aws Strand Partners

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UNLOCKING EUROPE'S AI POTENTIAL IN THE DIGITAL DECADE

THE PERSPECTIVES OF 30,000 EUROPEAN CITIZENS AND BUSINESSES ON OUR DIGITAL FUTURE

FOREWORD

Unlocking Europe's AI Potential in the Digital Decade

This report is released at a pivotal moment. Europe has set itself the challenge of becoming a digital leader by 2030. This independent study by Strand Partners captures the size of that opportunity. It outlines the positive socioeconomic impact that business leaders and individuals expect artificial intelligence (AI) to contribute to this goal, and the critical issues that need to be addressed for Europe to truly digitally transform.

The €600 billion opportunity:

A third of European businesses have adopted AI, a 32% growth rate since 2022. The report calculates that maintaining this rate of AI uptake could contribute an additional €600 billion in gross value added (GVA)[1] to the European economy by 2030.

This figure, if realised, would bring the estimated total economic impact of tech adoption in the region to €3.4 trillion by 2030, up from 2022's forecast of €2.8 trillion.

The study also captures the widespread optimism that AI technologies can drive positive change. Sixty-five per cent of European citizens anticipate that it will transform healthcare and education over the next five years. Over half believe it will be important in addressing major societal challenges, including climate change and disease control.

At AWS we are proud to work with companies that use AI and cloud technology to tackle some of society's biggest challenges, from reducing diagnosis time for complex brain diseases, to helping sustainable growers tackle food poverty while maintaining biodiversity. These companies are living proof that technology and a spark of innovation can deliver life changing enhancements to society.

Together, we can unlock the power of AI for all.

As we enter a new era of AI, the report lays out the three key actions needed to ensure these technologies are harnessed responsibly for the benefit of all.

Firstly, access to AI capabilities must be democratised so that small businesses and start-ups can reap the rewards.

Amazon is at the forefront of making AI accessible. It's why we launched Amazon Bedrock, making it easier for customers to access multiple leading generative AI models through one easy user interface. It's why we make tools like PartyRock, a generative AI app-building playground that requires zero coding knowledge, open to everyone. And it's why we launched the AWS Generative AI Accelerator, a programme that provides start-ups the support and resources needed to innovate and scale in this fast-paced field.

Second, we must invest in developing digital skills. The report identifies sixty-one per cent of businesses as being held back because they cannot hire staff with the right digital skills. At AWS, we are intentional about lowering the barrier to digital skills education. We offer more than 500 courses and learning resources, many on AI and Machine Learning (ML). At the end of 2023, we made our "AI Ready" commitment to provide free AI skills training to 2 million people globally by 2025.

Third, for the public to trust these technologies, we must ensure they are developed and used responsibly. Amazon believes AI should respect human rights and values like privacy, fairness and equity. We are committed to building fair and accurate services, not technology for its own sake. We know that only by pairing innovation with responsibility can we build the trust necessary to harness AI for the greater good.

With concerted action across these areas, I believe we can usher in a future where AI unlocks new possibilities in a responsible and inclusive way.

At AWS, we've been investing in Europe's digital future since 2007 with billions invested in cloud and edge infrastructure, job creation and some of our most innovative solutions proudly made in Europe. We look forward to continuing to collaborate in Europe's transformation journey. Let businesses, governments and society rally together to envision and shape a Europe with a responsible, sustainable, and prosperous digital future.

I encourage you to dive deep into the report and to be inspired by the opportunity we have in front of us.

Together, let's make this Europe's Digital Decade.

Tanuja Randery
Managing Director,
AWS EMEA

EXECUTIVE SUMMARY

ABOUT THE STUDY

AWS commissioned independent policy and research consultants Strand Partners to conduct representative studies of over 16,000 citizens and 14,000 businesses across the European Union, the UK, and Switzerland.

This research seeks to examine where Europe finds itself on its journey towards realising the European Commission's Digital Decade goals, following the 2022 Unlocking Europe's Digital Potential report by Public First.

This report – the first of its kind released since 2023 – witnessed the rapid and widescale adoption of generative AI and large language models (LLMs). It sets out the ambitious levels of AI uptake among European businesses and citizens.

This report emphasises Europe's position at the precipice of an AI revolution, as businesses and citizens increase their enthusiasm and ambitions for the technology. At the same time, it reveals the gap between the ambitions for digital technologies set by the European Commission's Digital Decade policy programme, which are being transformed by AI, versus the realities of digital skills, supporting infrastructure, consumer confidence, and cybersecurity.

SECTION ONE

EU DATA SUMMARY

In 2021, the European Commission set a series of Digital Decade goals to make Europe a digital leader by 2030. The Digital Decade targets align with four key areas: skills, public services, infrastructure, and digital transformation of businesses.

It seeks to:

Improve citizens' basic and advanced digital skills.

Boost the adoption of infrastructure and new technologies in EU businesses.

Make public services and administration available **online.**

The 2023 European Commission Digital Decade report finds that adoption of digital technologies by European companies is still well below the targets originally set by the Commission, in particular those for the uptake of AI and big data.[2] Under current trends, and without further investment and incentives, the goal of having 75% of businesses using cloud, big data, and AI will not be met by 2030.

Our research is the first large-scale survey conducted among both businesses and citizens on the Digital Decade since the boom in generative AI and LLMs launched a "**year of AI**". This year's edition of Unlocking Europe's Digital Potential focuses on AI and echoes the Commission's Digital Decade findings: the potential of Europe's Digital Decade has never been bigger, but there are significant barriers to overcome that require decisive action.

The generative AI boom has launched a "year of AI" – five key changes in the past year, revealed by this research:

+21% average increase in spending on digital technologies by businesses.

33% of businesses have adopted AI in 2023, compared with 25% in 2022.

50% of businesses say that digital technologies are essential to their business, up from 42% last year.

In 2023, 30% of businesses said that they'd adopted cloud technology, representing a growth rate of +15% from the previous year.

Of those businesses who have adopted cloud technology, 85% say that this technology is crucial to their business, up from 79% in 2022.

Digital capabilities, especially skills, are not keeping pace with expanded ambitions:

Only 22% of businesses say that their business' digital skills have improved in the past five years.

There is little increase in the percentage of businesses who say that they feel confident keeping their data secure (64% in 2023 vs. 63% in 2022).

A small rise in businesses who say that a lack of digital skills has slowed their businesses' growth (35% in 2023 vs. 33% in 2022).

This report, which contains new data from businesses and citizens on the progress of the Digital Decade goals, is more optimistic than the European Commission 2023 Report. It finds that, if we can maintain this accelerated rate of growth from the past year for every remaining year of the decade, **the EU would be on track to meet its target of 75% of businesses using AI, cloud, and big data analytics by 2030**. Achieving this will require decisive action by governments, businesses, and society to overcome the barriers to AI adoption identified in this report.

The Expanding Potential of Digital in Europe

There is growing awareness and uptake of digital technologies, and excitement about their potential benefits among businesses in Europe.[3] Businesses foresee AI improving their productivity (83%), automating tasks and transactions (87%), improving decision-making and analysis (84%), and helping personalise customer experiences (86%).

Our study finds that businesses across Europe overwhelmingly recognise the potential of AI, with over half expecting that AI will positively transform their industry over the next five years. Businesses have shown exponential growth in AI uptake since the beginning of the digital decade, and 38% of businesses say that they are already experimenting with AI. This research considers the accelerated uptake in AI over the past two years, and therefore presents a more ambitious picture of AI uptake compared to the 2023 European Commission report on the Digital Decade. As acknowledged by the Commission, data from its report was last updated in 2021, and therefore fails to account for increased AI adoption in 2022 and 2023.

The current market landscape allows for a diversity of technology, which is crucial for AI adoption. European businesses are currently able to experiment with a range of digital technologies, which powers increased uptake.

Furthermore, those that say they have adopted AI report significant benefits. Seventy per cent of businesses who are using AI say that it has already streamlined their business processes, 75% say that it has increased revenues, and 75% say that AI has stimulated innovation.

Similarly, European citizens strongly believe that AI will positively transform key public services, including education (66%), healthcare (65%), and even fields such as agriculture (56%) and sports and culture (53%) in the next five years.

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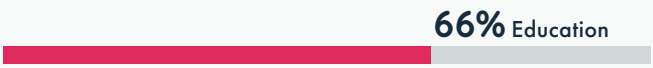
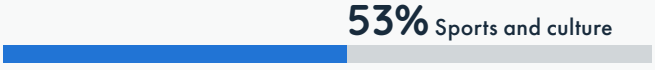




Europe has moved further along the European Commission's 'Path to the Digital Decade.[4] In this report, we build on the 2022 Public First study, which found that only a quarter (25%) of European companies had adopted AI technology. In 2023, this has increased to 33% of European businesses, at a growth rate of 32% (percentage change).

A growing and diverse international market for AI tools and providers is enabling European businesses to experiment with AI through various technology providers. Similarly, the Global Innovation Index 2023 report has noted the importance of international collaboration in driving innovation. Promoting the pooling of resources, knowledge, and expertise will enable businesses to increase their adoption of new technologies and citizens to resolve concerns and increase understanding.[5] The ability to choose the best technology at the best price will also be crucial in increasing AI adoption.

If this accelerated rate of growth (+32% per year) can be maintained on a yearly basis, **the EU would be on track to meet its target of 75% of businesses using AI by 2027.** However, to do so, businesses and governments will need to overcome several obstacles that may slow the uptake of AI technology. This will necessitate investment in digital skills for both technical and non-technical roles, international cooperation to incentivise AI uptake, and maintaining a regulatory framework that provides clarity and certainty to businesses, as well as enabling a diverse range of cloud and AI services to prosper.

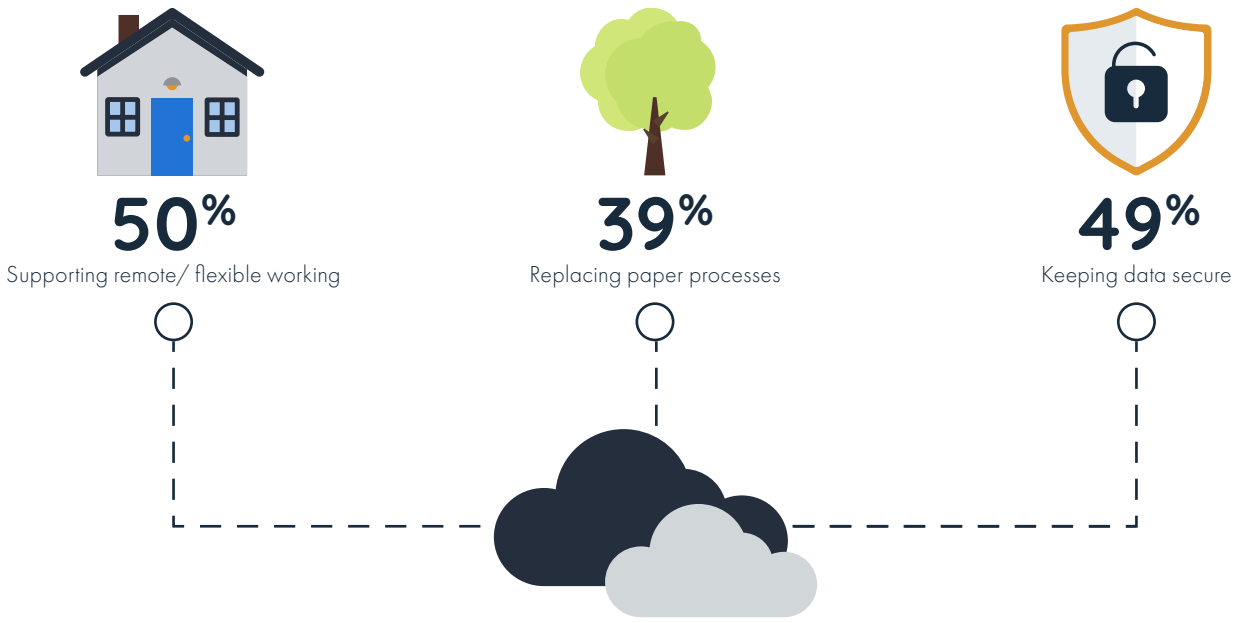
The European Commission 2023 Report similarly notes the importance of close cooperation between EU countries to guarantee collective progress and to accelerate Europe's digital journey. Initiatives such as the Recovery and Resilience Facility, of which 26% of its financial allocation is devoted to the digital transformation, or Invest EU, of which 25% of its financial guarantees are devoted to supporting research, innovation, and digitalisation, showcase the power of international collaboration in advancing innovation and helping overcome financial barriers to technology adoption.[6]

And what does this expanded digital potential mean for Europe? This report demonstrates the economic impact of AI, estimating that faster-than-expected AI adoption could unlock an additional EUR 600 billion on top of Public First's 2022 estimate of EUR 2.8 trillion. In total, this provides a new estimate of the economic impact of Europe's potential of EUR 3.4 trillion if Europe can outperform its AI adoption targets as this study suggests is possible. To put this in perspective, this figure is similar in value to the European construction industry.[7]

To achieve its targets and to unlock this expanded digital potential, Europe will have to work to overcome barriers and maintain current momentum. The biggest single barrier this report notes is digital skills gaps. Despite strong enthusiasm around the aims of the Digital Decade, there are significant gaps in knowledge and capabilities among both businesses and citizens. There is a mixed and sometimes vague understanding of the specific opportunities AI presents, and the extent to which it is underpinned by cloud computing. Half (50%) of European citizens are confident that AI will create more opportunities than risks regarding job security and the future of work. However, if Europe is to reap the benefits of this new decade, we must ensure that everyone is equipped with the right tools.

A Foundational Technology: Successful Cloud Adoption at the Heart of Raised Ambitions

Cloud technologies form the crucial foundation for the further adoption of digital and AI technology. The cloud underpins the LLMs that power generative AI programmes and provides the storage capacity that permits Europe's AI ambitions to grow. Europe's digital ambitions are thus being driven by the cloud. In addition to providing the basis for AI adoption, businesses in our report also noted that cloud technology facilitates important business functions, such as supporting remote and flexible working (50%), keeping data secure (49%), and replacing paper processes (39%).[8]



Further studies have marked the importance of cloud technology as a foundational technology to AI adoption, predicting that 70% of companies obtaining AI capabilities will do so through cloud-based software, while 65% of AI adopters will create AI applications using cloud-based development services.[9] This research further highlights that cloud technology is driving accelerated uptake in the Digital Decade, with 39% of adopters reporting that it has enabled them to digitalise systems, 25% noting that it has enabled them to automate existing business processes, and 17% stating it has helped them to develop new types of digital applications. In 2022, the Public First report found that a quarter (26%) of European companies had adopted cloud computing services – a significant distance from the EU's target of 75% by 2030.

In 2023, 30% of businesses reported that they'd adopted cloud technology, representing a promising growth rate of +15% compared to last year's research findings. Seventeen per cent of businesses also stated that cloud computing technology was the digital technology they were most likely to adopt in the near future.

If this high rate of growth of +15% business adoption of cloud technologies per year can be maintained, a supportive environment for AI expansion would be established, overcoming a crucial hurdle to help the **EU to meet its target of 75% of businesses using AI by 2030.**

Overcoming Europe's Digital Skills Dilemma

While it raises its digital aspirations, Europe finds itself facing a **digital dilemma: how to realise its expanding ambition in the face of multiple adoption barriers, most notably, overcoming the existing gap in digital skills.** Many European businesses have increasingly ambitious goals for their digital transformation, but these ambitions for technological change are fast outpacing current capabilities, as businesses struggle to both hire and train employees with good digital skills. In other words, businesses cannot keep up with the level of change and opportunity that digital technologies offer and will struggle to fulfil their own digital ambitions.

Digital skills are crucial for meeting ambitious targets. Digital skills play an increasingly important role in the growth and daily operations of European businesses. Sixty-five per cent of European businesses currently see digital skills as critical to their daily operations, and this is only set to increase. Two in three (67%) business leaders say that their business' digital skills levels have improved in the past five years, while the same number (67%) predict that in five years' time a candidate's digital skills will be more important than their university when it comes to hiring.

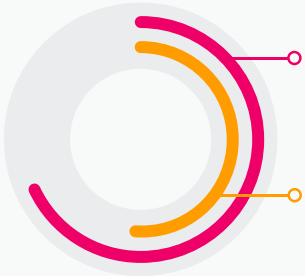
Yet large gaps remain. Despite the perceived importance of digital skills, fewer than one in five (19%) European businesses say that it's easy to find new staff with the right skills. Those businesses who find it difficult to hire spend over six months on average to find an employee with the appropriate digital skills. More than half (51%) of all businesses also report that basic digital skills are still lacking in their organisation.

Overall, businesses report an inability to find the right digital skills is the primary barrier to their adoption of new technologies. Nearly half (44%) say that difficulties hiring new staff with the right skills is holding them back and almost one in three (29%) say that a lack of digital skills is impacting business growth.

Reflective of high levels of experimentation, around one in five (17%) businesses can currently see a clear problem in their business that AI can potentially solve. This drops to just 9% among businesses with a skills gap for basic digital skills but rises to 24% for businesses who can fill these gaps. In short, the existence of a digital skills gap within businesses presents major barriers to AI adoption. This underscores a critical point: to take advantage of the newer solutions that technologies such as AI can offer, training in basic skills must be increased.

The EU is set to fall 8 million short of the European Commission's target to have at least 20 million people employed as ICT specialists by 2030.[10] This study indicates that citizens have high expectations for digital services, yet this deficit could hinder governments from meeting their demands. Similarly, businesses might struggle to achieve their digital goals, potentially missing out on the economic, innovation, and productivity gains that technologies like AI promise to deliver.

This study therefore suggests that **a digital skills gap is holding back businesses across all levels of the workforce**, from basic digital skills to advanced AI skills. There is a clear divergence between AI's aspirational potential and current opportunities for successful uptake.



65% of European businesses see digital skills as critical to their daily operations

51% of all businesses report that basic digital skills are lacking in their organisation

Consumer Uncertainty: Balancing Promise with Concerns

The promise of AI is compelling to most consumers and professionals, but some concerns remain over potential negative implications of the rapid development and deployment of these technologies.

European citizens believe that AI will have a positive impact on a range of areas that affect their everyday lives. Over half (58%) believe that AI will have a positive effect on day-to-day tasks and 50% believe it will have a positive impact on safety and security.

European citizens can also envision the promise of AI in their professional lives, especially through:

Automation of repetitive tasks **(38%)**

Improvement of decision-making and analysis **(26%)**

Increasing productivity **(25%)**

Half (50%) of European citizens are confident that AI will create **more opportunities than risks** in regard to job security and the future of work. Indeed, for businesses that have taken the leap, investing in digital technologies has resulted in significant benefits: 70% of businesses who are using AI say that it has already streamlined their business processes, 75% say that it has increased revenues, and 75% say that it has stimulated innovation. These figures underscore the substantial rewards awaiting those equipped with the capabilities and competencies to navigate the digital landscape.

However, the report shows that some citizens would like greater clarity on the decision-making process behind AI.

These findings indicate the importance of addressing questions over the impact of AI and other emerging technologies on the future of work and societies. Governments, businesses, and wider civil society must work towards building public trust in AI. To bring European citizens on the Digital Decade journey and support mainstream adoption of AI, governments will need to continue to expand their investment in digital skills training in businesses, schools, and among citizens in general. By upskilling citizens and increasing awareness of responsible AI, Europe will be able to provide its consumers with greater confidence in these technologies, enabling Europe to fully unlock the potential benefits they offer.

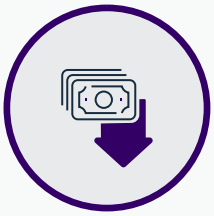
Unlocking Ambitions

This report seeks to highlight the financial, regulatory, internal, and social obstacles that threaten to hinder the full realisation of Europe's digital potential, while spotlighting the enthusiasm and ambitions surrounding AI. Additionally, it offers suggestions for both businesses and governments seeking to overcome these obstacles to fulfil Europe's digital aspirations and resolve its digital dilemma.

In line with the findings of this study, opportunities emerge for governments, businesses, and citizens to meet the ambitions of the Digital Decade, specifically to:

Invest in digital skills training for businesses and citizens. As our study has shown, there are insufficient digital skills within the current workforce, with businesses struggling to source new employees with the necessary digital capabilities. It also found that 56% of citizens learn most of their digital skills through independent learning, while a further 36% of citizens reported that their businesses offer no form of skills training or support. This calls for the delivery of well-funded training programmes that align with industry demand and that can empower citizens and businesses to use the digital tools best suited for their needs. There is an imperative for strong collaboration between businesses, governments, and educational institutions to develop digital skills training programmes that match the ambitions of the Digital Decade and that are tailored to the needs of different groups.

Address legal and regulatory uncertainties. Our research revealed regulatory and legal uncertainty regarding the use of AI technology as the second-most significant obstacle to tech adoption for businesses. Businesses and citizens desire a supportive and risk-based regulatory environment, which incentivises international collaboration and innovation around digital technologies like AI and cloud. A stable marketplace, supported by a principle-based and open regulatory framework, provides the best basis for increasing technological experimentation and adoption. Allowing for an open and secure environment with a diverse range of digital technologies could result in increased digitalisation, including AI adoption, with choice enabling companies and citizens to access the best technologies and providers to compete.



Tackle financial concerns. Limited budgets and resources can stand in the way of businesses adopting digital tech that can help them achieve their goals. When considering the adoption of AI and other emerging technologies, one in five (20%) cite high costs as a key barrier. Financial concerns also exist in digital skills acquisition – for example, 45% of citizens say that the cost of training programmes is a barrier to learning the digital tools they need. Whether for accessing digital skills or building digital capacity, these findings suggest the need for new thinking on ways to support democratising access to innovative technologies, enabling businesses to access and build around the best technology at the best price. As also revealed in this study, financing to expand skills and training and to reduce the burden faced by learners should be priorities for funding schemes.

Raise awareness and educate consumers on responsible AI use. Consumer understanding and confidence are pivotal for the successful adoption of new technologies, particularly AI. **While there is increasing experimentation with AI, our study shows that 35% of citizens don't understand the decision-making process behind AI, which contributes to public concerns about the technology.** Businesses and governments should collaborate to elevate public awareness and knowledge of AI's benefits and possibilities while emphasising the feasibility of implementing responsible usage. Empowering consumers and businesses with the necessary information and working within principle- and risk-based regulatory frameworks are essential to develop trust and to ensure responsible AI adoption during the Digital Decade.

Promote international and multi-stakeholder cooperation on AI to ensure interoperability. To foster the responsible development of AI, enhanced cooperation between governments, businesses, citizens, academia, and other stakeholders across borders is needed. Collaboration between public and private sectors can promote cutting-edge innovation in AI while developing guardrails to mitigate risks. Academic and civil society engagement ensures AI solutions reflect shared values and human rights. A diversity of perspectives will lead to more robust, inclusive, and equitable AI systems. International collaboration early on will build trust and prevent fragmentation in the nascent AI landscape.

Preserve customer choice. As the market for cloud services and AI capabilities advances, maintaining customer choice should be a priority. Customers should have the ability to choose between cloud providers based on factors like security, scalability, carbon footprint, and cost efficiency. In the emergent generative AI foundation model market, preserving choice empowers customers to select AI vendors aligned with their specific needs. With choice among cloud and AI providers, businesses will be best placed to realise the benefits of these transformative technologies.

These suggestions serve as guidelines on how businesses and regulators can collaborate to navigate the challenges and opportunities presented by new and emerging technologies. By investing in digital skills, addressing legal and regulatory uncertainties, providing financial support to enhance adoption where needed, and promoting responsible AI use, Europe can harness its full digital potential and lead the way in the transformative Digital Decade ahead.

The outcome of the current gap between ambition and capabilities will determine the trajectory of Europe's Digital Decade and the outcome of Europe's bold digital agenda.

CASE STUDY:

Growy: Overcoming the Digital Dilemma

A Case Study of How Cloud Computing is Helping Businesses in Europe To Unlock Its Digital Potential

- Over half (52%) of citizens see AI as important to tackling big societal issues like climate change.
- Despite some scepticism, the majority of citizens are optimistic about the future of AI. One area in which citizens are convinced about its transformative power is agriculture, with over half (56%) expressing this belief.

Growy exemplifies the transformative impact of AI in agriculture. As a Netherlands-based start-up, Growy operates vertical farms where robots tend to the plants. The company – based in the heart of agricultural science in the Netherlands, Wageningen – has developed an automated vertical farming system called Growy Cube that uses hydroponics. The Growy Cube uses LED lights, sensors, cloud software, robotics, and AI to optimise growing conditions. It monitors factors like temperature, humidity, CO2, etc. in real time. The cubes are modular and can be linked together. Growy claims each module can grow the equivalent of 1 hectare. The technology aims to improve yields, reduce resource use, and allow year-round production.

Key Features:

- **Robots at Work:** Robots equipped with advanced cameras and IoT sensors closely monitor plant health. They analyse water intake, growth rates, and nutritional needs.
- **Valuable Data Points:** These tech-savvy robots gather over a million pieces of data annually. This isn't just for efficiency; it's to truly understand and optimise plant health and growth.
- **Quality Produce:** Armed with this vast amount of data, Growy ensures that their plants aren't just grown but nurtured. The result? Plants that not only look but also taste superior.
- **Global Expansion with Cloud:** Growy's innovative use of cloud technology makes launching new farms a breeze. Each farm, regardless of its location, connects back to a central cloud system, ensuring consistent quality and care.

Key Advantages:

- **Continuous Care:** Robots, working round the clock and backed by cloud data, ensure plants always receive the care they deserve.
- **Data-Driven Excellence:** Every decision at Growy is backed by data, leading to continuous improvements in plant quality.
- **Quality and Efficiency:** Growy's technology ensures that every plant gets the best possible care.

As Growy expands, its need for a reliable and scalable infrastructure will only increase. Using cloud computing, the company can focus on its innovative agricultural methods instead of IT maintenance.

Here are some of the ways that cloud computing is helping Growy to embrace AI:

Cloud computing allows Growy to automate its farming operations, reducing the need for manual labour. This frees up the company's employees to focus on more skilled tasks, such as developing and deploying AI applications.

Cloud computing provides a scalable and reliable infrastructure for Growy. This ensures that the applications are always available and that they can handle the increasing amounts of data that Growy's robots are collecting.

Cloud computing makes it easy for Growy to collaborate with partners and suppliers around the world. This allows Growy to share data and insights, and to develop new AI applications more quickly.

SECTION TWO

KEY FINDINGS

1 Over a third of businesses are experimenting with AI, and a majority of businesses predict that AI will have a transformative impact on their industries.

70% of businesses who are using AI say that it has already streamlined their business processes, 75% say that it has increased revenues, and 75% say that AI has stimulated innovation.

Our research shows a clear acceleration in these trends: 77% of businesses that are using AI tools have adopted these technologies for the **first time** in the past four years.

The future of AI:

- **56%** of businesses think that AI will largely or entirely **transform their industry** in the next five years.
- Businesses predict that their AI usage will **significantly increase** in the next year; **67%** of those who know about AI expect to be consistently using at least one AI tool, up from the 25% which currently use at least one.

2 Excitement around AI is also reaching citizens – a clear majority believe that AI will transform key public services, large swathes of the economy, and even their daily lives.

European citizens believe that AI will positively transform key public services including education (66%), healthcare (65%), and even fields such as agriculture (56%) and sports and culture (53%) in the next five years.

Education: **66%**

Healthcare: **65%**

Agriculture: **56%**

Sports & culture: **53%**

Over half of citizens (51%) think that AI will positively impact their day-to-day life within the next three years.

3 AI is underpinned by cloud technology, which businesses report as increasingly foundational to their digital ambitions.

- Cloud computing technologies have become more important for over half (52%) of businesses in the past year.
- Businesses report that cloud technology enables key business functions, such as supporting remote/flexible working (50%), keeping their data secure (49%), and replacing paper processes (39%).

4 With increased ambitions for technology, Europe's businesses are attempting to expand their digital capabilities, especially digital skills within their organisations.

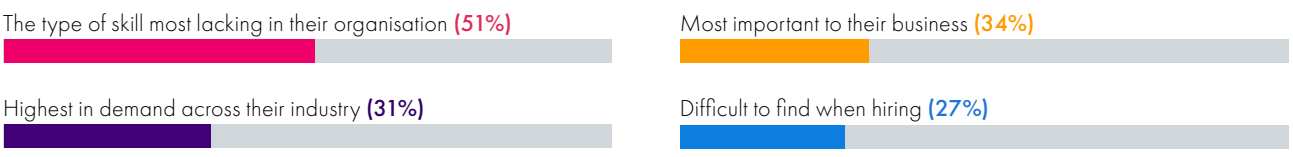
Three-quarters (75%) of businesses report that digital skills are important to the running of their businesses.

Over 2 in 3 (67%) of businesses stated that when hiring for most roles in five years' time, the candidate's digital skills will be more important than their university qualifications.

Less than 1 in 5 (18%) of businesses find it easy to find new staff with satisfactory levels of digital skills, which is linked to 65% of businesses now offering regular or occasional digital skills workshops or training programs for their employees to supplement hiring.

5 Businesses identify insufficient digital skills as a major factor holding them back from adopting more digital technology, while citizens lack understanding of AI and cloud computing.

- 27% of businesses reported that insufficient digital skills were a major factor holding them back from fully utilising digital technologies.
- 44% of businesses reported that sourcing new employees with the requisite level of digital skills was holding them back from using digital technologies.
- Simple digital skills, such as editing documents and creating spreadsheets, were selected by businesses as:



- Despite being a key enabler of the AI revolution that has drawn so much interest, only 7% of citizens say that they are very familiar with cloud computing, with 42% stating that they have not heard of it.
- 45% of citizens stated that they had heard of the concept of artificial intelligence but did not know what it meant and only 10% of citizens said they had an advanced understanding of generative AI.

SECTION THREE
EUROPE RAISES ITS DIGITAL AMBITIONS

Europe is raising its digital ambitions. Businesses and citizens across the continent are increasingly enthusiastic about the potential of using emerging digital technologies to address some of the most pressing challenges facing Europe, from climate change to economic growth.

Consumers are increasingly embracing new technologies and see both digital technology and digital skills as key to the success of future generations.

- **61%** of European consumers feel enthusiastic about embracing new digital technologies. Only **18%** say they are unenthusiastic.
- **48%** of European consumers say they have grown more enthusiastic about embracing new digital technologies over the past year, while only **13%** have grown less enthusiastic. This enthusiasm is driven by the release of AI chatbots, with **64%** saying they currently use similar kinds of technology in the workplace.
- **39%** of European consumers anticipate increasing their spending on digital technologies in the next three years. Only **17%** believe their spending will decrease.
- **61%** of European consumers think it is important for their children, or for future generations, to learn how to program.
- **45%** of citizens are actively seeking to improve their digital skills and **30%** see a need for them to do so in the near future.
- **55%** of European consumers would be interested in participating in digital skills training offered by educational institutions or online platforms.

The adoption and scope of public sector digitalisation have both increased, with a majority of consumers now saying that their government has done a good job at taking advantage of digital technologies.

54% of European consumers have used a website or app to pay taxes or a fine.

39% have used one to access medical records.

38% to renew a passport or driving licence.

- The majority (**57%**) of European consumers find their government websites and apps easy to use.
- **76%** of European consumers feel confident about being able to find information on their government's website or apps.
- On average, **87%** of European consumers found government websites and apps helpful when carrying out tasks including paying taxes, proving identity, accessing medical records, renewing passports or driving licences, applying for benefits, voting in elections, and registering to vote.
- **52%** of European consumers think their governments and public services do a good job at taking advantage of digital technologies.

While the Digital Decade has seen a proliferation of government-based websites making public sector services available online, European governments will need to raise ambitions to ensure the Digital Decade target of making 100% of key public services available online remains relevant as the Decade progresses.

While citizens are increasingly using online public services, there is clearly still room for growth. Fifty-six per cent of European citizens believe that there is significantly more their government could do to make it easier to access public services through digital technologies. Based on these findings, there is clearly room for advanced technologies such as cloud and AI to expand access and foster greater ambition in the capabilities of online public services. While the 2030 target in principle is within reach, citizens' desires and enjoyment in using public services online means that the capabilities of public sector digitalisation must keep pace with innovations experienced elsewhere for the target to remain relevant.

Initiatives such as Denmark's 'Mit ID', a national digital ID that is primarily used through an app, highlight further steps governments can take to harness digital technology to provide online public services.[11]

Familiarity with next-generation technologies such as AI is strong among a minority of citizens.

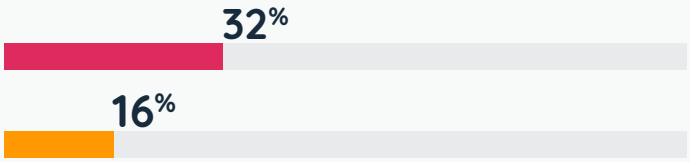
20% of European consumers are familiar with generative AI and its potential applications, while a further 48% are somewhat familiar with this technology.

When given the definition, 34% of European consumers believe that generative AI will have a significant impact on the way people in their country live their personal and professional lives, while a further 45% think there will be some impacts, but not transformative ones.

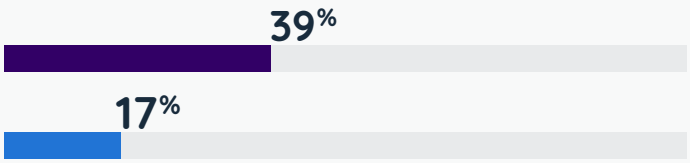
European Businesses and Citizens Are Optimistic About the Future of Digital Technology

Our survey of businesses and citizens in Europe found that there is a strong belief that digital technology can be used to address some of the most significant challenges the continent faces, from climate change to economic growth.

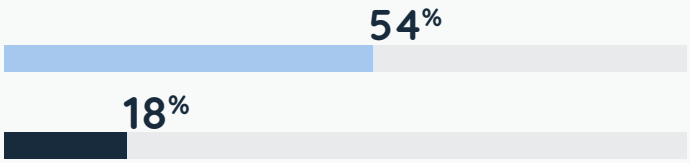
The survey found that businesses are becoming more enthusiastic about embracing new digital technologies.



In the past year, 32% of businesses said they became more enthusiastic about digital technology, while only 16% said they became less enthusiastic.



Businesses are also planning to increase their spending on digital technology products and services in the next three years. Thirty-nine per cent of businesses said they plan to increase their spending, while only 17% said they plan to decrease it.



Citizens are also generally positive about the future of digital technology. Fifty-four per cent of citizens think the current pace of innovation or change in digital technology is about right, while only 18% would like it to be faster and, similarly, only 18% would like it to be slower.

Europe's citizens are ambitious when thinking about the impact technology can have on the future of the continent. **Our survey found that citizens believe that AI will have a transformative impact on many industries, especially healthcare, education, transportation, entertainment, retail, manufacturing, agriculture, finance, and sport and culture.**

Overall, this study suggests that most European businesses and citizens are optimistic about the future of digital technology, but there are critical challenges to adoption that need to be addressed. With careful planning and implementation, digital technology can be used to create a more prosperous and sustainable future for all, but it is imperative to ensure that it is used in a responsible way that benefits society as a whole. Concerns around AI in particular need to be addressed by emphasising the role of responsible AI and highlighting the potential for job and economic growth presented by AI technologies.

CASE STUDY:

NeuroPro: How Digital Tech is Improving the Diagnosis of Brain Diseases

NeuroPro is a Swiss-based digital health company that is using digital technologies to improve the diagnosis of brain diseases. The company's VMLpro platform, which is hosted on AWS, provides physicians with access to the data and tools they need to diagnose patients quickly and accurately. Increasing the speed and accuracy of diagnostics has the potential to revolutionise healthcare. Over half of Swiss citizens (58%) think AI will transform the health sector in the next five years.

VMLpro uses a variety of digital technologies, including:

- **Cloud Computing:** AWS provides VMLpro with a scalable and reliable infrastructure for the platform.
- **Machine Learning:** VMLpro uses machine learning to analyse data and make predictions about brain diseases.
- **Artificial Intelligence:** VMLpro uses artificial intelligence to automate tasks and improve the accuracy of diagnoses.
- **Virtual Reality:** VMLpro uses virtual reality to allow physicians to visualise patient data and make diagnoses.

These digital technologies have enabled NeuroPro to raise its ambitions in a number of ways.

- **Reduce the time it takes to diagnose brain diseases:** VMLpro can process large volumes of data in real time, so physicians can reach a diagnosis faster.
- **Improve diagnostic accuracy:** VMLpro uses machine learning and artificial intelligence to analyse data and make predictions about brain diseases. This helps physicians to make more accurate diagnoses.
- **Increase the availability of diagnostic services:** VMLpro can be used by physicians anywhere in the world, so patients have access to diagnostic services regardless of their location. AWS also enabled NeuroPro to comply with data security regulations in a range of different countries.
- **Empower patients:** VMLpro gives patients access to their own data, so they can be more involved in their own care.
- **Advanced research:** VMLpro can be used to collect and analyse data from a large number of patients, which can help researchers to better understand brain diseases.

NeuroPro is a great example of how digital technologies can be used to improve healthcare. By using digital technologies, NeuroPro has been able to provide patients with faster, more accurate diagnoses and improve the availability of diagnostic services.

Here are some additional details about how digital technology has enabled NeuroPro to raise its ambitions:

- NeuroPro is able to collect and store large amounts of data about brain diseases. This data can be used to train machine learning models that can help physicians to make more accurate diagnoses.
- NeuroPro can develop and deploy a range of new diagnostic tools and technologies. For example, virtual reality can be used to allow physicians to visualise patient data and make diagnoses.
- An online digital platform has made it possible to collaborate with partners and suppliers around the world. This has allowed NeuroPro to get access to the expertise and resources it needs to develop new diagnostic technologies.

SECTION FOUR

THE BARRIERS AND CHALLENGES TO UNLOCKING EUROPE'S DIGITAL POTENTIAL

1 Skills

Although businesses are excited about the potential of AI and are increasing their experimentation with AI technologies, only **17%** of European businesses can point to a specific day-to-day friction or problem that AI could solve, and this falls to **9%** among businesses who say that they have a skills gap. This skills gap has negative effects on the economic revenues of businesses as jobs become difficult to fill. Research by the OECD suggests that skills shortages are particularly common among high-skilled positions such as in management, healthcare, education, or ICT sectors.[12]

Almost half (**44%**) of European businesses consider difficulty sourcing new employees with the desired digital skills to be a barrier to digital technology positively impacting their business. A further **27%** consider insufficient digital skills within the current workforce to be a barrier. The 2023 annual Eurochambres economic survey reaffirms that the lack of skilled workers is an ongoing and growing issue for businesses. Heightened concerns around employment are compounded by skill mismatches, which become accentuated when companies seek to embark on green and digital projects.[13]

Our research further demonstrates how the skills gap impacts upon businesses' ability to adopt digital tech; **28%** of European businesses cited a lack of skills within the business as a barrier to increasing their adoption of AI. This inhibits their ability to meet targets and support their growth.

Indeed, it is already the case that **65%** of European businesses currently see digital skills as business critical to their daily operations.

Two in three (**67%**) business leaders predict that in five years' time a candidate's digital skills will be more important than their university degree qualifications when it comes to hiring. As such, the digital skills gap will have increasing relevance for employees in the coming years. Despite the acknowledged importance of skills, this is not yet reflected in the digital skills training programmes currently on offer. **Fifty-six per cent** of European citizens learnt most of their digital skills through independent research, and 42% learnt through trial and error. There is therefore a clear lack of support in filling the skills gap.

Research conducted by Gallup, commissioned by AWS, found that the average worker with advanced digital skills in high-income countries reported earning **50%** more than similar workers who do not use digital skills – this rose to **72%** more in middle-income countries.[14]

By limiting businesses' ability to adopt digital technology, the skills gap inhibits the growth of business and high-skilled sectors. There is still a fallacy held by some businesses that increased tech adoption and automation will necessarily result in a lack of jobs. However, as demonstrated by the case studies showcased in this report, digital technology adoption can pave the way for more and higher-skilled jobs. For instance, Cardiomatics' use of AI to read ECGs signals improves diagnostic accuracy, enabling cardiologists to focus on treatment while cloud improves security and confidentiality.

65% of European businesses currently see digital skills as business critical to their daily operations.

Almost half (44%) of European businesses consider difficulty sourcing new employees with the desired digital skills.

28% of European businesses cited a lack of skills within the business as a barrier to increasing their adoption of AI.

CASE STUDY:
Cardiomatics

Cardiomatics: Transforming Patient Care with Cloud, AI, and Machine Learning

- 46% of citizens think that AI will have a positive impact on healthcare.
- 80% of businesses think that AI will transform healthcare in the next five years.

Cardiomatics is a Polish healthcare startup and AWS customer that uses cloud-based AI technology to analyse ECG signals with greater speed and accuracy than cardiologists. By transforming diagnosis with machine learning and AI, Cardiomatics can revolutionise patient access to healthcare.

Core Features:

- **Accurate and Fast:** Cardiomatics is Certified as Medical Device Class IIa (through Medical Device Regulation – MDR)[15] certification so that professionals can use it for high-precision diagnostics, and quickly: Cardiomatics reduces the diagnosis time by up to 80% compared to manual methods.
- **Secure:** Cardiomatics employs secure cloud technology to safeguard patient data and diagnostic information. This data security enhances patient confidentiality and ensures the privacy of sensitive healthcare information.
- **Powered by AI:** Cardiomatics uses AI algorithms and has processed an extensive dataset of over 6 million hours of ECG recordings.

Key Advantages:

- **Accuracy:** Cardiomatics is classified as a CE-marked medical device, harnessing algorithms that have analysed large datasets. The effectiveness of Cardiomatics algorithms has been validated in clinical trials and ensures high accuracy.
- **Fast ECG Analysis:** Cardiomatics reduces the time of ECG analysis by up to 80% and facilitates diagnosis of more patients. Its speed outpaces manual analysis and offers a cost-effective solution.
- **User-Friendly:** The Cardiomatics software was specifically developed with digital technology to offer an intuitive interface and easy-to-read ECG reports. Thanks to cloud connectivity, Cardiomatics is accessible anytime and anywhere with a web browser. As a hardware-agnostic platform for arrhythmia diagnostics, the technology is compatible with more than 25 common ECG recording devices enabling further accessibility.

How AI and cloud technologies have helped Cardiomatics raise its business ambitions:

- AI technology has provided Cardiomatics with a new and unique model to disrupt traditional cardiology healthcare methods. They are the only company that deploys this type of software in clinics with ECG experts.
- Cardiomatics has provided support to clinicians by increasing the flow of information and increasing the speed and quality of the diagnostic process. This gives them the tools to provide high-quality healthcare to their patients.
- Cloud computing enables high levels of data security and privacy, which means Cardiomatics can offer their products to support healthcare institutions.

2 Legal and regulatory uncertainties

The rapid recent advances in digital technological change have made it difficult for legal frameworks to adapt and keep pace. The regulatory framework at the European level has also undergone significant revision or expansion. Data compiled by Bruegel suggests that around 80 new legislative initiatives with relevance for the adoption of digital technologies have been adopted since 2019.[16] As a result, businesses face difficulties understanding how new regulatory requirements apply to them and how best to implement guidance issued from national governments. Businesses are more likely to experiment and innovate in a regulatory environment with lower administrative and compliance costs, which incentivises digital growth and adoption. This does not always match the broader EU discourse or wider goals, but due to the rapidly evolving technological landscape, the lack of flexibility in newly conceived regulation becomes quickly outdated.

Our study found that **21% of European businesses** cite compliance and legal uncertainties related to digital technology to be a barrier to the impact of digital tech on their business. This causes tangible frictions in businesses' ability to choose the right tools. When asked about their future investment plans, businesses that identify compliance and legal uncertainties as a barrier to the adoption of digital technologies report **24%** less tech investment over a one-year horizon and **48%** over a three–year horizon.

With **21%** of businesses being held back from further adoption by compliance and legal uncertainties, there are three areas we've identified that can hold back adoption:

a. New regulations can create uncertainty and delays in uptake, which can deter the collaborative efforts required for startups and scaleups experimenting with digital technologies such as AI to grow rapidly.

b. Existing regulations are not always updated, with significant missed opportunities to simplify and digitalise. As highlighted by the OECD, regulatory frameworks are not always agile enough to accommodate the fast pace of innovation and, consequently, existing rules become outdated and no longer relevant.[17]

c. The overall regulatory burden can create significant frictions and uncertainties for businesses. The European Commission has recognised the need for regulatory policy to be responsive to the needs of European businesses. At her 2023 State of the Union address, Commission President von der Leyen committed to setting out a comprehensive legislative approach to AI, noting 'We want to hear directly from small and medium sized businesses, about their everyday challenges. And next month, we will make the first legislative proposals towards reducing reporting obligations at the European level by 25%.'[18]

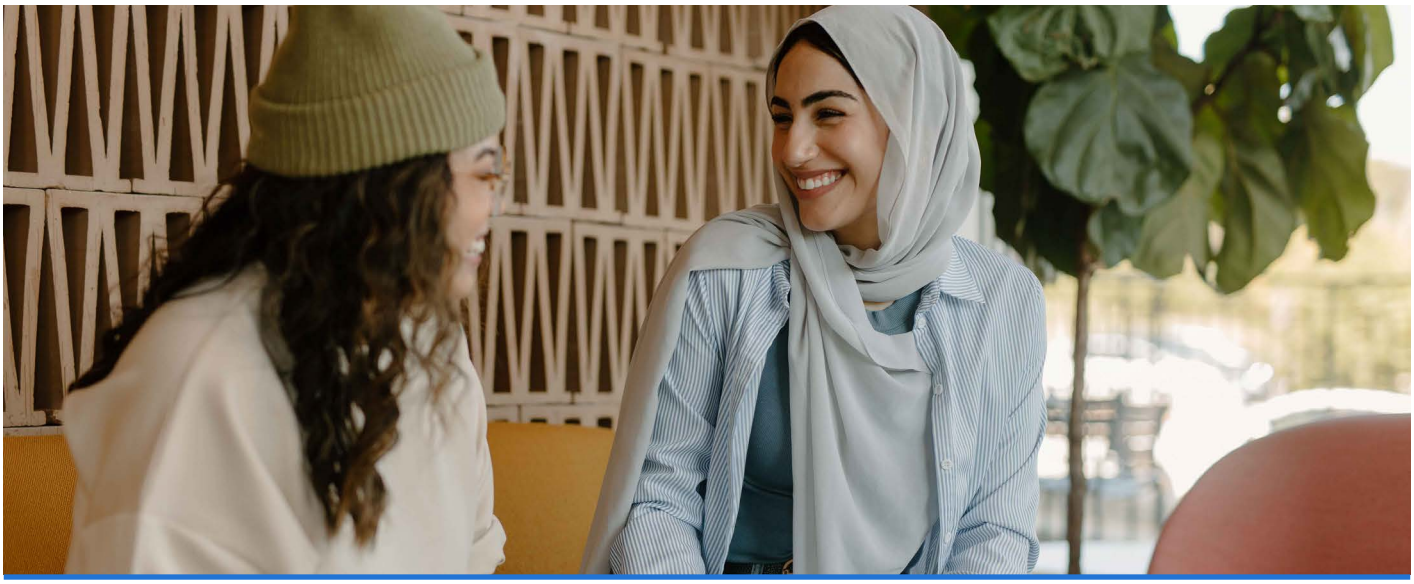
3 Finance

A third (**33%**) of European businesses believe that the cost of implementing digital technologies is a significant barrier to adoption.

Although businesses foresee an increase in their investment in digital technologies (**60% over the next three years**), finances remain a significant barrier to a number of businesses, in particular micro-SMEs. With fewer in-house capabilities to rely on, smaller businesses must have access to financing and to the right expertise. Accounting for over a third of the value added by SMEs to the European economy in the last year, it is imperative that this large segment of the business community be included in measures to achieve the Digital Decade goals.[19]

Additionally, **45% of European citizens** view the cost of training programmes as a significant barrier preventing them from acquiring new digital skills. Considering the number of businesses who seek to hire workers with an established set of digital competencies, training and education must be available to individuals at all stages in life.

This study notes that for all businesses, but particularly micro-SMEs, addressing financial barriers is essential to foster wider digital adoption and participation.



4 Consumer knowledge and confidence

A lack of consumer knowledge and confidence in emerging digital technologies remains an important barrier that is hindering Europe from unlocking its digital potential.

Knowledge gaps are evident as:

Only 1 in 5 (19%) of European citizens are very familiar with the concept of cloud computing.

While a further **28%** have heard of the concept but do not know what it means.

44% had not heard of the concept.

This is compounded by the lack of awareness around advanced technologies. **Twenty-nine per cent** of European citizens are very familiar with the concept of AI, while a further **45%** have heard of it but do not know what it means, and one in five (**20%**) said they had not heard of AI. Only **10%** of European citizens claimed an advanced or very advanced understanding of generative AI.

Ultimately the vagueness surrounding the concept of AI is a double-edged sword: it promotes great excitement and deep uncertainty.

Indeed, while our research showed the enthusiasm for AI in automating routine tasks and its application to big societal challenges, there are also worries about its future development.

Although citizens report some concerns about AI's impact on jobs, emerging research has shown that AI can be harnessed to drive job growth. The 2023 World Economic Forum Future of Jobs Report estimates that the impact of most technologies on jobs is expected to be a net positive over the next five years, with AI specifically expected to have a 25.6% net positive effect on job growth over the next five years.[20] Furthermore, the use of AI to automate repetitive basic tasks will enable employees to focus on more high-value, creative work.

Addressing these concerns is paramount to unlocking the digital ambitions of the decade ahead.

SECTION FIVE
Unlocking Digital Ambitions

The European Commission has set out ambitious targets for unlocking the potential of the Digital Decade. By 2030, **75%** of EU companies must be using cloud/AI/Big Data, and more than **90%** of SMEs must reach at least a basic level of digital intensity. These are crucial goals if we are to truly reap the benefits of emerging digital technologies. Yet, as this research shows, key capabilities like digital skills, adapting the legal and regulatory framework, financing, and consumer knowledge are still lacking. To meet these ambitious goals, more targeted support must be available.

This study illustrates the extent to which education and support in accessing the right digital skills lies at the heart of these efforts. To support this goal, AWS has launched 'AI Ready', a new commitment to provide free AI skills training to two million people globally by 2025.

If implemented, these recommendations can support a digital transition with positive impacts on all citizens and businesses, unlocking an additional **EUR 600 billion** (on top of last year's prediction of **EUR 2.8 trillion** in economic value) primarily driven by the expanded adoption of AI, as well as progress in cloud and big data. In total, European businesses who face barriers to digital adoption predict that the elimination of these frictions would boost their projected five-year revenue growth by **+53.5%.**

1 Investing in digital skills training for businesses and citizens.

As this study has demonstrated, there are both insufficient digital skills within the current workforce and increasing difficulty when sourcing new employees with the necessary digital skills. Research showed that **56%** of citizens learn most of their digital skills through independent learning, while **36%** of citizens say their company offers no form of skills training or support at all.

To address this, this report recommends expanding cooperative efforts between the public and private sectors to develop and deploy **comprehensive and well-funded training programmes that empower both citizens and businesses** to effectively use digital tools. These programmes should be tailored to the learners' unique needs and responsive to the asks of industry as regards the skills in demand. Collaboration between businesses, educational establishments, and governments is essential in designing and delivering these programmes. It is imperative that both public and private sectors prioritise and urgently invest in modernising curricula, prioritising digital skills training, and engaging with certification initiatives. Public-private cooperation will be crucial in maximising the effectiveness of funding programmes to support SMEs and to develop digital skills. The research shows learners and businesses also highly value qualifications gained outside traditional learning institutions and as part of lifelong learning. Initiatives to address skills gaps should build upon this market demand, utilising industry-leading certifications and other micro-credentials to equip citizens with the advanced skills they need to be successful in the job market.

Specifically, there should be **an emphasised focus on enhancing cloud and AI technology skills and education**. We must aim to mainstream the use of digital technologies, such as AI or cloud, in European businesses and ensure that the current workforce is able to make the most of investments in digital technology. By offering reskilling and upskilling programmes, we can empower companies to continually evolve and maintain a competitive edge in this fast-paced digital landscape.

There is, furthermore, a strong imperative to invest in digital skills training for the next generation. European citizens show a desire for good digital skills programmes in schools, ranging from basic digital skills (75% think it is important that children learn to back up their data, 67% think it is important that they are able to create a basic spreadsheet), to safe behaviour online (63% of European citizens think it is important that schools teach children to post responsibly on social media), to advanced digital skills (61% of European citizens think it is important for children to learn to code).

Finally, it is crucial to **diversify the pipeline of digitally skilled citizens, expanding funding and training programmes to a greater range of citizens**. Initiatives that can help reach a diverse range of citizens and equip them with digital skills will prove crucial to meeting the EU target of 20 million ICT specialists by 2030. It is important therefore to also consider the diversity of skills that will be needed to meet the needs of a number of emergent roles in ICT. Educators can seek deeper integration with business to develop more attractive educational programmes or to link with professionals able to act as role models for young learners. In doing so, educational programmes can broaden expectations about the types of careers that adoption of digital technologies will facilitate and encourage greater participation of groups who are currently under-represented in the ICT sector. These investments in educational programme design and delivery will be vital in bridging the digital skills gap and promoting a diverse, digitally literate society to fulfil a range of emerging roles in ICT.

2 Address legal and regulatory uncertainties.

Our research revealed compliance and legal threats as the second most significant obstacles to tech adoption. Many businesses cite an uncertain regulatory landscape as a barrier to digital adoption, and have indicated that their use of digital technologies, such as cloud computing, big data, and AI, would increase if they could ensure that they are complying with the necessary regulations.

To address these concerns, some suggestions emerge for European policymakers:

Expand the criteria of the Digital Decade to address business confidence.
The European Commission should consider an additional criterion in their Digital Decade targets, examining European businesses' 'readiness for digital uptake and investment'. By providing governments with the business confidence and commercial environment needed to drive digital adoption, Europe can better examine its digital competitiveness and highlight where intervention is required to address remaining uncertainties and support investment.

Provide regulatory certainty and publish clear, uniform guidance.
For European businesses and citizens to succeed in the Digital Decade, transparency and clarity are required to lower the administrative and compliance costs that could ultimately stifle entrepreneurship and international growth. A predictable business environment would empower businesses to increase their investments, to see potential returns in increased revenues and support for employment.

The EU has just reached a provisional agreement on the AI Act, forming a broad legal framework for regulating the use of artificial intelligence. As the EU moves forward, it will remain important to focus on risk-based legislation for AI that protects citizens and rights and encourages trust, while also allowing for continued innovation and practical application.

The continued pursuit of an innovation-friendly and internationally coordinated approach will support the safe, secure, and responsible development of AI technology.

Protect flexibility for digital adoption.
As in 2022's Digital Potential report, businesses are asking for the flexibility required to explore the potential applications of new and emerging technologies.[21] Increased AI adoption will rely on supporting technology choice and the ability for companies to easily choose and switch between AI and cloud service providers, as well as facilitating seamless data sharing between providers through the requirement for interoperability with international standards. A regulatory sandbox approach, which enables both innovation and competition, will prove key in providing businesses the flexibility to experiment and choose the best technology.

Citizens similarly are seeking an effective legal environment that also provides access to the best technologies. The most common priority cited by citizens in keeping their data secure was having a robust legal framework (45%), followed by using the best technology (39%). Regulatory regimes should therefore ensure that there is an open environment that supports consumer choice within a trusted legal framework.

Establish supportive and risk-based regulatory environments for new technologies.
As mentioned above, regulatory sandbox programmes for specific sectors could be further expanded to bridge the gap between new technologies and a need to regulate. Experimentation and innovation with new technologies benefit from the availability of regulatory spaces to develop new business models or approaches. Sandbox programmes act as a tool for policymakers to best understand how to support innovation through a risk-based approach. They also permit policymakers to explore how the current regulatory framework can be adapted or modernised to meet new challenges, without undergoing the time-consuming process of developing wholly new regulatory initiatives. At a time when the lead time for new technological developments is ever shortening, this more flexible and agile approach to finding regulatory solutions would help policymakers meet the expectations of both citizens and businesses keen to benefit from the promise of digital adoption.

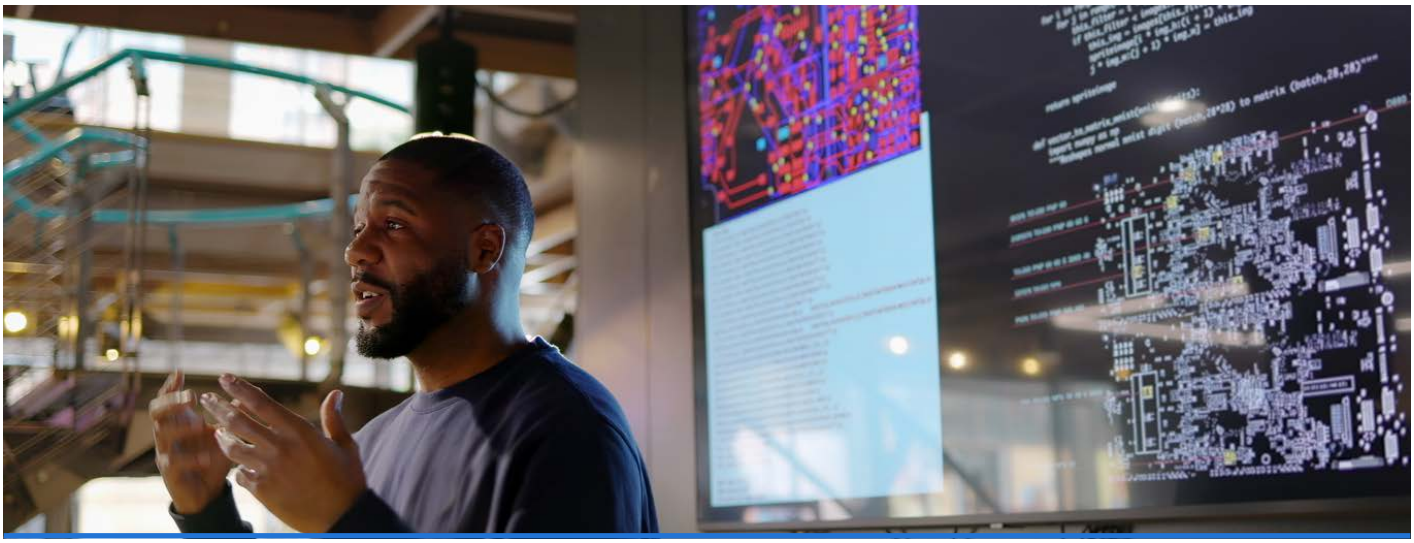
3 Tackling financial concerns and increasing public procurement.

While direct financial support provides an incentive to digitalisation, public procurement also plays a powerful role as a multiplier for technology adoption. 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.'[22]

The report noted that municipalities with greater digital capabilities and sophistication were less likely to report a lack of investment in digital infrastructure. For countries with a high share of municipalities considered to be 'digitally sophisticated', there was a higher rate of digital adoption for firms in those countries. The positive spin-off can also be seen within business sectors, as the EIB Report finds that digital innovation by suppliers or customers of businesses drives digital uptake by those businesses. Public procurement should therefore aim to expand capabilities and increase sophistication of municipalities and businesses, driving a virtuous circle of increasing digital innovation and uptake. This would mean that the Digital Decade not only delivers new and innovative key public services online that are reflective of the new opportunities AI and other technologies provide, but also drives innovation in businesses' sectors themselves.

The European Commission should **continue its support for a range of funding opportunities to digitalise businesses.**[23] While guidance provides a compilation of possible sources of funding, more efforts should go into supporting target skills and modernising European businesses. Out of the six funding programmes proposed by the EU, little is directed at SMEs, with even less support for micro-SMEs. InvestEU specifically addresses the financial needs of SMEs who are adopting digital technologies but is limited in impact due to the narrow list of financial products it offers and their expansive requirements. By widening access and addressing any lack of flexibility in funding tools, these programmes can have the ability to offer the skills and resources businesses need to make the most of new technologies.

In parallel, **governments should invest additional funding for citizens to undergo digital training** programmes and provide financing opportunities for businesses to increase their digital capabilities. Access to learning the skills required for the 21st century is a matter of inclusion: all employees should be prepared for the future of work.



4 Raising awareness and educating consumers on responsible AI use.

Consumer understanding and confidence are pivotal for the successful adoption of new technologies, particularly AI. While there is increasing experimentation around the use of AI, our study shows that **35%** of citizens don't understand the decision-making process behind AI, and this is concerning to them. Therefore, businesses and governments should collaborate to elevate public awareness and knowledge of AI's benefits and possibilities while emphasising responsible usage. Empowering consumers and businesses with the necessary information is essential to foster trust and ensure responsible AI adoption during the Digital Decade.

Specifically, successful education and awareness initiatives could centre on principles of accessibility and collaboration:

Measuring citizen confidence in AI will help European governments and businesses to address consumer concerns and redress perceptions that AI uptake will lead to job displacement. An indicator around citizen awareness of new technologies will help to understand citizens' views, to design interventions that can serve to encourage uptake and adoption based on responsible AI.

Raising public awareness and knowledge of AI's benefits and responsible usage will prove crucial in a successful AI transition. Empowering consumers and businesses with essential information is essential for fostering trust and ensuring responsible AI adoption during the Digital Decade. To achieve the Digital Decade goals, governments must equip citizens with the requisite skills and knowledge to empower them in their digital journey.

Schools should increase their focus on digital skills, ensuring that the next generation is proficient in using digital technologies and is aware of emerging technologies like AI and generative AI. This research indicates strong support (69%) for educational institutions and employers to offer digital skills training and development support. Businesses and citizens note the importance of both basic and advanced digital skills in the digital revolution – successful digitalisation does not require all citizens to be able to code, but rather it is crucial that their skills and techniques are digitally enabled to meet the Digital Decade target of 80% basic digital proficiency by 2030.

DETAILED 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 nationally representative members of the public. This survey has ensured representation based on age, gender, and NUTS 1 region.[24]
- 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.

Markets:

The markets surveyed were Denmark, France, Finland, Germany, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and the UK. Across all these markets, we have surveyed a total of 30,112 respondents, consisting of 16,001 consumers and 14,111 business leaders.

Economic Modelling:

Our headline estimate of the potential economic impact of digital transformation is an update on the economic modelling published in 2022 with new data from 2023. This model is based on the potential economic impact of achieving the following four goals, based on the European Commission's Digital Decade targets :

- Increasing businesses' cloud computing uptake to 75%.
- Small business adoption of three key digital tools and services (CRM, ERP, and fast broadband) increases to 90%.
- 80% of EU adults achieve basic digital skills.
- Taking maximum advantage of the potential economic impact of AI and big data.

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