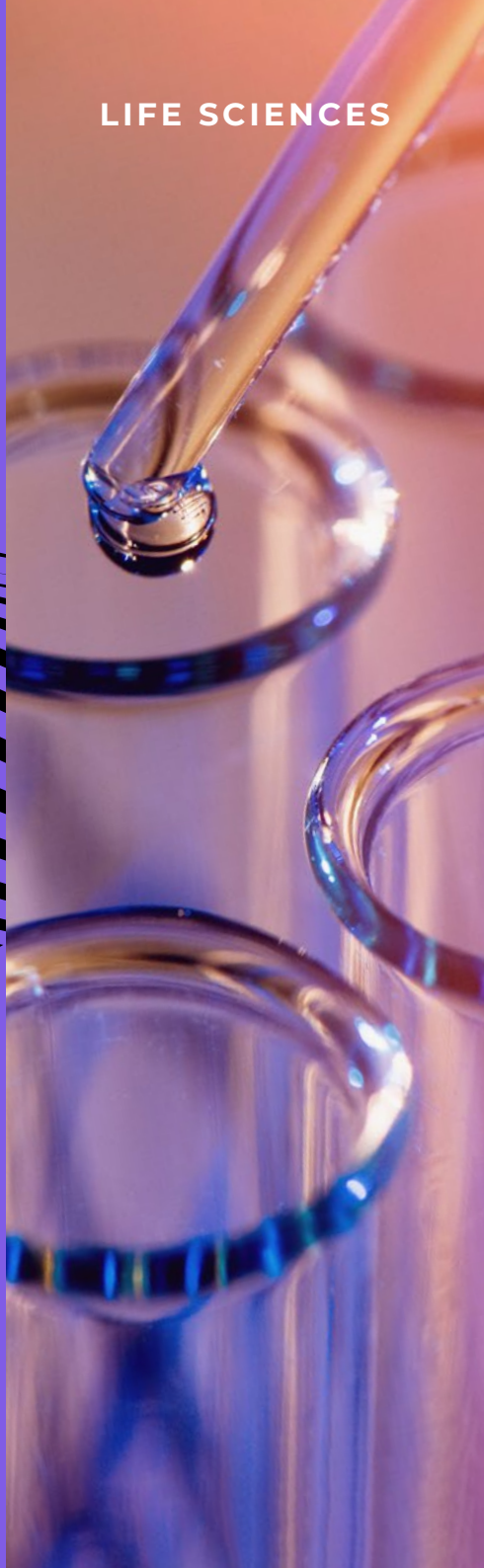
EXPLEO RESEARCH

Integrating AI: Navigating the next wave of business transformation

LIFE SCIENCES



expleo

Welcome to our Integrating AI life sciences edition

The scale and breadth of applications where AI has the potential to make a difference and transform ways of working is something almost without precedent. But how do we deliver on that promise?

In our report, 'Integrating AI – navigating the next wave of business transformation', we have partnered with IPSOS to understand the attitudes and opinions of 803 key decision-makers from transformative industries – aerospace & defence, automotive, BFSI, energy & utilities, life sciences, manufacturing, retail, and transport – to paint a picture of the state of the industry and answer that question.

In this life sciences edition, we look at how the life sciences sector is evolving at a rapid pace and experiencing unprecedented transformation through the adoption of AI. Although life sciences is currently lagging behind other sectors due to factors such as regulated, long sales cycles and a cautious, risk adverse approach to change, by leveraging AI, the sector is able to drive innovation, improve patient outcomes, and streamline operations, positioning it for significant growth.

What we see is that we are at the tipping point for AI: 80% of those surveyed say that AI currently is or already has transformed their industry. Moreover, 96% have or will deploy AI tools in the coming months. But this urgency is not driven by hype – decision-makers now expect ROI from their deployments, whether through productivity gains, greater efficiency or improved quality.

Across all our industries, the feeling is unanimous: now is the time for AI to deliver on its promise.

However, challenges and roadblocks still remain. For the life sciences sector, these include complex challenges around regulation, data security, and system interoperability. With this in mind, we have combined the market intelligence from our survey, with Expleo's experience and expertise in real-world AI deployments for life sciences customers to offer tangible guidance on the greatest hurdle facing AI adoption today: how to integrate AI tools and programmes into your business at scale.

Driven by two guiding principles – technology capability and expertise are not guarantees of success, and change management is key – **we provide a six-step guide to moving your AI projects from proof of concept to production.** Thank you for taking the time to read this report; I hope it acts as a trusted companion as you leverage AI as part of your organisation's business transformation.

How does life sciences compare to other sectors?

Decision-makers in all eight industries surveyed are in agreement: **AI is transforming how they do business.** It also demonstrates remarkable versatility, enhancing efficiency across every stage of the value chain – from customer requirement analysis to maintenance, and quality control – and across sectors as diverse as aerospace, retail, and banking. However, **clear differences emerge in how each sector envisions and implements AI opportunities,** as well as varying levels of AI diffusion and integration, as illustrated in the graph below.

We explore this in more detail in the next chapter.

Maïté Oulevey
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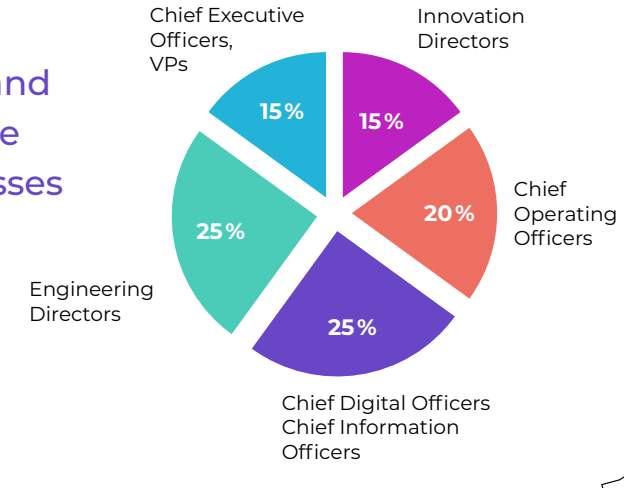
Methodology

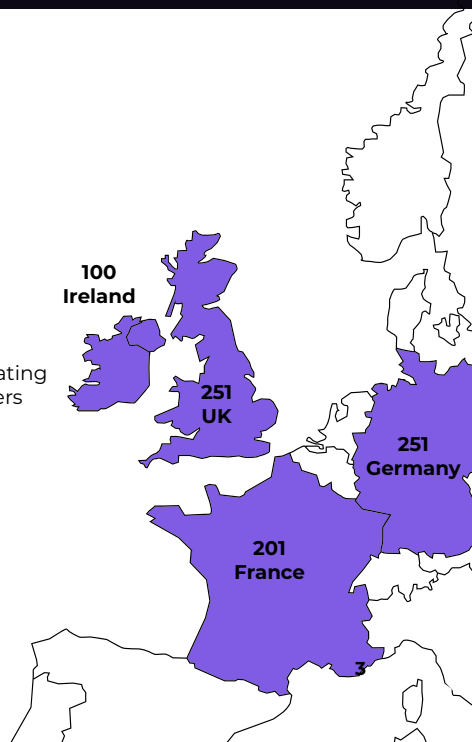
The research was conducted by a team of IPSOS researchers specialised in B2B and qualitative interviews.

8 sectors

Aerospace & defence	Automotive	Life sciences	Banking, financial services & insurance
13% of interviewees	13% of interviewees	6% of interviewees	19% of interviewees
Transportation	**Energy & utilities**	**Manufacturing**	**Retail**
10% of interviewees	6% of interviewees	18% of interviewees	15% of interviewees

70% of interviewees work in large- and mid-size businesses





Four trends shaping AI adoption

#1 Deploying AI is an urgent priority

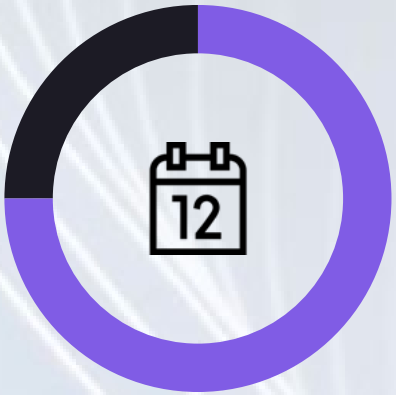
There is an undeniable surge in AI adoption across a broad swathe of industries: on average, **one in four companies has already deployed AI tools, with an additional one in three currently developing or acquiring them** (Figure 1, page 6).

AI is no longer a technology of the distant future, but an immediate instrument of change across industries, as underscored by the fact that 80% of executives surveyed regard AI as a transformative force within their sectors.

The **urgent need to integrate AI** which executives expressed reflects broader market dynamics and the pressure on companies to remain competitive in an increasingly digital landscape.

"We're expanding AI applications to predict train cancellations, detect vehicle defects, and for VAT determination. Also, we manage large websites and plan to automate customer inquiry responses soon. "

COO, Transportation sector, Germany



72%

will deploy AI solutions within **12 months**

24% already use AI solutions

50% are under pressure from executive committee to integrate AI

80% believe AI has already transformed their industry

AI adoption takes off

Expleo's previous research identified that in 2021, 22% of businesses had already implemented such tools, with an additional 42% planning to do so within three years*.

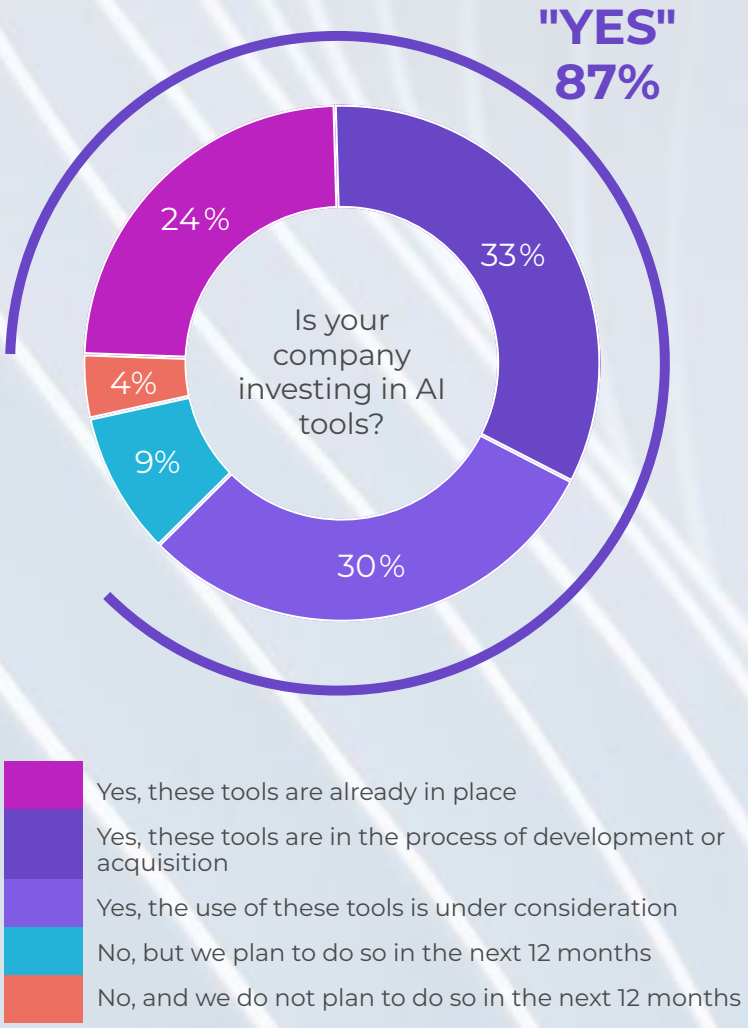
These new findings reflect a significant acceleration: nearly all the decision-makers interviewed intend to deploy AI in the coming year if they have not already. This indicates **a renewed urgency among decision-makers to deploy AI.** This shift is driven by several factors:

- **Technological advancements** in machine learning (ML) algorithms, increased computational power, and the availability of large datasets have significantly improved the capabilities of AI systems.
- **Broader applications available for AI** ranging from software code development to predictive analytics and personalised marketing.

These two factors – supported by ongoing investment – collectively contribute to the rapid acceleration in the adoption and integration of AI, making it a **transformative force across every sector.**

** Expleo's Business Transformation Index 2021 report, https://expleogroup.com/bti/*

Figure 1 – Companies investing in AI tools.



Note: Based on interviews with 803 C-Level executives from 8 different sectors.

AI is a powerful transformer

Companies almost unanimously agree AI will reshape their industry, company organisation, and products in the coming three years, if it has not already. However, the leaders interviewed observe a greater awareness of the global transformations generated by AI in their sectors of activity rather than within their organisations, and even more in their products and services.

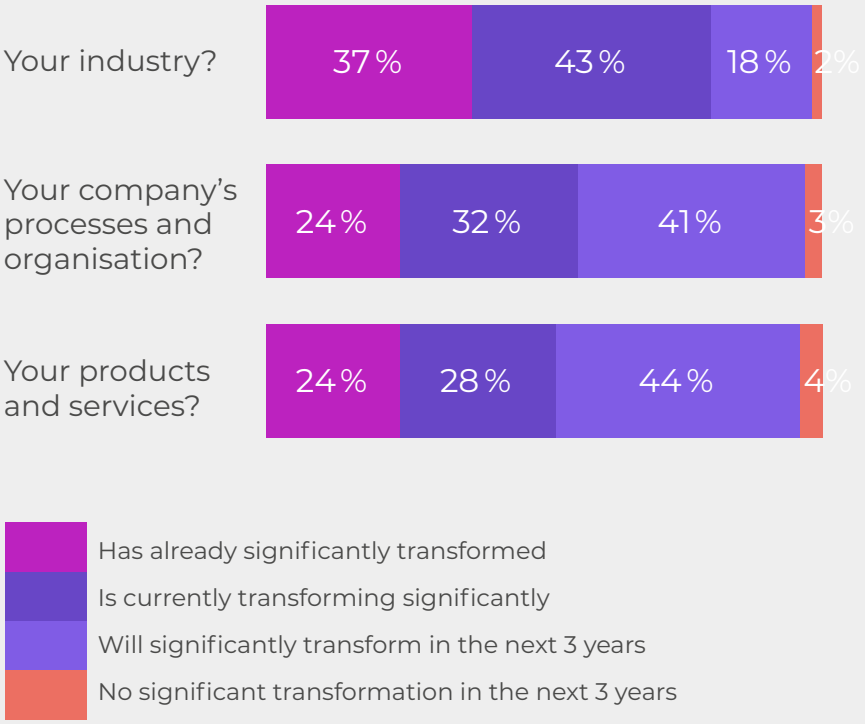
This difference in perception tends to indicate three trends:

- The majority of decision-makers interviewed share a **sense of lag in adopting AI** compared to their competitive environment.
- This transformation may be anticipated by companies, though not yet evident internally, despite **wider industry perceptions.**
- The **deep integration of AI** within companies, processes, and tools poses a **significant challenge** for all businesses.

As with any innovation, it will take time for AI to have a visible impact on companies' processes, structures, products, and services. These figures, however, demonstrate that **AI has entered a new phase of development and deployment.**

Figure 2 – Perceived impact of AI.

Q: Would you say that AI has already, is currently, or will significantly transform ...



Note: Based on interviews with 803 C-Level executives from 8 different sectors.

#2 AI will have real financial impact

Our study has shown that **there is a distinct appetite for organisations to see their AI projects move beyond pilots**, and that they are demanding tangible returns on their AI investments.

The findings underscore decision-makers' emphasis on ROI metrics that directly correlate to their bottom line: **better time-to-market (91%), financial gains (90%), and improved quality (90%).**

It is therefore vital to **develop strategies to concretely measure AI's effectiveness**, as companies increasingly shift towards operationalising AI solutions that can demonstrate immediate and measurable improvements in productivity, cost savings, and revenue generation.

"The main thing in our financial operations is coding. It's a significant cost in any large organisation. AI solutions can reduce the workload by 10%, it is a huge gain."

COO, Insurance company, UK

Nine out of ten decision-makers are measuring ROI of AI projects on financial factors

90% financial gain (cost reduction - productivity improvement)

91% better time-to-market

90% improved quality (error detection)

Efficiency, profitability, quality

The **difficulty in measuring ROI may pose a significant barrier to scaling AI projects**. As the industry confronts the realities of implementation and profitability, issues such as technical limitations and concerns about financial viability emerge. For instance, the high costs associated with training AI algorithms present a formidable obstacle.

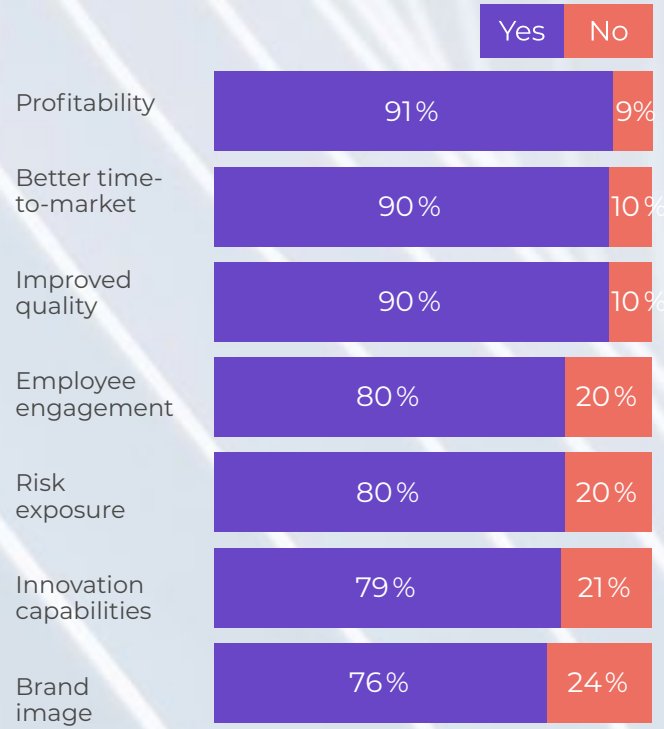
In such a context, **C-Level executives' objective is to embrace this technology**, taking small steps, controlling operational risk and financial investment. The acceleration of AI adoption will thus result in the **rapid launch of initiatives ("quick wins")** aimed at testing AI projects, with a key focus on concrete ROI.

The ability to design appropriate tools for measuring and demonstrating ROI therefore emerges as a critical factor for the integration of AI. It will allow organisations to track the performance of AI initiatives, validate their impact on key business objectives, and justify ongoing investments. These tools also instil confidence among stakeholders by providing transparent insights into the value generated by AI projects.

** Expleo's Business Transformation Index 2021 report, https://expleogroup.com/bti/*

Figure 3 – Metrics used to measure AI ROI.

Q: How do you measure the ROI of your AI-related initiatives?



Note: Based on interviews with 803 C-Level executives from 8 different sectors.

#3 Scaling AI remains a challenge

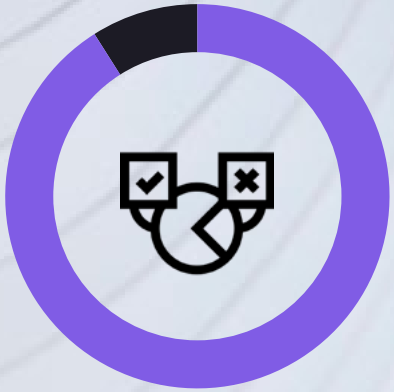
The surveyed decision-makers **overwhelmingly pervceive AI as an opportunity rather than a risk**. They see it as a means to enhance their organisations' capabilities and operations, thereby increasing productivity and competitiveness. Interestingly, executives are confident in their ability to overcome commonly cited barriers to adoption of AI, such as ethical concerns and cybercrime.

Contrary to the common fear of AI replacing human jobs, the research findings indicate that AI is being integrated as **a tool for gradual enhancement within companies**, complementing the abilities of existing teams and systems rather than supplanting them.

However, in spite of the overall positive view of AI, decision-makers are still faced with the challenge of scaling AI. **Successfully moving projects from pilot to production relies on overcoming numerous challenges** of which technical integrations (39%) and controlling costs (35%) are the most pressing (Figure 6, page 13).

"AI can analyse financial data, and track employee performance, providing invaluable insights for strategic decision-making. This requires skilled personnel to oversee and regulate AI tools, ensuring responsible and ethical use."

CISO, Manufacturing industry, Germany



for **91%** of respondents, the **benefits** of AI **outweigh risks**

97% trust their company's ability to utilise AI ethically

90% say benefits outweigh risks associated with cybercrime

for **73%, financial costs and technical integration** are the biggest challenges

AI approaching the heart of businesses

While presenting more readily identifiable opportunities for support functions, the power of AI technologies appears **to increasingly impact jobs and operations that lie at the core of companies' business and value proposition.**

C-Level executives consider two main areas when assessing the impact on their business:

1. **The productivity of their organisations** from core business processes and means to supporting functions such as finances, and marketing.
2. **The performance and quality of the products and services delivered** to customers.

When asked at the outset of each interview to name the most compelling applications for AI, our surveyed executives had a high degree of common responses, with the top spontaneously mentioned being: **predictive maintenance** (32%), **quality control and inspection** (29%), **supply chain optimisation** (19%), **customer experience enhancement** (18%), and **fraud detection and security** (15%).

These applications naturally reflect the specificities of each of the sectors of the interviewees, highlighting an essential property of AI: while productivity gains sought are common across all sectors, **AI solutions are most effective when customised to meet the specific needs of each business, industry, or organisation.**

Figure 4 – Opportunities offered by AI.

Note: Based on interviews with 803 C-Level executives from 8 different sectors.

Integrating AI into core business operations

As established, decision-makers across all the surveyed industries have **a keen focus on aligning AI programmes to their core business objectives.**

For instance, in manufacturing, decision-makers surveyed indicated investing in AI-driven predictive maintenance systems to minimise downtime and optimise production schedules without compromising on product quality. In finance, ML algorithms are deployed to enhance fraud detection mechanisms and personalise customer experiences through tailored financial recommendations.

This means that while they allocate significant attention and resources towards AI integration, **C-Level executives' primary concern remains leveraging these advancements to enhance and optimise existing operations** rather than diverting focus away from core competencies.

Figure 5 – Word cloud for mentioned AI applications.

Based on replies to the open-ended question: "According to you, what are the main possible applications or uses (existing or envisaged) of AI in your industry"

The size of the words are proportional to the frequency that the word appeared in the verbatims.

Integrating with existing tools, the leading challenge

Whilst decision-makers are keen to put AI into place to serve their core businesses, **many are facing or foresee challenges on the horizon**. In fact, of those surveyed, less than one-in-five (17%) did not see any major obstacles to adoption and scaling AI tools.

They are facing the harsh realities of implementing AI (39%) and high implementation costs (35%) ranking as their main concerns.

There is a widely recognised complexity in integrating AI systems with existing infrastructure, ensuring data quality and availability, selecting appropriate AI algorithms, and dealing with technical limitations or bottlenecks.

Financial concerns indicate that **decision-makers are worried about the costs associated with AI adoption and scaling**. This could involve expenses related to acquiring AI technology, hiring skilled personnel, training employees, and maintaining AI systems. It also reflects the uncertainty around the return on investment (ROI) previously mentioned.

Although high implementation costs and financial challenges are the most widely cited challenges, **the research findings highlight that organisations are in fact facing a wide range of issues**, including lack of training/skills (28%) and internal resistance to change (31%). This reflects the reality that successfully scaling AI deployments is more than just a technical exercise, requiring a holistic approach that combines technical expertise, financial planning, and organisational change management.

Figure 6 – Main obstacles for AI integration.

Q: What are the main obstacles faced by your company to adopt and scale AI tools?

Note: Based on interviews with 803 C-Level executives from 8 different sectors.

Balancing risk assessment

The survey highlights a **nuanced perspective on AI risks**, revealing a range of concerns, with notable emphasis on competitive and ethical implications. Leading the list, 39% of executives identify business risks, such as market disruption and devaluation of existing products, indicating a **primary worry about AI's impact on market dynamics and competitive positioning**. This also reflects the s hared sentiment among decision-makers on the urgency to deploy AI as soon as possible.

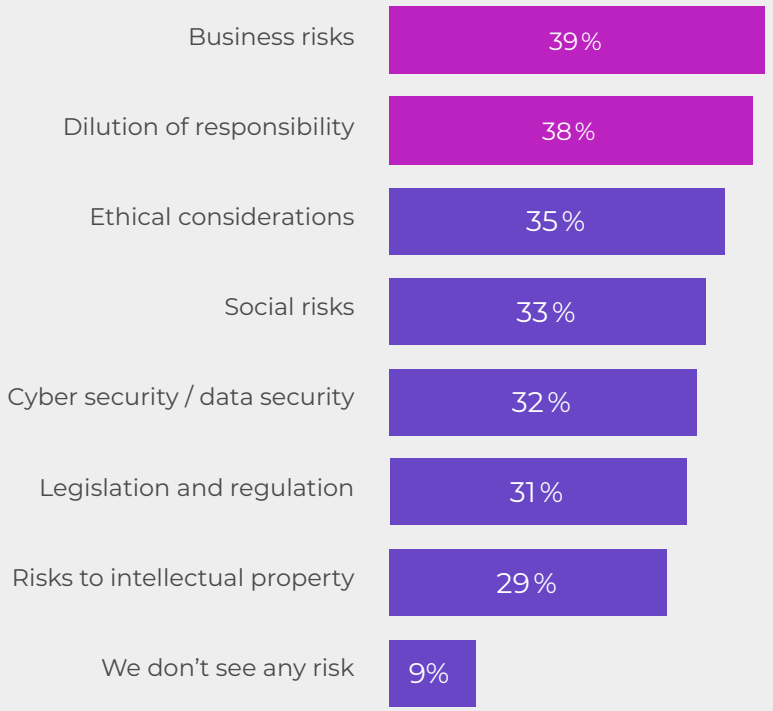
Close behind, 38% of decision-makers surveyed cite the dilution of responsibility, reflecting fears about **accountability in AI-driven decision-making processes**. Ethical considerations (35%) underscore apprehensions also related with the **automation of critical decisions**, as well as algorithmic biases and potential drift in AI applications.

Social risks (33%) point to significant concerns regarding AI's effect on employment, highlighting the potential for workforce displacement. Cyber security (32%) emphasise the critical importance of safeguarding against AI-related vulnerabilities and breaches. Regulatory and legislative risks, at 31%, suggest a potential unease about the evolving legal landscape and compliance challenges associated with AI. Intellectual property risks reflect worries about **protecting innovation in a rapidly advancing field**.

These findings indicate a complex risk landscape, underscoring the importance for executives to balance innovation with ethical, social, and security considerations to responsibly harness AI's full potential.

Figure 7 – Main risks of AI adoption.

Q: What are the main risks of AI for your business?



Note: Based on interviews with 803 C-Level executives from 8 different sectors.

#4 Proven AI expertise is in demand

The complex integration challenge and perceived risk landscape of scaling AI applications is likely one of the contributing factors to the emphasis on skills and expertise found in the survey.

In particular, **a significant need for specialised skills, which are often not available internally**: 60% of respondents stated they rely on external experts to deploy and manage AI projects.

Equally, **there is also a substantial focus on employee training**, as 55% of organisations already have internal AI training programmes, highlighting a proactive approach to skill development despite existing talent shortages.

"We will soon deploy AI for preventive maintenance, working closely with consultants specialised in AI."

Engineering Director, Automotive industry, France

60% of respondents rely on **external experts** to deploy AI adoption projects

39% say the primary obstacle is technical difficulties in integrating AI solutions into existing tools

55% have internal training on AI for employees in place

A need to integrate the workforce in AI adoption

As mentioned earlier in this report, AI deployments are not just a technical process and adoption is a key contributor to success.

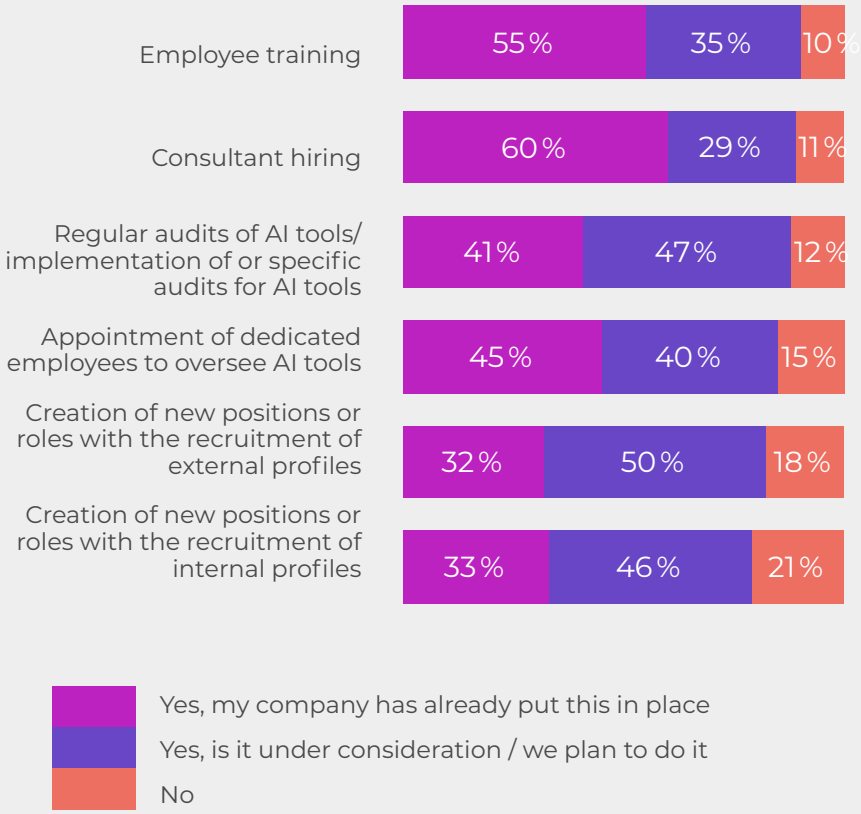
This is recognised by the decision-makers we surveyed, with **nearly one third (31%) of respondents identifying internal resistance from employees as a major obstacle**. This suggests cultural and organisational barriers to AI adoption. This resistance is often linked to concerns about job displacement, necessitating careful management to maintain workforce morale.

The primary response from decision-makers surveyed to these challenges is training to acquire the necessary skills: 55% have already implemented programmes for their employees, while 35% plan to do so. Training can also ease workers' anxieties about the technology replacing their jobs.

Furthermore, **nearly half of the surveyed organisations are exploring the creation of dedicated AI roles**, although this approach is less common at this stage. Incremental innovation, combined with a gradual increase in human resources, appears to be the preferred strategy.

Figure 8 – Action implemented for introducing AI.

Q: Has the arrival of AI led to the implementation of these actions within your company?



Note: Based on interviews with 803 C-Level executives from 8 different sectors.

Balancing AI integration with workforce development

The adoption of AI presents a challenge both in acquiring the necessary skills and profiles (28%) and in terms of employee acceptance (33%). Nearly one-third of the decision-makers surveyed fear resistance to change from their employees in response to the inevitable arrival of AI in their companies. Change management and training are thus key facilitators for change.

An incremental approach helps ensure that AI initiatives are manageable and that ROI becomes clearer over time. Ultimately, **the integration of AI into the workforce necessitates a balanced strategy, combining external expertise with robust internal training and talent development** to navigate the complexities and potential disruptions of AI technology.

"Before considering production-related benefits, I believe AI will be utilised for employee training and development. It will involve developing automated learning systems to educate employees on new technologies and procedures, thereby fostering adaptability and continuous improvement within the company".

Engineering Director, Life Sciences sector, France

33% express concerns regarding AI's effect on employment

31% see resistance from employees as an obstacle to AI adoption

28% face a shortage of AI talent

From contemplation to actual implementation of AI

Through our research we have established that across all industries, there are clearly commonalities in the experience decision-makers have when deploying AI.

- **Deploying AI is an urgent priority**, with 72% of companies surveyed either exploring or already implementing AI tools.
- **AI will have real financial impact**, as nine out of ten decision-makers require ROI measurements before deciding to scale up.
- **Scaling AI remains a challenge,** with key obstacles predominantly arising from technical and financial concerns for most of the decision-makers.
- **Proven AI expertise is in demand,** leading 60% of decision-makers to rely on external experts to navigate the complexities of AI.

The next 12 months are critical as organisations transition from contemplation to actual implementation of AI solutions, aiming to realise the potential that AI holds for transforming business processes and outcomes.

Our findings underscore the strategic importance of AI in today's business environment and the urgent need for companies to harness this potential responsibly and effectively.

As companies move forward, AI is not just a technological upgrade but a fundamental enabler of future business success. And these trends and challenges are common to all sectors studied, from aerospace to automotive, and banking to retail.

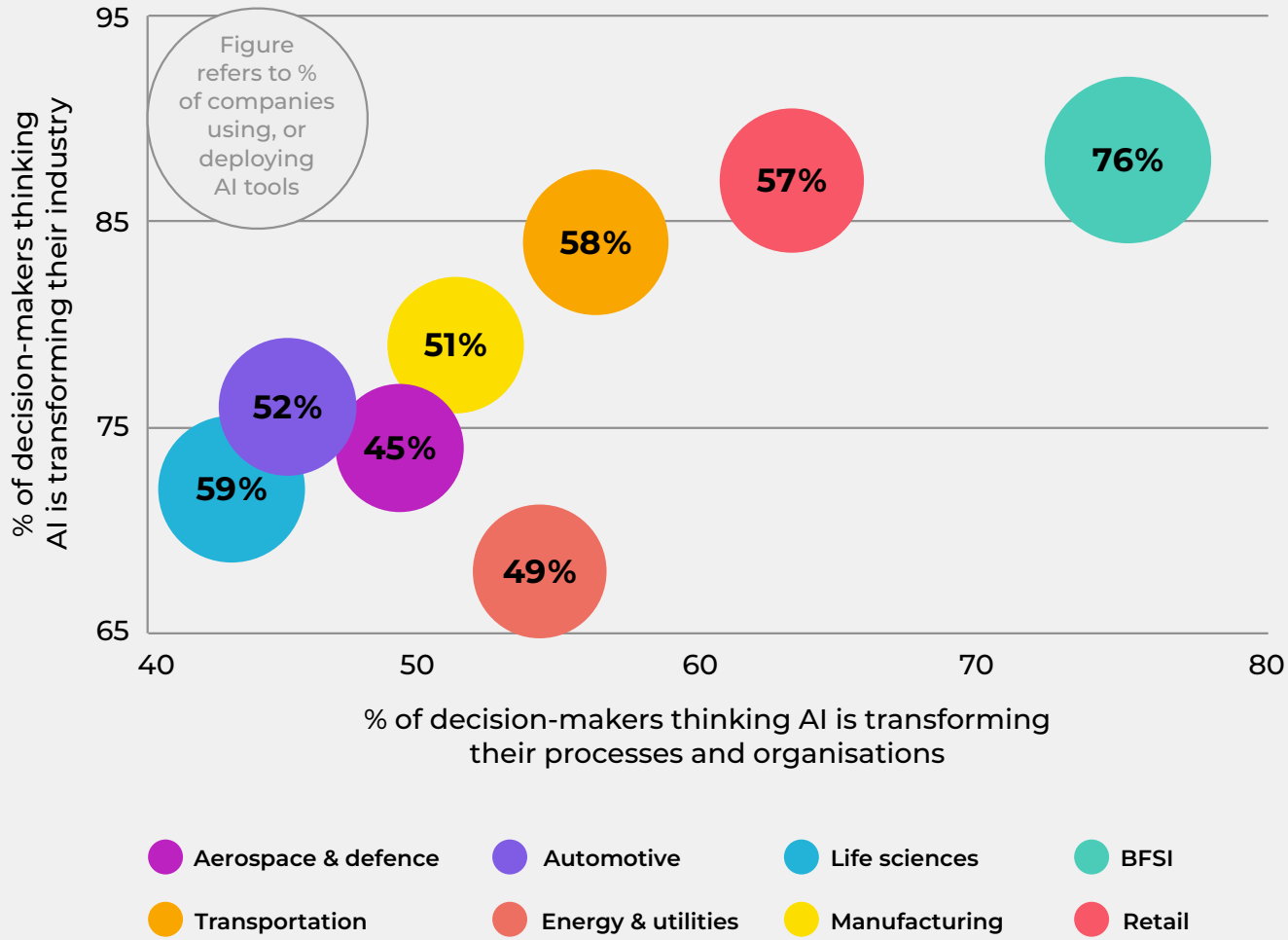
Life sciences industry analysis

How does life sciences compare to other sectors?

Decision-makers in all eight industries surveyed are in agreement: **AI is transforming how they do business.** It also demonstrates remarkable versatility, enhancing efficiency across every stage of the value chain – from customer requirement analysis to maintenance, and quality control – and across sectors as diverse as aerospace, retail, and banking. However, **clear differences emerge in how each sector envisions and implements AI opportunities**, as well as varying levels of AI diffusion and integration, as illustrated in the graph below.

We explore this in more detail in this chapter.

Figure 9 – Perception of AI's transformational impact across industries compared with adoption levels of AI tools.



Life Sciences

The life sciences sector is experiencing unprecedented transformation through the adoption of Artificial Intelligence. Indeed, AI solutions already revolutionise diagnostic and treatment paradigms but also streamline research and development processes, significantly reducing the time and cost associated with bringing new therapies and drugs to market.

"The biggest opportunities of AI lie in scaling critical success factors in R&D and production while ensuring the integrity of the certification process."

Maïté Oulevey, VP Life Sciences, Expleo

Executive summary

1. **AI is seen as a critical tool for enhancing core operations and advancing product design and development, with two-thirds of decision-makers recognising its importance for these segments** (Figure 26, page 57). Additionally, 74% plan to deploy AI within 12 months. Decision-makers see its potential to transform operations, processes, and products, such as accelerating drug discovery, optimising clinical trials, and personalising patient care with predictive analytics and ML.

2. **Technical challenges are the biggest obstacles businesses face to integrating AI into their companies within the life sciences sector for more than half of C-Level executives surveyed**. This anticipation of technical challenges is higher than in any other sector. This is due to the unique complexities of healthcare data, regulatory constraints, and the need for transparency and trust in AI-driven systems.

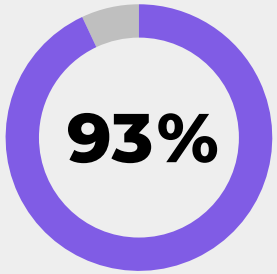
3. **Decision-makers in this sector are more sensitive to the various risks associated with the use of AI than those in all other sectors studied**. When interviewees were asked about the main risks associated with AI adoption, they pointed to ethical considerations (39%), dilution of human responsibility due to automation (51%), security of sensitive data (39%), and regulatory constraints (39%).

"We use AI to produce information and to support the generation of texts and procedures, for example, for translation into other languages. These are the first tests we're doing."

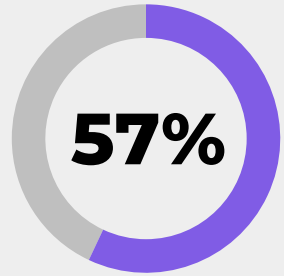
IT Director, Life Sciences sector, Germany

Survey highlights

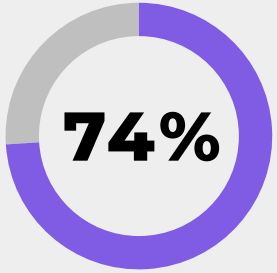
49 decision-makers interviewed



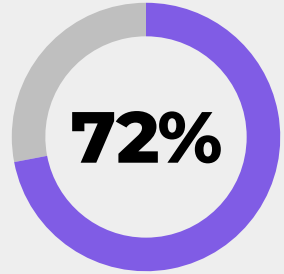
Profitability - first criterion for measuring ROI of AI projects



External expertise - first tool to support AI project deployment



AI solutions to be deployed within the next 12 months



Life sciences industry is transformed by AI

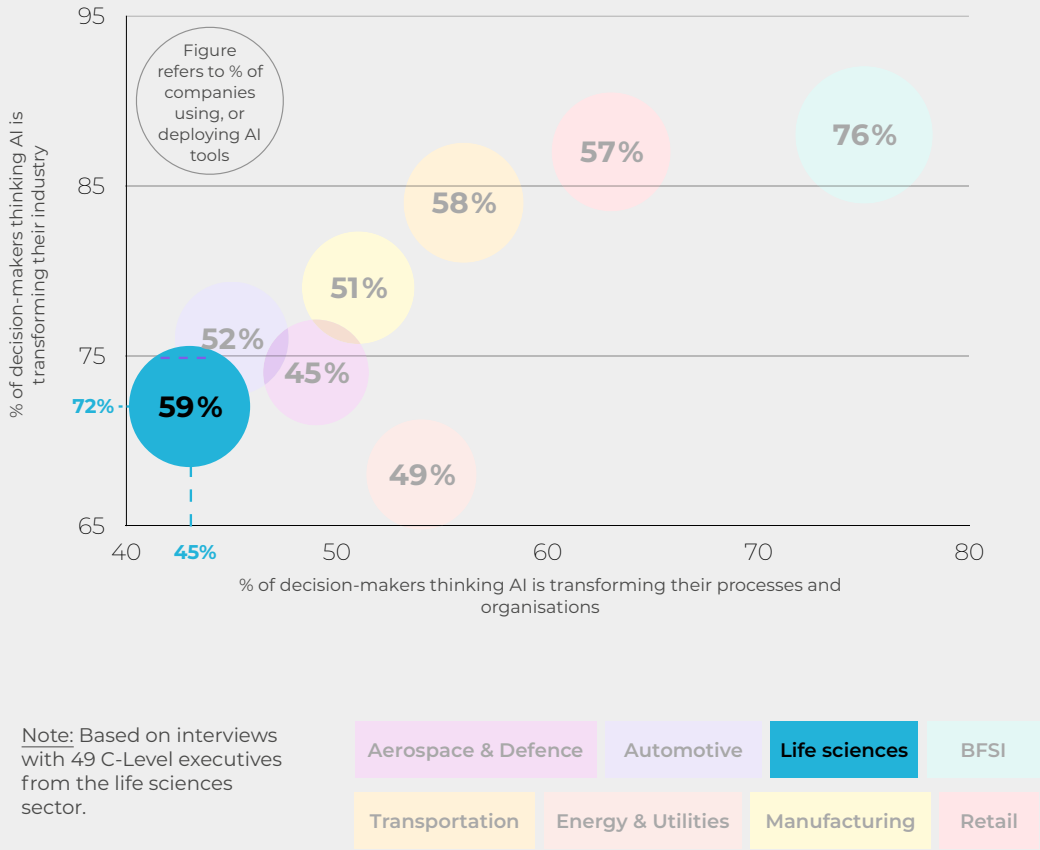
A strong drive to catch up with AI adoption

In the dynamic realm of healthcare & life sciences, **AI emerges as a transformative force with 72% of decision-makers recognising AI's profound transformational impact on their industry**. AI enhances accuracy, efficiency, and scalability across various domains in this sector..

While only 20% of companies have implemented AI tools, **39% indicate they are in the process of deploying these tools**, compared to an average of 33% in other sectors (Figure 1). This means that a total of 59% of companies are either using or deploying AI tools, signaling significant dynamism within the sector as it catches up with AI adoption.

This sector faces heightened challenges in adopting and scaling AI tools, spanning technical (55%), financial (35%), and organisational (33%) dimensions (figure 13). It necessitates collaborative efforts across stakeholders to overcome barriers and harness AI's transformative potential for improved patient outcomes and healthcare delivery.

Figure 10 – Perception of AI's transformational impact in the life sciences sector compared with adoption levels of AI tools



Note: Based on interviews with 49 C-Level executives from the life sciences sector.

Scaling R&D and production capabilities

The decision-makers interviewed primarily identify benefits of AI for the manufacturing of their products and supply chain management (54%), R&D and product design (50%), and quality improvement.

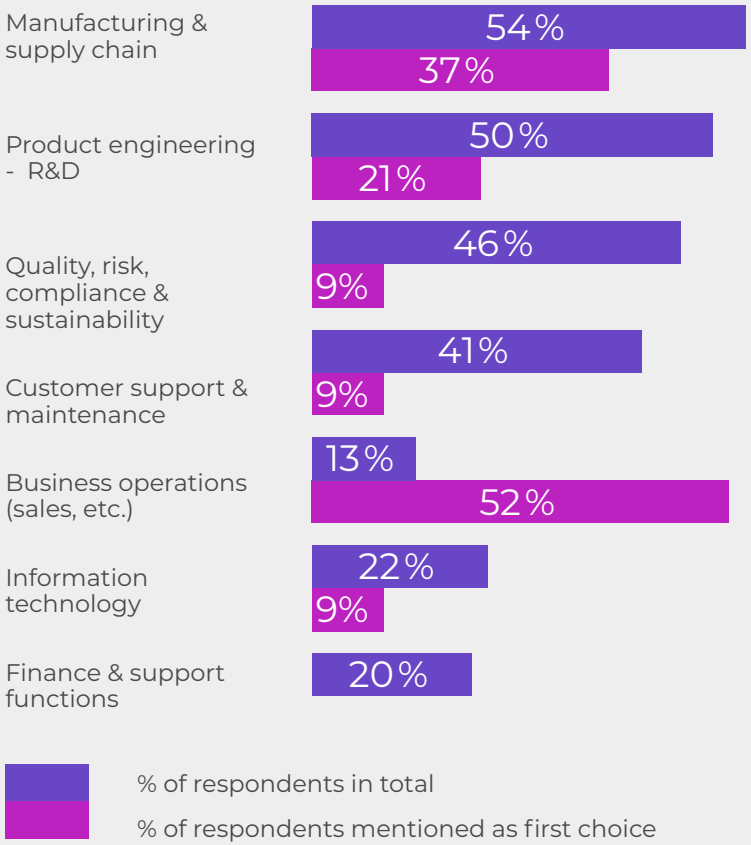
Based on the qualitative answers collected, **decision-makers identify a wide range of possible applications:**

- AI significantly enhances operational efficiency by **revolutionising production planning and automating manufacturing processes.**
- AI-driven predictive maintenance systems optimise supply chains and production processes, minimising downtime and scaling R&D and production capabilities to meet growing demands.
- Through advanced algorithms, AI facilitates disease diagnostics with unprecedented precision, ensuring early detection and personalised treatment plans.
- Automated quality control mechanisms further bolster product integrity, instilling confidence in pharmaceuticals and medical devices.
- In drug development, AI accelerates **the discovery process by analysing vast datasets, expediting research pipelines and bringing novel therapies to market more swiftly.**
- Clinical trials benefit from AI's streamlined design, participant recruitment, and data analysis, resulting in more efficient trials with higher success rates.

In this era of precision medicine and streamlined operations, AI serves as a catalyst for innovation, unlocking new frontiers in healthcare.

Figure 11 – Departments within companies expected to benefit most from AI adoption.

Q: Which department of your company will benefit the most from AI?

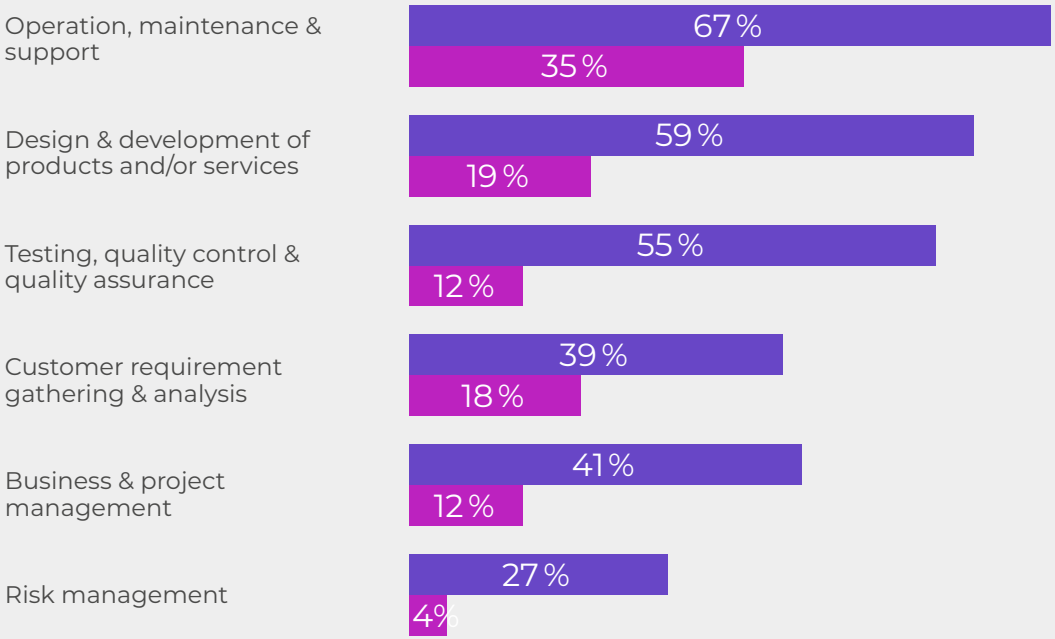


Note: Based on interviews with 49 C-Level executives from the life sciences sector.

Enhancing accuracy and efficiency

Figure 12 – Most interesting fields of application of AI within companies.

Q: What are the most interesting uses of AI for your company?



Note: Based on interviews with 49 C-Level executives from the life sciences sector.

% of respondents in total

% of respondents mentioned as first choice

TOP 5 AI APPLICATIONS MENTIONED

1. **Disease diagnostics**
2. **Processes optimisation**
3. **Drug & product development**
4. **Quality control**
5. **Clinical trials optimisation**

"We could use AI to speed up the development of our products, analyse millions of lab data and reduce the time needed for testing and developing new cures."

COO, Life Sciences sector, Ireland

Still struggling with AI adoption

In the healthcare & life sciences sector, the adoption and scaling of AI tools encounter various hurdles, with **percentage rates for all obstacles notably higher compared to other sectors studied**. Technical difficulties, cited by 55% of respondents, pose formidable **challenges ranging from interoperability issues to the complex nature of AI algorithms and data integration**. For instance, these difficulties are compounded by the sector's diverse and siloed data systems, intricate patient privacy regulations, and stringent quality standards, necessitating specialised expertise and meticulous planning to navigate. High implementation costs, noted by 35% of executives, present significant financial burdens exacerbated by the sector's unique requirements for data security, patient confidentiality, and regulatory compliance, necessitating substantial investments in robust infrastructure and talent development.

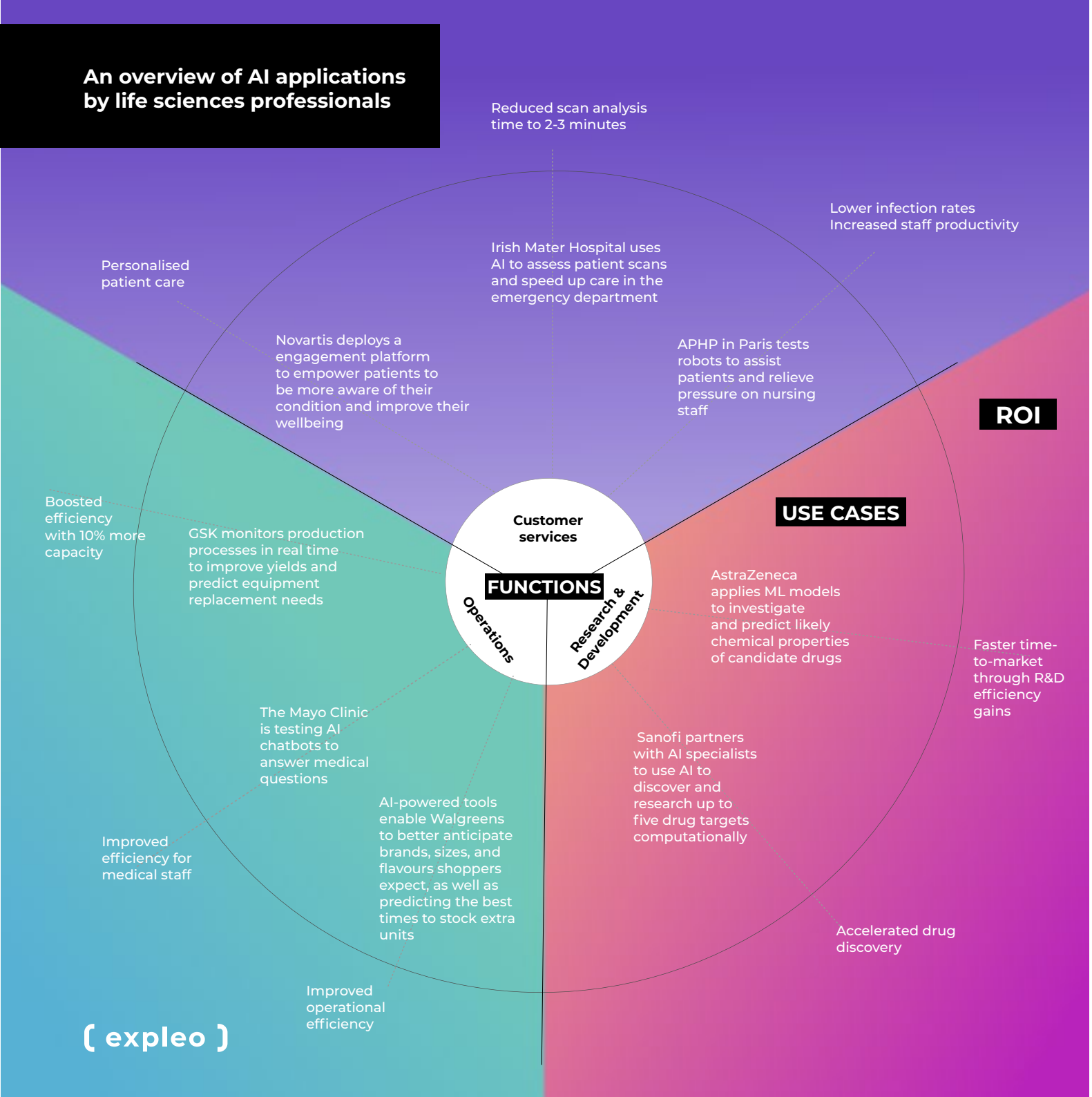
Resistance from employees emerges as a prominent barrier, with 39% expressing concerns about fostering a culture of innovation, overcoming fears of job displacement, and ensuring staff readiness for AI technologies, reflecting heightened sensitivities within the healthcare workforce. This may be amplified by ethical considerations surrounding AI's impact on patient care and professional autonomy, further complicating efforts to drive adoption and change management initiatives.

Additionally, the sector grapples with internal **skill shortages, uncertainty about ROI, regulatory ambiguity, organisational complexities, and data security concerns**, all at rates surpassing those observed in other industries.

Figure 13 – Challenges faced by companies in the adoption of AI.

Q: What are the main obstacles faced by your company to adopt and scale AI tools?

Note: Based on interviews with 49 C-Level executives from the life sciences sector.

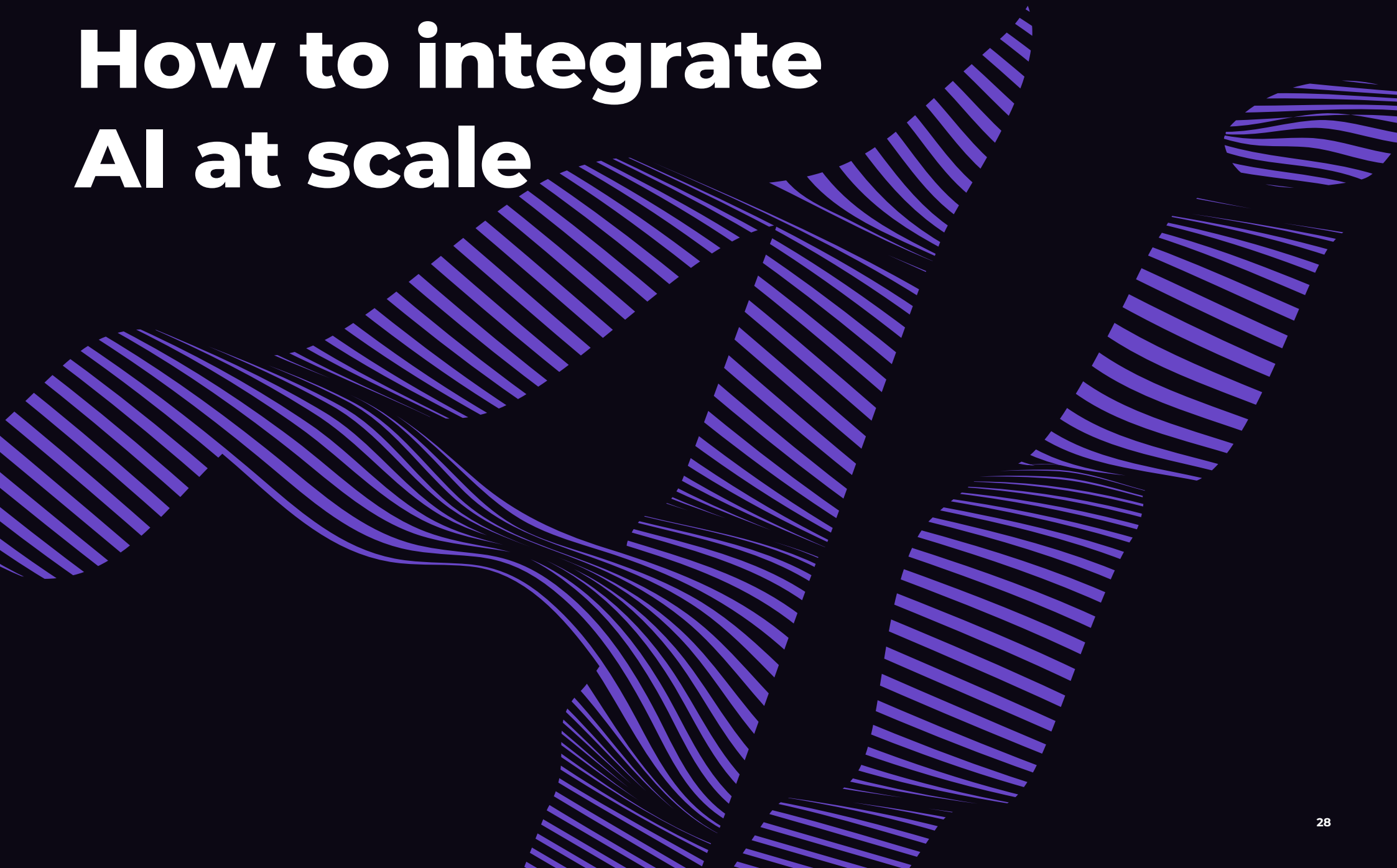


Conclusion

In the dynamic landscape of healthcare & life sciences, AI stands as a transformative force, promising enhanced accuracy, efficiency, and scalability across numerous applications. The sector grapples with important challenges in adopting and scaling AI tools. Technical complexities, including the sensitive nature of the data needed to train AI algorithms, present significant hurdles, as well as regulatory obstacles such as the mandatory certification for factories. Collaborative efforts between healthcare professionals and technology experts are essential to unlock AI's full potential, from disease diagnostics and drug development to supply chain optimisation, ultimately improving patient outcomes and advancing healthcare delivery.

This infographic was created using publicly available information and data from the websites of the mentioned companies.

How to integrate AI at scale



Successfully integrating AI

The potential of AI spans all industries, marking it as one of the most transformative technologies of our time. This sentiment is widely shared within the industry, beyond the headlines and media hype as this report shows. The consensus is clear: AI is here to stay.

At Expleo, our extensive experience has shown that this optimism is often contradicted by real-world evidence. Numerous AI projects are initiated, but many fail to reach the production phase. Recent estimates suggest that AI project failure rates hover around 80%*.

Our research highlights two primary obstacles businesses face: the technical challenges of mastering AI technology and the need to manage the costs associated with resource-intensive AI projects. Business leaders are eager to leverage AI but frequently encounter frustration when results fall short of expectations.

Drawing from our expertise, we have identified six key steps to successfully integrating AI, addressing these challenges and paving the way for successful AI adoption.

*Source: Harvard Business Review, November/December 2023

Six critical steps

1. **Identify a real and viable business need**
2. **Evaluate technical and financial feasibility**
3. **Choose the right technology and architecture**
4. **Develop robust and automated data pipelines**
5. **Train and validate your model on representative data**
6. **Monitor and maintain your data and models**

"From our experience scaling AI projects, there are two key lessons: there's no AI without good data and there's no scale without tangible ROI."

Hervé Garnousset, SVP & CTO at Expleo

1. Identify a real and viable business need

As 72% of the decision-makers surveyed indicate that their companies were about to deploy AI, they are at that **crucial stage where an AI idea needs to be transformed into a concrete business case.**

Deploying AI for the sake of it does not guarantee success, and it certainly does not ensure positive business outcomes or ROI, which more than nine out of ten decision-makers cited as the primary criterion for investing in AI. Often, **in the rush to deploy, many factors that could undermine the business model of an AI project are overlooked, ranging from technical feasibility to scalability.**

An effective AI solution must have a tangible business benefit or impact. Consequently, **it is crucial to get buy-in from all relevant stakeholders. This can help to overcome resistance to change and facilitate adoption.** Implementing AI can have significant changes to business processes so, careful management is needed when implementing AI to avoid disrupting operations. Industry-specific regulations should also be considered as they can impact the solution.

2. Evaluate technical and financial feasibility

For almost one decision-maker out of three surveyed, the **main obstacle to integrating and scaling AI, as highlighted by this research, is its cost and technical complexity, which must be evaluated thoroughly.**

The problem should be technically addressable, considering the quality and availability of data, infrastructure readiness, performance and scalability. **The AI solution needs to be able to integrate with the organisation's existing IT systems**. It should be designed in a way that allows it to scale as the organisation grows and its needs change. AI systems require ongoing maintenance and support to ensure they continue to operate effectively over time.

A solid business case with a clear ROI is crucial. The cost model should include data pipeline, foundation model selection, model training & validation, model fine-tuning, production, change management, the monitoring of data & model, infrastructure costs (both cloud and on-premises), and maintenance.

3. Choose the right technology and architecture

AI is not just one thing but a constellation of many different technologies working together, and it is rapidly evolving in a dynamic technology landscape. As this research demonstrates, decision-makers continue to struggle with understanding AI and its fundamental concepts.

A lack of proper tools and infrastructure is a common issue that prevents organisations from moving AI into production. They must match the project's needs, avoiding overfitted models and generic solutions that don't fit specific requirements. Miscalculating or underestimating true infrastructure needs is a frequent mistake. **Training models in the cloud can give a misleading sense of a model's limitations, with true costs only becoming apparent later**. Similarly, relying on outdated legacy hardware systems unsuitable for AI applications can hinder progress.

Getting an accurate picture of your infrastructure needs is vital to ensure the chosen technology and architecture support both current and future AI demands.

4. Develop robust and automated data pipelines

Data is the cornerstone of your AI program; without it, the project will crumble. Ensuring the quality and availability of data, with regular updates, is critical for the operation of your model. Poor data quality is a main reason why AI projects fail.

The principle that applications are only as good as the data that feeds them holds true for AI as well. Without good data management, your AI project is doomed from the start. **Training data must be complete, unbiased, and reflective of real-world conditions.**

Consistent data sources between training and deployment minimise AI drift and the risk of failure, leading to robust performance both at proof of concept and in real-world applications.

5. Train and validate your model on representative data

As mentioned in step 1 above, **measuring performance and ROI against real data that reflects the real-world application is essential.** AI applications that perform well on a smaller scale often face challenges when handling larger volumes of data or users.

These challenges usually stem from issues with the model's architecture, the data it was trained on, the infrastructure it operates on, or a combination of all these factors. **The quality and representativeness of training data are fundamental to the successful deployment and scaling of AI applications.**

Testing on representative data ensures that the AI can generalise well, handle real-world conditions effectively, and deliver consistent results at scale.

6. Monitor and maintain your data and models

An AI tool is almost a living thing; it needs to be nurtured and maintained continuously. This final step hinges on correctly fulfilling the five preceding steps.

AI needs constant and intense supervision to adapt to changes in the environment, data, and user needs. When deployed in production, a model faces real-world data that might differ from training data, leading to data drift and reduced accuracy. **Anticipating changes and monitoring data continuously are crucial for maintaining effectiveness.**

Addressing data drift starts with understanding its nature. Monitoring data, using statistical tests to detect changes, and implementing retraining strategies are essential for maintaining model accuracy. **A robust data infrastructure and skilled personnel are vital for identifying and addressing drift, ensuring long-term success.**

The way forward

While the advantages of AI are widely recognised, the path to effective AI adoption is fraught with challenges. Technical hurdles, such as integrating AI into existing legacy systems, and affordability, such as costs associated with deployment, were cited as significant obstacles.

Additionally, there is a considerable focus on the necessity for workforce reskilling and change management to accommodate this new technology landscape.

The challenge is now to translate the promises of AI into tangible gains. Decision-makers are aware of the technical, financial and organisational challenges, and seek tangible ROI, to take their AI deployments beyond R&D projects and proof-of-concept.

The next 12 months are critical as organisations transition from contemplation to actual implementation of AI solutions, aiming to realise the potential that AI holds for transforming business processes and outcomes.

Our findings underscore the strategic importance of AI in today's business environment and the urgent need for companies to harness this potential responsibly and effectively.

As companies move forward, AI is not just a technological upgrade but a fundamental enabler of future business success. And these trends and challenges are common to all sectors studied, from aerospace to automotive, and banking to retail.

Thank you for taking the time to read this report; I hope it acts as a trusted companion as you leverage AI as part of your organisation's business transformation.

To read the full version of the Integrating AI report, visit expleo.com

About Expleo

Expleo is a global engineering, technology and consulting service provider that partners with leading organisations to guide them through their business transformation, helping them achieve operational excellence and future-proof their businesses.

Expleo benefits from more than 50 years of experience developing complex products, optimising manufacturing processes, and ensuring the quality of information systems.

Leveraging its deep sector knowledge and wide-ranging expertise in fields including AI engineering, digitalisation, hyper automation, cybersecurity and data science, the group's mission is to fast-track innovation through each step of the value chain.

As a responsible and diverse organisation, Expleo is committed to doing business with integrity and working towards a more sustainable and secure society.

Expleo boasts an extensive global footprint, powered by 18,000 highly skilled experts delivering value in 29 countries and generating €1.4 billion annual revenue.

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