging European governments and policymakers to take the above steps. These recommendations are aimed at tackling key barriers to adoption and scaling, and at ensuring the current pace of innovation is maintained.

Conclusion

This report paints a clear picture of Europe's AI landscape in 2024. The pace of change is rapid, with adoption growing 27% in twelve months and nearly half of European businesses now using AI (42%). Yet our research reveals a crucial challenge: while startups are pushing boundaries with AI-driven innovation, many larger enterprises remain focused on basic efficiency gains, creating a two-tier system that could limit Europe's economic potential.

This two-tiered model describes a scenario where AI is adopted broadly across businesses but in many businesses remains concentrated in basic applications, such as automation or chatbots, without advancing to transformative use cases. This would create a stratified ecosystem of AI use, presenting evident risks to Europe's economic and innovation landscape.

Limiting AI to its more basic use-cases restricts economic potential, as businesses miss opportunities for transformative innovation and fail to compete globally with regions like the U.S. and China. This dynamic risks deepening inequalities between large enterprises and SMEs that struggle to secure financing for AI, as well as between tech and non-tech sectors, resulting in an uneven and fragmented innovation landscape.

Two-tiered adoption between large businesses stuck at basic levels and startups who are ready to fully integrate AI also stalls digital transformation, fostering resistance to deeper organisational change and limiting integration of AI into workflows. It stifles talent development by concentrating AI expertise within fewer advanced companies and hindering workforce adaptation to advanced AI skills. Finally, it undermines Europe's long-term AI leadership and innovation, weakening its position as a global AI hub, and risking the erosion of its competitive edge in innovation and investment.

The barriers to deeper adoption are significant but solvable. Regulatory complexity, skills shortages, and investment constraints all need addressing. The examples highlighted throughout this report – from predictive maintenance in manufacturing to AI-optimised agriculture – show what's possible when these barriers are overcome. In alignment with Europe's ambitions to enhance competitiveness during the Digital Decade, a clear path forward emerges. Through the three-point plan set out in this report, Europe can foster an innovation- and business-friendly landscape.

Europe has the foundations for success: strong research capabilities, robust institutions, and growing public support for AI adoption. With coordinated action to address the challenges identified in this report, it can turn these advantages into lasting economic benefits.

Methodology

The fieldwork for this study was undertaken by Strand Partners' research team for Amazon Web Services. This research has followed the guidance set forth by the UK Market Research Society and ESOMAR. For the purposes of this study, business leaders are defined as founders, CEOs, or members of the C-suite in organisations.

'Citizens' are nationally representative members of the public based on the latest available census.

For inquiries regarding our methodology, please direct your questions to: polling@strandpartners.com.

For each market:

We conducted a survey targeting **1,000** businesses and **1,000** nationally representative members of the public.

This survey has ensured representation based on age, gender, and NUTS 1 region.

Additionally, we surveyed **1,000** business leaders, representative by their business size, sector, and NUTS 1 region.

Sampling:

Our sampling process used a mix of online panels that are recognised for their validity and reliability. These panels are carefully curated to ensure diverse representation across various demographics. For the business leaders, the panels are selected with a consideration for organisational size, sector, and position within the company. Our objective with the sampling strategy is to achieve an optimal mix that mirrors the actual distribution of our target populations in the respective markets.

Weighting Techniques:

Post-data collection, we applied iterative proportional weight to correct any discrepancies or over-representations in the sample.

Survey:

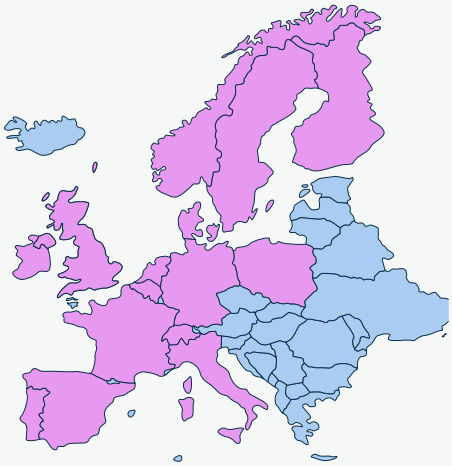
This study was designed with the objective of delving deep into the digital landscape:

Usage Patterns: This survey gauges the evolving patterns of digital technology usage. We are particularly interested in examining the adoption and implementation levels of technologies, focusing on cloud computing and artificial intelligence.

Perceptions and Attitudes: The survey seeks to unearth the prevailing perceptions and attitudes towards digital technologies, understanding the perceived benefits, challenges, and potential ramifications of both present and emerging tech solutions.

Barriers and Opportunities: The survey scrutinises the predicted challenges and potential avenues that both businesses and individuals anticipate on their digital trajectory. This involves pinpointing challenges, from skill deficits to regulatory complications, and recognising opportunities for growth, innovation, and market development.

'Size of the Prize': The survey shed light on the economic repercussions and growth prospects linked with digital transformation. By elucidating the 'size of the prize', we aspire to stress the importance of digital transformation and foster further investments and technology adoption.



Countries:

The countries surveyed were Belgium, Denmark, France, Finland, Germany, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and the UK. Across all these countries, we have surveyed a total of **28,000** respondents, consisting of **14,000** consumers and **14,000** business leaders.

References:

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2. A large enterprise (also referred to as a large business or established enterprise) is a business with 500 or more employees, founded 10 years ago or more.
3. Eurostat: 32 million enterprises in the EU, source: https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20231212-1. 9% of businesses adopted AI for the first time in the past year (33% adopted in 2023, 42% adopted in 2024.) This equates to 5.48 businesses adopting AI each minute.
4. The highest annual increase in global mobile phone adoption occurred between 2007 and 2008. In this period the growth rate in the number of mobile subscribers was 18%. Source: https://stats.areppim.com/stats/stats_mobilexpenetr.htm
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9. Ursula von der Leyen, 'Mission Letter', September 2024, p. 6. Available at: https://commission.europa.eu/document/download/6ef52679-19b9-4a8d-b7b2-cb99eb384eca_en?filename=Mission%20letter%20-%20S%C3%89JOURN%C3%89.pdf
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13. Businesses with 250 employees or fewer.
14. Research from AWS and Telecom Advisory Services: https://www.aboutamazon.com/news/aws/ai-cloud-adoption-economic-impact-gdp-aws
15. As outlined in the Draghi and Letta reports.
16. The "once-only" principle aims to reduce the administrative burden on businesses and citizens by ensuring they only have to provide certain standard information to authorities and administration once. Source: European Commission, 2020, 'The Once Only Principle System,' available at: https://commission.europa.eu/news/once-only-principle-system-breakthrough-eus-digital-single-market-2020-11-05_en