



Accelerating competitive advantage with AI

How organisations are moving from
experimentation to business impact





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Foreword



Artificial Intelligence is the engine of the 4th industrial revolution and is at the heart of the digital transformation currently reshaping business, government and society. Little surprise, then, that the global AI market is expected to be worth up to \$15.7 trillion by 2030.¹

For any organisation looking to get ahead in this AI-led future, the need to accelerate the adoption of new technology across their entire organisation is pressing. Indeed, if the message of our 2018 report, *Maximising the AI Opportunity*, was 'get started', 12 months later it's 'get serious'. Experimenting with AI in pockets is a great way to build capability and prove the potential of AI, but to deliver its full benefits, organisations need to move beyond experimentation. There is now a clear link between an organisation's full deployment of AI technologies and its ability to accelerate growth, improve productivity and retain a competitive edge.

If the message of our 2018 report, *Maximising the AI Opportunity*, was 'get started', 12 months later it is 'get serious'.

In this year's report '*Accelerating competitive advantage with AI*', it is encouraging to see so many UK organisations are doing just that while acknowledging the vital role AI will play in securing their future. Compared to last year, the number using AI solutions in their day-to-day operations has increased, while the number of UK business leaders aspiring to be pioneers in AI innovation

has more than doubled. The challenge now is to move beyond tinkering, break out of the sandbox and harness the power of this technology at scale.

Those looking for a reason to accelerate their AI journey need look no further than perhaps the most important finding of this year's report. Namely, that organisations already moving from experimentation to implementation are performing significantly better on productivity and business outcomes than those still caught in the early stages of exploration.

This gap is widening, with more advanced organisations realising the benefits on their bottom line, while also progressing more rapidly in other key areas of their AI-led digital transformation, such as fostering a culture of active participation among employees and establishing principles to ensure they are using technology in an ethical and responsible way.

This case for increased velocity around AI adoption is applicable beyond individual organisations too. Indeed, a key finding in this report is 44% of leaders recognise AI is a skill that will help secure their future prospects. Yet over a quarter believe the UK has the socio-economic structures in place to become a world leader in AI. Having been asked by the government to lead a study into the UK's digital



Cindy Rose
CEO, Microsoft UK

competitiveness, my colleagues and I understand the impact current political and economic turbulence is having on organisations across all sectors.

While uncertainty of this nature can often breed caution and risk-aversion we believe the better path lies in focusing on ways in which we can create and shape the future – a future in which the UK maintains its global leadership in AI and remains a competitive force. Given this moment in our history, where both leadership and competitiveness on the global stage is more vital than ever, there is no doubt that fully embracing AI-led digital transformation is a critical success factor for the country as a whole.

At Microsoft, our mission is to empower organisations to build on the positive steps they have already taken so they can achieve more. To help them move from small-scale AI experimentation to large-scale AI implementation in a way that drives value for their business, their employees, their customers and the UK as a whole.

How they do it – technically, culturally and ethically – is, above all, the story of this report. It is impossible to overstate how important this journey is for all of us and for generations to come.

Cindy Rose
CEO, Microsoft UK

Executive Summary



In our 2018 study, *Maximising the AI Opportunity*, we took a detailed look at the potential growth and performance benefits presented by Artificial Intelligence (AI) for UK organisations. Using a mixture of research among leaders and employees, along with the insights of experts across the worlds of academia, business and government, we set out a clear roadmap to guide companies of all shapes, sizes and sectors in beginning their own AI journeys.

We also revealed a worrying gap between intent and action, with many organisations at risk of falling into a cycle of conversation and risk assessment rather than taking practical steps to actually introduce the technology into their operating model and culture.

Twelve months on, we find a much-evolved story. Through an extensive literature review and by once again taking the views of policymakers, business leaders, industry experts and employees, we discover that the need to not only close that gap, but progress beyond it, has become supercharged.

Against a backdrop of fluctuating growth forecasts, ongoing political uncertainty and ever more rapid digital disruption, we reveal AI-led digital transformation increasingly holds the key to gaining and retaining a competitive edge – for individual organisations and for the UK itself.

Put another way, it is clear that simply getting started is no longer enough. Rather than experimenting with AI for individual projects or business areas, organisations that can move to full-scale implementation have an opportunity to unlock unprecedented performance benefits. Meanwhile, on the flipside, those who do not are in real danger of falling further behind their more progressive counterparts.

As Mitra Azizirad, Corporate Vice President for Microsoft AI, explains: “In the next five years, every successful company will become an AI-company. It is now the next level of competitive differentiation.”

Perhaps most importantly of all, we find those organisations already using AI at scale are performing an average of 11.5% better than those who are not – up from 5% just one year ago. This is an extraordinary increase and clear evidence of the significant benefits awaiting companies who act now to embed AI across their business.

This heightened performance includes forging ahead on vital areas like productivity and business outcomes as well as on more culturally-led (but no less important) aspects such as fostering an ethos of active participation and continuous learning among employees, and establishing clear usage principles to ensure the technology’s benefits are experienced in their entirety, without bias and inclusively by all.

The anatomy of an AI-enabled organisation

So how exactly can UK organisations scale their use of AI and secure a competitive edge while, at the same time, doing so in a way that is ethical, responsible and in line with the needs of their employees, partners and customers?

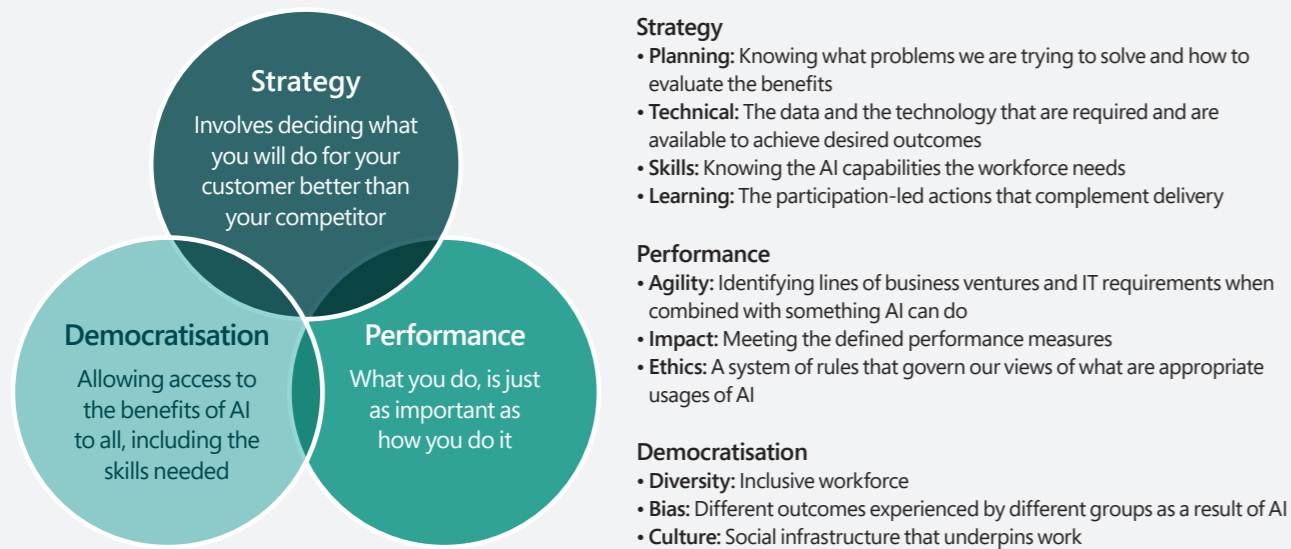
Along with a detailed look at the current state of AI in the UK, this is the question at the heart of the pages that follow. In particular, we view it through the lens of what we call the ‘Anatomy of an AI-enabled organisation’. (See Figure 1.) This reveals how the organisations best placed for success are those in which three core dimensions of AI usage – strategy, performance and democratisation – are all present and symbiotic.

This model also takes into account the fact that as an organisation progresses its AI journey, it naturally comes up against fresh challenges and complexities – both operationally and culturally. Following the model’s key tenets can therefore help answer these new questions and ensure the organisation continues to move forwards, without jeopardising either business outcomes or ethical performance.

“In the next five years, every successful company will become an AI-company. It is now the next level of competitive differentiation.”

- Mitra Azizirad, Corporate Vice President for Microsoft AI

Figure 1.
The anatomy of an AI enabled organisation



Positive progress

Amidst this pressing and holistic need for progress, there is much cause for positivity. Despite the level of political and economic turbulence in the UK and the impact this is having on organisations across sectors (something we consider further in later chapters of this report), our research uncovers compelling evidence that UK organisations are recognising – and acting upon – the value of AI. More than half (56%) are now using it to some degree while the number of companies with an AI strategy has more than doubled – from 11% in 2018 to 24% today.

In short, while there is much work to be done, the building blocks are increasingly in place. Yes, progress may be slower in some sectors than others – as we see in

the Industry Spotlights section later on – but across the board there is a growing acceptance of the need to change as well as an active determination to do so.

The key now is to boost the power of that forward momentum. To accept that getting started with AI is just that: the beginning. To truly gain a competitive advantage, organisations of all types should swap exploration for true AI implementation at scale. They must consider not just the technical aspects of deploying the technology effectively, but the cultural ones too. And of course, its benefits should be felt fairly and inclusively by everyone.

That is the path to becoming a truly AI-enabled organisation. And it is the only one that leads to lasting business success in the future.

“The UK is very well placed to succeed in AI and it presents massive opportunities. The question is whether or not we will take advantage of them.”

– Dr Blay Whitby, Philosopher and Technology Ethicist





Chapter 1 

The state of AI in the UK



There can be no doubt. These are testing times for UK industry. Faced by great political and economic uncertainty at home and abroad, an intensifying climate change agenda and ever more rapid digital disruption, many of the nation's businesses are understandably focused on surviving as much as thriving.

Yet amidst the tumult, a chink of light too. Despite the noise and distractions externally, organisations across sectors are increasingly recognising the value of AI – both by positively impacting their own business and by helping the UK compete on the world stage.

And they are acting upon it too. More than half of UK organisations (56%) are now using AI to some degree, including a rise of 11% in machine learning, a 9% rise in automation, a 7% rise in voice recognition and a 6% rise in smart assistants compared to this time last year. (See Figure 2.)

Similarly, nearly half (44%) of leaders believe AI is a skill that will help secure their future prospects in the UK. And while last year 11% of leaders said they had an AI strategy in place, this has more than doubled to 24% today.

There is also a clear and growing appetite for innovation. Of the UK business leaders we spoke to in 2018, just 14% expressed an ambition to be at the forefront of pioneering new AI technologies and applications. Fast forward to today and this has grown to 38%, underlining not just their openness to change but a burgeoning understanding that, when it comes to AI, keeping pace with the pack is not necessarily enough. True success comes from getting out in front.

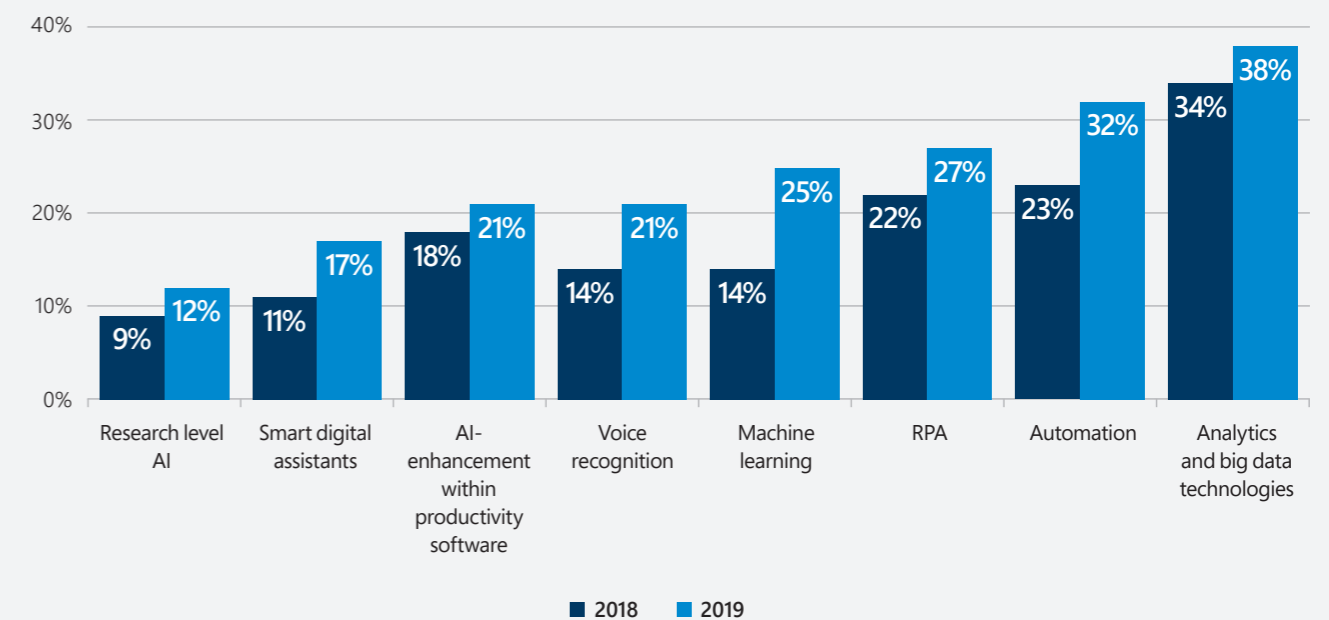
Put another way, we ask how organisations can ensure they are taking the right approach to AI. One that unlocks the power of the technology to generate and expedite growth. That prevents over-analysis and

a fear of 'what if?' – both of which can paralyse progress before it begins. And that helps employees at all levels develop the skills to thrive in an augmented workplace.

Perhaps most critically of all, we consider the importance of establishing a clear code of ethics, commitments, and values when it comes to AI's development and use. Why? Because only then can we build trust in the technology (both inside and outside the workplace), allay concerns about data security, and ensure that the positive impact of AI is felt as keenly from a social perspective as it is from an economic one. Not just now, but for generations to come.

As Robbie Stamp, Chief Executive Officer of management consultancy firm BLOSS, puts it: "There is an element of organisations looking over their shoulders and fearing they are missing out on something that will provide a massive competitive advantage – that if they are not engaged in AI, they are going to lose."

Figure 2. AI technologies being used by UK organisations – 2018 vs. 2019



A huge opportunity

These progressive intentions are well-placed. According to figures from TechJury, the global AI market is expected to be worth almost \$60 billion by 2025, an increase of \$58.6 billion from 2016.² Start-up funding and corporate investment in AI are also at an all-time high, while the latest forecasts from McKinsey Global suggest the technology will add \$13 trillion to global economic activity by 2030.³

\$13 trillion to global economic activity by 2030.

Closer to home, the 2018 House of Lords report, *AI in the UK: ready, willing and able?*, continues to have a powerful influence on policymakers. Indeed, this year alone saw the UK government make a £115 million commitment to support AI training at graduate university level.⁴

Organisations who act now to embed AI across their business therefore have

a huge and compelling opportunity to transform themselves for an AI-led future. To get out in front and reap the financial, operational and cultural rewards for many years to come.

From openness to action

Yet, while being open to an AI-led future is one thing, actually using the technology effectively is another. As the House of Lords' report author, Lord Timothy Clement-Jones, points out: "The discourse about AI has accelerated enormously, as has the pace of adoption. But it is really important people ensure they are creating solutions that actually benefit workers and organisations rather than simply adopting it for its own sake."

In other words, although these steps forward are positive, there is much still to be done to truly unlock AI's transformative potential at both an organisational and national level.

Firstly, and as Clement-Jones alludes to, a large number of organisations struggle with balancing their desire to introduce AI quickly and the need to establish a clear roadmap for where and how they do it. Consequently many miss the vital step of actually identifying the precise business

problem(s) AI is best equipped to solve and, thus, fail to experience the true value it can deliver.

As Nick Wise, Chief Executive Officer of OceanMind, a not-for-profit using insights and intelligence to protect the world's fisheries, puts it: "You should know your problem first and realise AI can be a solution. If you don't understand what you are trying to solve, you are carrying a hammer looking for a nail and AI is going to be of no real use to you."

"If you don't understand what you are trying to solve first, you are carrying a hammer looking for a nail and AI is going to be of no real use to you."

—Nick Wise, Chief Executive Officer, OceanMind

Mind the chasm

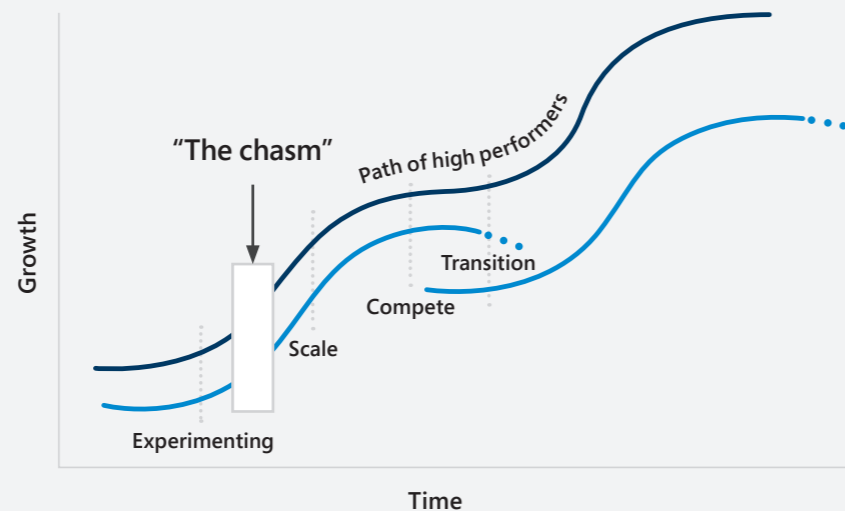
There is also a clear and widening gap between organisations that are deploying AI solutions at scale and those that are either caught in the exploration phase or, more worryingly, not yet using it regularly at all.

Put another way: success tends to breed success, with businesses already feeling the benefits of AI more likely to learn from that experience to increase the speed and effectiveness of adoption elsewhere. Meanwhile, as we see in Figure 3, those who spend too long testing the use of AI in local silos or departmental pockets are more likely to fall into what we refer to as the 'Adoption Chasm' – the gap between experimentation and full implementation. We explore the process of bridging this chasm in more detail in the next chapter.

As Microsoft UK Chief Operating Officer, Clare Barclay, explains: "Organisations that are new to AI are not experiencing the same speed of progress as those that are already on the journey."

Figure 3. **The difficult journey**

The traditional S-curve, used in previous reports, shows how organisations can avoid any potential slow-down in their digital transformation journey by focusing on the next step before the previous one is complete. Here we combine the S-curve model with Chasm Theory, which represents the journey from experimenting with AI to scaling it. The key to crossing this chasm is to power technical improvements through incremental, measurable, predictable progress and to support these with the social and cultural changes required to operationalise AI at an organisation-wide level.





This disparity is not limited to companies operating in the same industry either. As we see during the Industry Spotlight chapter of this report, there are significant differences in how different sectors across the UK are harnessing the power of AI.

With progress comes complexity

Yet even those organisations who have successfully integrated AI into their value chain can ill-afford to rest on their laurels. Why? Because with advancement comes complexity. Alongside the evident benefits AI brings, so do a raft of new challenges and questions that, in many cases, businesses seem unable and/or unready to answer.

For example, just 34% of UK leaders and 20% of employees say they know how to evaluate the business benefits of their organisation’s AI investments, begging the question of how they can determine if the technology is delivering what they actually need it to – not to mention how they know what to replicate or improve as the use cases expand.

Similarly, nearly two-thirds of leaders (63%) admit they do not understand how the AI they use arrives at its conclusions – a figure that rises to 74% among employees – while more than half of leaders (57%) and nearly

three-quarters of employees (73%) confess they do not know what to do when AI is following the wrong course of action.

The impact of this knowledge gap from both a competency and ethical perspective is explored further in Chapters 3 and 4. Suffice to say though, if an organisation’s people are unaware of how or why the technology is working, the chances of them ensuring it is correctly, effectively and responsibly deployed are naturally reduced.

The next step

Clearly, then, for organisations across sectors, progress on their journey of AI-led digital transformation remains far from straightforward. Yet it is – or at least must be for those looking to secure competitive advantage – inevitable.

“We all need to understand that AI is simultaneously very simple and terribly complex.”

– Robert Elliott Smith, Author, *Rage Inside the Machine*

Their task now is to not just introduce AI, but to scale it. To unlock not just its business value, but its cultural and societal benefits too. To move from experimentation to implementation and become not just a business that employs AI solutions, but a truly AI-enabled organisation.

In the remainder of this report, we examine how they do it, considering the following three core pillars in particular:

- 1. From experimentation to implementation:** Scaling AI across the whole organisation, not just in local or departmental pockets.
- 2. Creating a culture of participation:** Ensuring staff at all levels feel empowered to re-skill and actively contribute to the implementation of AI technologies.
- 3. Making AI work for everyone:** Establishing a clear set of developmental standards and operating principles to ensure the technology is not biased, deployed ethically and in a way that actively promotes diversity and inclusion.

We also lay out some practical steps for how every organisation can move forward on its own unique AI journey. Yes, there may be a challenging road ahead. But for those who get it right, unprecedented opportunity awaits.

Ready to lead?

As more organisations recognise the value of AI and seek to adopt it across their organisation, they have a chance to not only outperform their own competitors but to help the UK take a leadership position in AI on the global stage.

But is the country ready to do so? According to the nation’s business leaders, possibly not, with just over a quarter (26%) saying they believe the UK has the socio-economic structures in place to become a world leader in AI.

“The UK has a proud history of AI research and development but when it comes to implementation, we are starting to lag behind the US and China,” says Microsoft UK Chief Operating Officer, Clare Barclay. “Political and economic uncertainty can understandably breed caution but in today’s climate, it actually needs to be the catalyst for greater, faster change. It is time for UK organisations across sectors to focus on innovation and in leading the world on AI.”

From experimentation to implementation

Chapter 2 



As we have discussed already, the need for organisations across sectors to move beyond executing small-scale AI projects and become truly AI-enabled is pressing – and one that will play an increasingly vital role in their ability to gain a competitive advantage in the future. In this chapter (as well as in those that follow), we therefore focus on how they might go about doing this.

Firstly, though, we need to be absolutely clear on why. After all, adopting AI at scale is a significant undertaking; one that will affect people and business units at all levels and across multiple areas of the organisation. It is understandable, therefore, for leaders to ask: what is the benefit of striving to expand the use of AI even further?

The answer is compelling: organisations already making progress on their journey to implementing AI at scale are performing 11.5% better than those who are not, a figure that has more than doubled since last year. In particular, they are more productive (11%), show higher profitability (12%) and experience better business outcomes (11%).

This offers a huge boost forward for any organisation, carrying not just the obvious impact on its bottom line but also significant advantages when it

comes to stealing a march on rivals. As Microsoft UK Chief Executive Officer, Cindy Rose, explains: “There is now a clear link between an organisation’s full deployment of AI technologies and its ability to gain and retain a competitive edge.”

Organisations already scaling AI are performing 11.5% better than those who are not.

Similarly, AI-advanced organisations (those that are successfully employing the technology at an organisational level rather than just a local or departmental one) are more agile than those that are experimenting with it, meaning they are better equipped to respond to customer and employee needs, changes in technologies, or market conditions. Meanwhile, the ones experimenting are more agile than those not investing in AI at all.

“The sooner organisations can adopt modern technologies such as AI, the more they can add to the longevity of their business. AI allows you to scale and provide answers.”

– Kyle Fugere, Global Head, dunnhumby Ventures and dunnhumby Labs

Strides not steps

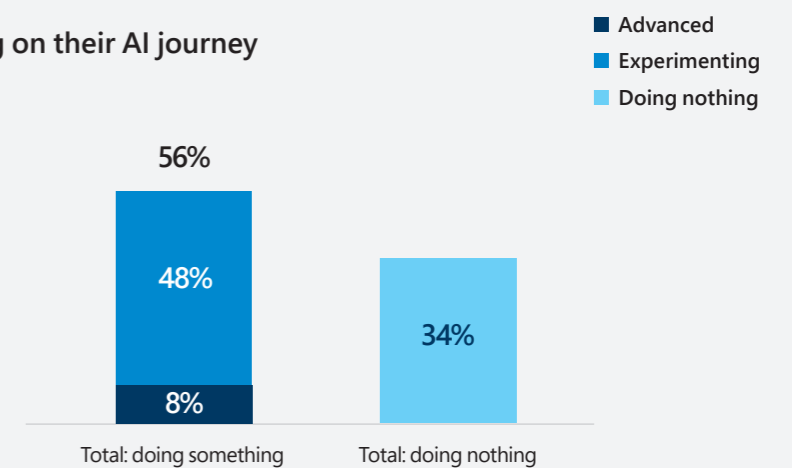
While more than half (56%) of UK organisations are now using AI to some degree and the number with an AI strategy in place has more than doubled (from 11% in 2018 to 24% today) is encouraging, it does not mean progress is necessarily happening quickly or expansively enough.

Put another way: first steps should not be mistaken for giant strides. Of all the business leaders we surveyed, only 8% classified their organisation as Advanced AI users while nearly half (48%) currently remain in the experimentation phase. (See Figure 4.)

Figure 4.

How UK organisations are progressing on their AI journey

Advanced-AI organisations are classed as those in which AI is involved in most things they do, while those labelled as experimenting are using it only in discrete business areas or functions. Meanwhile, given the pervasiveness of AI in applications and software services, those who rate themselves as either doing nothing or don’t know are most likely not doing any conscious implementations rather than failing to use it at all. Opposite are how UK business leaders are split across those categories.



- Advanced
- Experimenting
- Doing nothing

Total: doing something

Total: doing nothing

Moving from the 48% to the 8% is a holistic process. Indeed, the best way for organisations to scale AI is the same way they should any other aspect of ongoing digital transformation. Namely that it is iterative and far more than a purely technical project owned and overseen by the IT department. It is something in which the entire organisation must feel consulted and engaged.

As Microsoft UK Chief Operating Officer, Clare Barclay, points out: "The more organisations embrace the need for holistic cultural transformation, the faster they will be able to scale their use of AI. Leaders must take action now to embed diversity and inclusion as well as ethical principles into their AI strategy, bringing to bear the skills of all and ensuring no one gets left behind."

Start with the problem

Equally key is knowing *where* to start. That is, no AI project in the experimentation or implementation phase, is likely to get very far unless everyone involved is crystal clear on the actual business problem being solved. This includes having a clear view on what the AI is expected to do, along with what level of resources are required to introduce, manage and measure it.

Indeed, as we see in the Box Out opposite, being clear on both purpose and function will help prevent an organisation from either under- or over-extending itself while also mitigating the risk of it falling into the adoption chasm between experimentation and implementation. Taking the time to identify the issue, set the right course of action and improve progressively to achieve their goal is the smartest way forward.

"It is worth understanding whether you are just trying to do something for technology's sake or if there is a genuine problem that might be solved through AI."

– Dr Lee Howells, Head of AI, PA Consulting Group

Technically correct

Similarly, something all advanced AI organisations tend to have is a strong data strategy – accompanied by the tools and capabilities needed to deliver it.

The importance of this is recognised by business leaders too, with 43% agreeing that preparing usable data represents their biggest challenge to scaling AI. Remember also that Analytics and Big Data technologies currently top the list of AI applications being used by businesses in the UK (see Figure 2, page 8).

This need for companies to get their data house in order is true across all sectors, with experts from the fields of finance, healthcare, retail and manufacturing united in seeing it as a critical component of any AI scaling plan.

It is what Dr. Lee Howells, Head of AI at PA Consulting Group, which specialises in management consulting, technology and innovation, refers to as the "critical mass" – the big, evolving picture that can uncover game-changing relationships between information sourced from different parts of

the organisation, then use them to power new, company-wide AI applications.

The leadership challenge

Of course, moving from experimenting with AI to implementing it at scale is a complex process. One that cannot happen overnight and that brings with it a number of significant, albeit surmountable, barriers to success.

Chief among them is the pressure it places on leadership. Yes, in a strong organisation, all staff have a responsibility to be curious and proactive about driving positive change, especially, as we have seen in previous years, when it comes to digital transformation. Yet as the people tasked with setting an organisation's strategic direction, leaders are being required to absorb a great deal of new information about the capabilities of AI and then quickly ascertain exactly what role it can and should play within their organisations.

Positively, far more leaders want their firm to be seen as trailblazers in AI innovation, than this time last year. They now need to back that up with action, in particular by investing more in their own AI education and training so they can then pass on that same knowledge and progressive mindset to employees.

Yet our research also reveals that many UK leaders lack an understanding of how AI can be used in a fair, responsible and effective way. Currently, just over a fifth (21%) say they have completed training in how they can use AI in their jobs while around two-thirds (63%) do not know how AI works out its conclusions. Overcoming this will be a crucial factor in whether they are able to implement AI quickly, effectively and responsibly.

Fishing for data

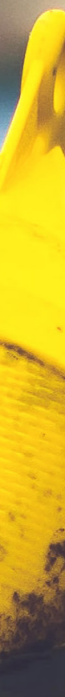


OceanMind is a not-for-profit organisation that empowers enforcement and compliance to help governments and the seafood industry to protect the world's fisheries. Here, Chief Executive Officer, Nick Wise, explains how the company is using AI to solve a very human problem.

"A big part of what we do is looking at the movement of fishing vessels around the world. Of those we are able to track (eventually 3 million), each one produces somewhere between tens and thousands of data points per day. In the past, all this data had to be reviewed by a human who would look at a particular vessel, understand its movements, put those movements in context with regulations and decide whether or not there was something suspicious to follow up on. For countries like Thailand, with thousands of vessels, that is just an insurmountable problem. You simply cannot get enough people with the right expertise to do it.

So, we trained a machine to understand some of the key knowledge among our employees. This meant it could perform an initial sift of the data before it was passed on to us humans. So, whereas in the past a team of people would have to look at the data and then make trade-offs and choices about what to analyse based on the time available, now, with AI, it is possible to sort the data much faster according to its characteristics. Based on what the AI filters, the teams can then spend their time looking only at information flagged as anomalous or important.

Using the technology has already saved countless hours and helped us be far more accurate and effective in selecting the vessels and data we investigate. And the reason it has worked so well is we started with a specific problem for the AI to solve rather than the other way around. For any organisation, do that and what can be achieved with AI is virtually limitless."



“There is absolutely no excuse for anybody in business, at whatever age they are, not reinventing themselves in terms of really understanding how AI works.”

— Lord Timothy Clement-Jones, Chairman, House of Lords Select Committee on Artificial Intelligence

Evolving with the technology

The other challenge organisations – and leaders, in particular – face as they seek to scale AI adoption is ensuring they are able to manage the technology as its functions and use cases evolve.

As we see in Figure 5, there remains a degree of uncertainty about how to deal with any issues or teething problems encountered after deployment, issues that even the most well-prepared business is unlikely to avoid. 71% of leaders are not in agreement with how to cope with changes to staffing.

To return to a point made earlier in the chapter, being able to answer these kinds of questions, and make smart decisions as a result, is much easier when you have begun with a clearly defined view of what success looks like. Although it should also be said that being clear on your

business objectives does not mean being forever wedded to them. AI-led digital transformation is a process of evolution, requiring companies to shift and adapt accordingly. This further underlines exactly why organisational agility is so important too.

The path to best practice

For any organisation treading its own unique path to embedding AI at scale there is much to consider. What business problem(s) can AI solve? What will the technology actually do? How do we manage it correctly and deal with it when things go wrong? How can we develop sufficient capability levels among leadership and staff? And how do we foster the necessary agility to allow us to adapt and thrive as we go?

Answering these questions can help them secure the competitive edge AI promises.

Figure 5. Leaders unclear on how to successfully manage AI projects

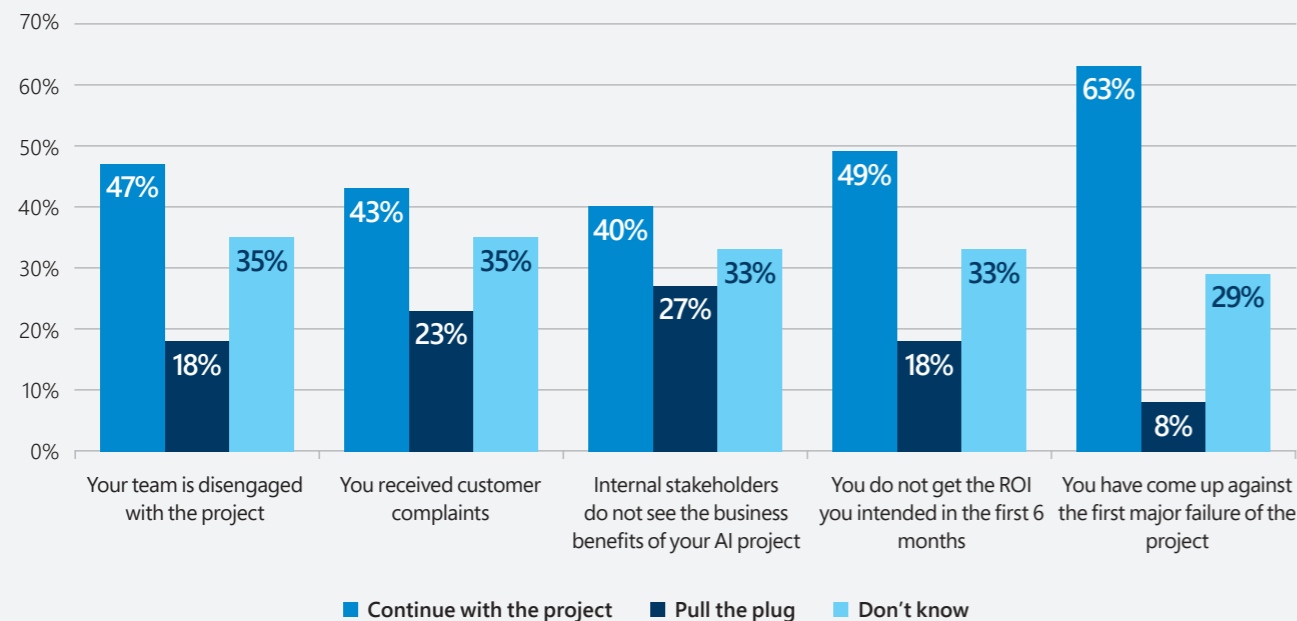
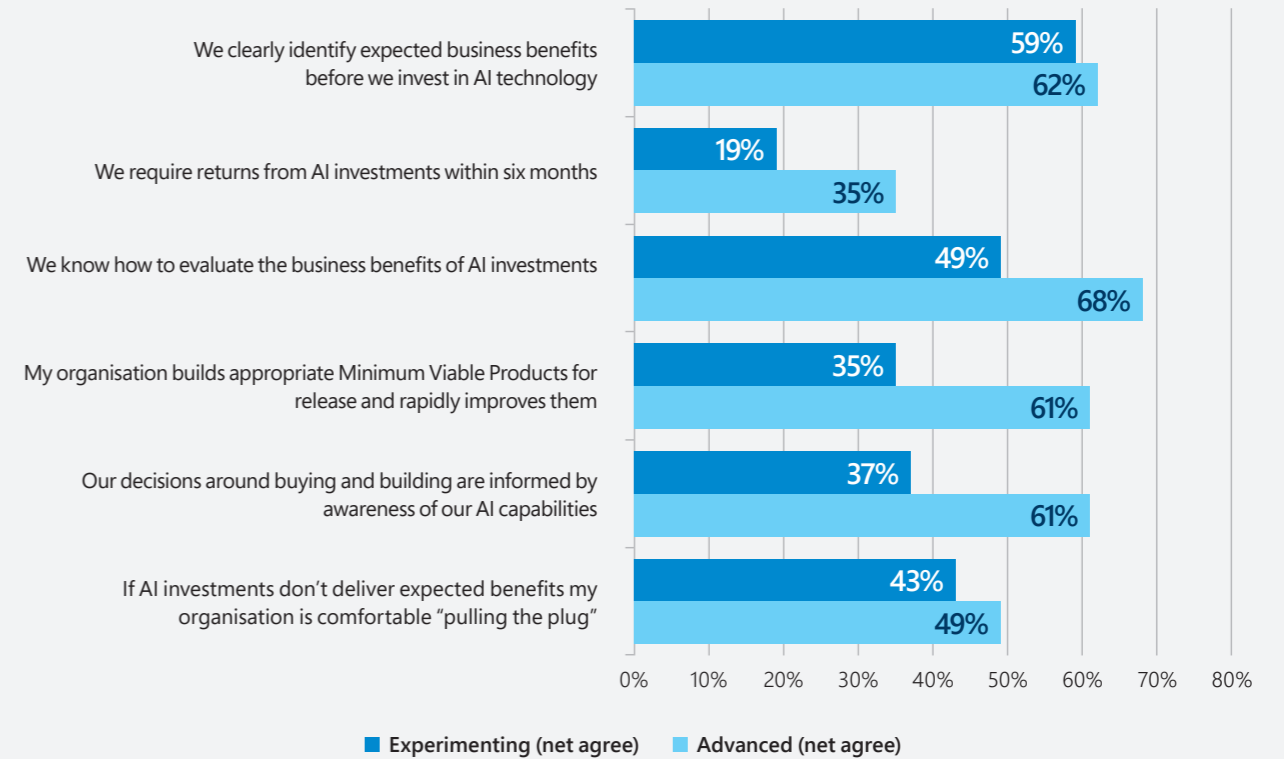


Figure 6. The AI best practice gap



And the sooner, the better. As with so much in life, the more organisations use the technology, the better they understand it and the more exponential their progress to scaling it becomes.

As we see in Figure 6, the more advanced an organisation is on its AI journey, the more likely it is to exhibit some of the key best practices associated with AI use.

Perhaps more than anything else, this means being brave enough to disrupt what may have worked in the past, focused enough to deploy AI solutions in the right places and flexible enough to change course as the technology evolves. As Maureen Metcalf, Founder and Chief Executive Officer and Board Chair of organisational leadership

experts at Innovative Leadership Institute, says: “We have to rewire how we think about leadership and what we think to run our organisations. What we did to get us here will not get us to the next level. We’re creating the road as we are mapping it.”

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— Maureen Metcalf, Founder and Chief Executive Officer and Board Chair, Innovative Leadership Institute

Case study: Lloyds Banking Group

Having served the nation through its products and services for more than 250 years, Lloyds Banking Group is using AI technologies to remain at the forefront of banking innovation. After a period of experimentation, the company is now implementing AI use cases across different parts of the group, generating real value for its business, staff and customers. Here, Head of AI Business Integration, Abhijit Akerkar, who also serves as an Expert Advisor on the All Party Parliamentary Committee on Artificial Intelligence, discusses his perspective of scaling AI effectively and responsibly.



How best do you drive excitement about AI within business?

What I have seen work is to have transparent conversations with a range of business leaders, explaining the technology and its capabilities as well as laying out what it can and cannot do for them. This helps kickstart an open, more collaborative conversation that, in turn, generates a lot of ideas and opportunities about where AI can add most value.

What are the key considerations before investing in an AI solution?

It pays to look at three axes. The first is the size of the prize. Is it big enough for us to pursue? Second, how long will it take to generate value? What will it take in terms of systems integration and processes to translate the output of a machine learning model into a tangible business outcome? And, third is feasibility. In other words, is the problem algorithmically solvable? And if so, do we have the data internally or can we source it from elsewhere? If the answer to all these questions is 'yes', you have hit the sweet spot – providing, that is, it will pass through your ethical or compliance tests too. Finally, your key business stakeholders have to be sufficiently excited about the solution to sponsor it. So, do not underestimate the importance of taking the time to get the right people onboard from the outset.

What are the key ingredients required to be in place for the safe and effective scaling of AI?

The positive results from initial use cases serve as the biggest catalyst, but this has to be supported by ample demonstration of risk governance and controls to give everybody the confidence that we can scale AI safely and responsibly. For effective scaling, you will also need investment in a talent pipeline, capability building, and a scalable tech stack that would allow seamless build and deployment of machine learning models.

What does it take to get data ready for scaling?

A successful AI solution usually involves innovatively piecing together a variety of data spread across multiple sources and a range of systems. So, the first step is to get access to subject matter experts who understand that data. Then comes the most time-consuming task of assessing the data quality, cleaning it, obtaining the right policy approvals for transferring the data to a data lake, and organising it in the most useful fashion. It is like moving a data mountain, which can take as much as a couple of months. The fruits of the hard work are worth it, though. Once you have the data foundation ready for the first use case, you can easily launch and run, say, 15 different ones simultaneously, thereby unlocking much greater value.

4 practical steps to implementing AI at scale

Michael Wignall, Azure Business Lead, Microsoft UK




There are three things I always come back to when thinking about the key elements of any successful AI scaling programme. First is an organisation's people and, in particular, making sure they have the right skills and capabilities to use AI effectively and responsibly. Second is creating a culture that supports development, quick turnaround and failing fast. And, third, selecting the right technology to make good use of the data.

My top tips for moving from AI experimentation to implementation are therefore:

- 1 Do not view AI implementation as just an IT project. Instead, treat it as a business change programme of which technology is a key element.
- 2 Take the time to get people onboard, articulating the reason for the change to stakeholders and the benefits they can expect. No-one should feel they are having AI 'done to them'.
- 3 Identify and scope a business problem and then plan how AI can help solve it. Try not to kick off with a new business problem either; start with one you already know and understand.
- 4 Do not expect AI to scale organically. You need to build an organisation-wide strategy. Businesses that are purposeful and think about scale are better than those who do a bunch of projects and hope it will just accrue all together and lead to scale as a result.



Creating a culture of participation

Chapter 3 



While in the previous chapter we discussed the strength of the business case for implementing AI at scale, there is a very human factor to consider here too. Despite the doomsday headlines of recent years, the technology's growing influence is far from a case of robots taking over the world.

In fact, according to PWC's 2018 *Economic Outlook* report, there is a very real chance that "AI will create as many jobs as it displaces."⁵

Yet, even so, for organisations looking to successfully integrate and expand their use of AI, the need to ensure workers feel engaged in, and empowered by the journey ahead cannot be underestimated.

"Saying to everybody 'you won't lose your job if you participate in the transformation' is a critical factor," explains financial author and blogger,

Chris Skinner. "You have to give people the opportunity to change. If they reject that opportunity, that's something else. But if you don't give them the chance, it creates huge amounts of resentment."

"Organisations have a responsibility to take their people along with them on their AI journey, helping workers learn and develop based on their skills and interests."

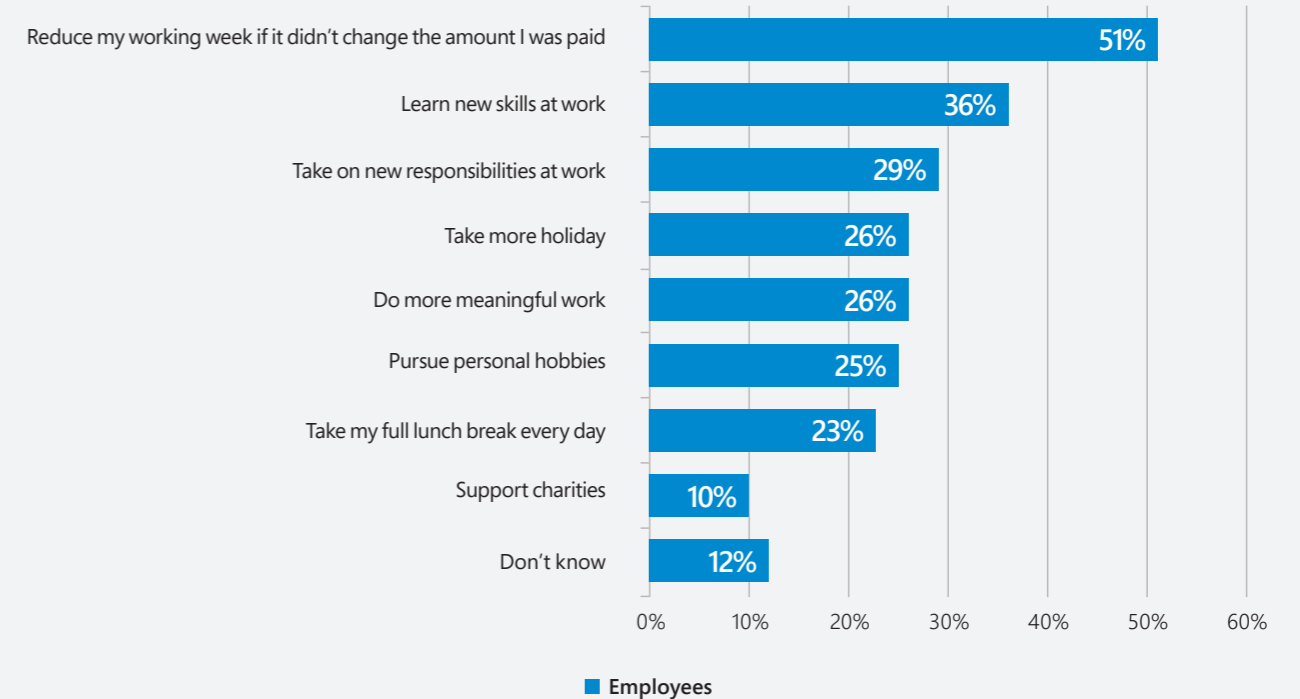
– Priyank Patwa, Head of AI, M&GPrudential

Agents of the future

The good news is, the desire to participate among both leaders and workers is there. Indeed, as we see in Figure 7, when asked how they would spend any time they save due to their organisation's investments in AI, more than a third of employees (36%) said they would use it to learn new skills at work while 29% insisted they would take on new professional responsibilities. (See Figure 7.)

Interestingly, these answers were behind only the option of reducing their working week without a cut in pay. And even here it should be noted that, as we see in the East Suffolk & North Essex NHS Foundation Trust (ESNEFT) case study at the end of this chapter, working less time does not necessarily mean creating less output. It just means doing higher value work.

Figure 7.
How UK workers would reinvest time saved by AI



As one participant in a social experiment we conducted around AI augmentation in the financial sector told us: "I would use AI to make my work more meaningful by collaborating with senior leaders and managing directors to ensure I am delivering the analysis they need and that servicing levels and profitability are on target."

This is what Microsoft UK Chief Operating Officer, Clare Barclay calls "genuine empowerment" and it underlines a growing view of AI as a force for job augmentation not replacement among UK workers, along with generating enthusiasm to become active agents in the future of work.

Skilling up

Of course, to do so, leaders and employees have to be armed with the skills and knowledge to use the technology confidently and competently. Not just to experiment either, but to solve real business problems.

Here, though, there is a 'but'. Similar to the action/intention gap we discussed earlier when it comes to leaders' own AI education, there is a noticeable discrepancy between what the nation's boardrooms think they are doing and what, in fact, is making its way down to the shop floor.

Only 11% of UK workers have completed training to improve their understanding of how to use AI in their job.

So, while 66% of leaders in AI-advanced organisations say they are actively supporting employees with the implementation of AI and a further 76% claim to understand the breadth and depth of AI skills their workforce will need to be successful in the next 12 months, just one in 10 (11%) of UK workers overall say they have completed training to improve their

understanding of how to use AI in their job. Perhaps most astonishingly, 96% of all UK workers also say they have never been consulted by their manager about the introduction of AI in their organisation.

Beyond training

Closing this disconnect and ensuring workers have the tools to augment their roles with AI is critical. Yet while training will, of course, play a large part in this, it is really just the first step. As with any effective digital transformation project, there must be a process in place to ensure learning is both continuous and experience-based, and that communication flows openly and effectively in both directions. (Interestingly, while 96% of employees say they have never been consulted by their manager about the introduction of AI in their organisation, 83% of leaders say their staff have never asked about the organisation's AI plans either.)

Although this mindset shift may take time to cultivate, it will, ultimately, reduce the risk of resistance and/or ineffective implementation, thereby saving more time further down the line. Why? Because employees who are free to step outside the 'classroom', actively integrate their knowledge of AI into their day-to-day job, ask questions and openly feedback on their experiences to leaders will find it far easier to trust the technology, develop new skills and capitalise on the opportunities the technology offers them long-term.

As author Robert Elliott Smith puts it: "enabling the human to do their job is really important." That might be by helping them be more productive, reducing the amount of time they spend on more repetitive, process driven tasks or allowing them to collaborate more seamlessly with colleagues. Either way, it has to involve problem-solving and innovating around real situations not hypothetical ones.

The benefits work both ways, not only making employees feel more comfortable using AI but by giving them a platform to suggest real-life improvements to leadership.

"Decades of research show that although employer-provided training is important, the lion's share of the skills needed to reliably perform a specific job can be learned only by doing it."

— Matt Bean, Assistant Professor, Technology Management, University of California

This change is as much about culture as it is technology. A move from a situation in which only certain people or business functions have the tools to experiment with AI, to a true democracy in which everyone has the building blocks to integrate it into their working day and can actively contribute to the development of new solutions, regardless of where they sit within the organisation.

For Lydia Gregory, Co-Founder of AI consultancy FeedForward AI, this sense of a single, unified workforce collectively harnessing the power of AI rather than working in departmental or disciplinary silos is key to unlocking the technology's full set of performance, growth and employee augmentation benefits. "It is such a shame when roles are divided into technical and non-technical. The way forward is combining these roles. You need a multi-disciplinary team."

The power of democratisation

This is not an either/or. A choice between collective engagement or not. Our research found that an organisation's use of AI actively *needs* a democratic culture to support the requirements of scale.

In other words, fostering open, collaborative participation in which the entire workforce can learn, communicate

and improve in the context of their actual job offers the only lasting path to prosperity. On the flipside, and to refer back to the adoption chasm in Figure 2 (page 8), introducing AI in small pockets or in darkened rooms makes it virtually impossible to cross from the initial experimentation phase into full-scale implementation.

What is more, we also found a direct correlation between how advanced an organisation is on its AI journey and the broad-mindedness of its culture, something we explore further through the lens of diversity and inclusion in the following chapter of this report.

Indeed, an advanced AI organisation is more likely to both understand and develop the skills and mindset needed to work with the technology and create a culture of sharing knowledge and experiences related to it. This, in turn, makes it easier for them to conduct the necessary skills mapping and forward planning to empower employees to do better, smarter, more meaningful work.

As Jeanne Meister, founding partner of HR advisory and research firm The Future Workplace, explains: "Transparency is key. You have to make sure employees understand the benefits of AI and do not fear its ability to make certain tasks superfluous."⁶

Perhaps more than any other, these findings bring into stark relief the need for businesses to not just start their AI journey but establish the right culture to drive it forward. Now more than ever, a collaborative and democratic organisational ethos goes hand in hand with its ability to scale AI technologies and, in doing so, gain a competitive edge.



Case study:

East Suffolk & North Essex NHS Foundation Trust

Darren Atkins, Chief Technology Officer at East Suffolk & North Essex NHS Foundation Trust (ESNEFT), recently oversaw the implementation of the organisation's first ever Robotic Process Automation (RPA) solution. Here, he shares his views on the growing role of AI in healthcare and explains why getting staff on board from the outset was key to his project's success.



ESNEFT has recently adopted an RPA solution to make your operations more efficient and potentially help avoid human errors as well. Can you explain more about that?

Although, ultimately, it has been successful, the project was quite difficult to get off the ground. I didn't have the buy-in from the Board, something that is critical to any transformation programme. The issue was that no-one had really seen RPA being used in healthcare, so I had nothing to use to reassure senior leadership it would work. But then I discovered an intelligent automation platform from Thoughtonomy which, because it is Cloud-based and hosted in Microsoft's cloud, meant deploying the robots would be a lot easier. We bought the platform and it was up and running within just three days. Suddenly, I had five robots ready to help us, so the first thing I did was a pilot study for invoice processing in our finance team. Within the first month we released around 300 hours. By month 12, we were releasing about 4,500 hours a month. That is a lot of time saved and a proof point I could then take to the rest of the organisation.

How can AI change the healthcare industry within the UK and at ESNEFT?

AI in healthcare is an extremely exciting prospect. We are still very much in the early days, trying to balance the hype and opportunity with a sense of realism, but used appropriately, there is no doubt AI will help medical professionals improve and verify the decisions they are making. To be clear though: this can never be about replacing staff. It should be about allowing them to maximise their skills, be more efficient, spend more time with patients and, ultimately, get better outcomes.

How did you manage those changes from a cultural point of view?

This is the NHS, so things do not tend to move fast! The way I have adopted RPA at the moment, it is not about doing massive transformational change, it is about automating existing processes to make them a lot faster and free up staff from the parts of their roles they enjoy least. That is an easy and attractive message to understand and means people do not see it as a threat to their job. I also spend a lot of time with staff to watch how they work and really understand the opportunities at the coal face. They are the ones struggling with inefficiencies that are sometimes invisible to service managers and leadership. If you do not create a culture that means people embrace, participate in and experience the real value of the technology, they are not going to come up with ideas for how to make it better.

Where are you seeing the most progress?

There have been some good successes with AI in health already, but these tend to primarily be in specialist areas, like cancer pathways and diagnostic reporting. What is vital is that we apply it in a measured, governed and non-biased way. We know AI fits somewhere in the future, but I do not think we can predict right now exactly where it is going to take us.

Finally, what is next?

Jointly with our Board, we have created a whole culture around making time matter. The theory is if the robot workforce can free up time for corporate and clinical staff, that has to be a good thing. Likewise, if a patient spends one less minute queuing up to pay for their car park ticket because we have automated it, that is time they can spend with their doctor, getting the help they need. Above all, we want to wake up the whole organisation to the idea of using automation for clinical work. This is where the real value is – around having better outcomes for patients and providing our medical staff with more time to spend with the people they treat.

4 practical steps for creating a culture of participation

Mitra Azizirad, Corporate Vice President, Microsoft AI



AI disruption is inevitable. Every single business I talk to is going to become an AI business; it is the next level of competitive differentiation. While, in previous years, we have seen an AI approach based on proofs of concept, organisations now need to adopt a new mindset and a new way of working if they are going to embed it at scale. After all, it is not the technology that holds deployment back, it is the lack of an AI-ready culture. Businesses need a strategy that allows every level and layer of the organisation to participate in the journey to implementation.

Here, then, are my top tips for creating a culture of AI participation:

- 1 Prioritise explainability. You should not have to be a data scientist to explain the results AI is spitting out. Everyone has to be supported in understanding how the technology works.
- 2 Allow people from across the organisation to participate from the outset. Then, as you begin to scale, you will be doing so from a foundation of strength and experience.
- 3 Accept that the more you use AI, the more the human interaction with the technology becomes critical. This is not about replacement; it is augmentation.
- 4 Sign up to Microsoft's AI Business School. We help companies refine their organisational strategy and culture so they can innovate better around AI and create new opportunities for their business, employees and customers.



Making AI work for everyone

There is a popular metaphor in the technology industry used to describe the relentless pace of technical innovation. Taken from Lewis Carroll's famous book *Through the Looking Glass*, it says that "if it takes all the running you can do to keep in the same place, if you want to get somewhere else, you must run at least twice as fast as that."

In other words, when it comes to the responsible use of AI, organisations have to move just as quickly to establish the correct ethical and cultural frameworks as implementing new technology solutions themselves.

Certainly, as the capabilities and usage of AI expand, the question of how to programme and deploy it in a way that is ethical, unbiased and inclusive is one that nearly every organisation is having to answer.

"Responsible AI seems to be something everyone is afraid of and the last thing on the list in terms of actually doing something about it."

– Mitra Azizirad, Corporate Vice President for Microsoft AI

As Wendell Wallach, Professor and Chair of the Technology and Ethics Research Group at Yale University's Interdisciplinary Centre for Bioethics, explains: "Better companies are

going to fully grasp that good ethics is a cost of doing business. And that requires real investment, not superficial representations, to make concerns go away."

The best of both worlds

Clearly, then, when scaling AI, it is no longer enough for organisations to simply optimise for performance. Instead, they must also take action to create a fair and rewarding value exchange for all stakeholders – employees, leaders, customers, investors et al. They have to create a culture in which AI works for everyone.

"It is crucially important in the design of any AI system to reflect the needs of all its users," explains Theo Blackwell, Chief Digital Officer at the Mayor of London's Office. "To do it, organisations need a more diverse workforce involved in the design process and more focus on – and input from – end users."

As well as being good news for those using AI, this fair and inclusive approach to the technology and its benefits carries a powerful business case.

Firstly, organisations with a diverse workforce have been consistently shown to outperform those that do not.⁷ Secondly, by ensuring AI tools do not alienate or overlook specific groups, businesses can ensure they are recruiting from and harnessing the broadest possible pool of talent. And, thirdly, gaining a reputation for high ethical standards is, in an age of conscious consumerism, a must-have for building deeper, more loyal relationships with customers.

Meanwhile, outside an organisation's workforce, there are a growing number of positive examples of AI making

technology more inclusive from a functional perspective, particularly for disadvantaged groups. Examples include the accessibility and assistive tools that add subtitles to audio or video streams in real time or enable text-to-speech conversion for phone conversations. We also explore how AI is helping improve mobility for visually impaired people in our Case Study at the end of this chapter.

"You need to hardwire ethical decision-making into the core of your operations."

– Hugh Milward, Director, Corporate External and Legal Affairs, Microsoft UK

Operationalising ethics

In many ways, the job for organisations can be summed up as the need to operationalise ethics. As Hugh Milward, Director, Corporate, External and Legal Affairs at Microsoft UK, puts it: "You need to hardwire ethical decision-making into the core of your operations."

Two of the most important criteria here are the ability to accurately identify all ethical issues as they arise and understanding how to respond when they do. Crucially, and as we see in Figure 8, the more advanced an organisation is in its AI-led digital transformation, the more likely it is to have established the cultural and ethical principles to deliver against these criteria.

Figure 8.
More advanced AI firms are better at tackling bias

Compared to organisations not yet using the technology at scale, AI-advanced businesses are more likely to:



Ensure AI is used responsibly



Identify and address bias



Create a culture of sharing knowledge and experiences related to AI



Understand and develop the skills and mindset needed to work with AI



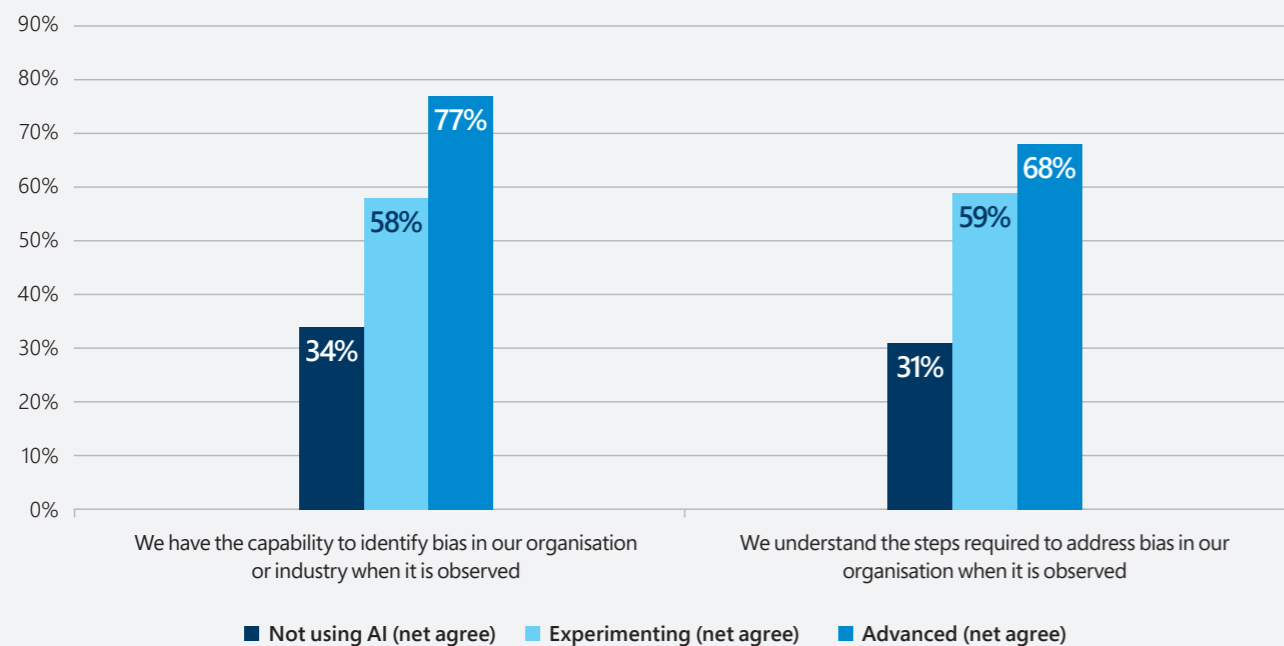
Create and implement workforce diversity plans

Indeed, our research found that using the technology at an organisational level leads to stronger democratic practices all around, including a greater commitment to diversity

and ethics, along with a heightened focus on skills development. Advanced-AI organisations are also significantly more able to identify bias within the business

generally and understand the required steps to combat it when compared to those still experimenting with or waiting to adopt the technology. (See Figure 9.)

Figure 9.
More advanced AI firms are better at tackling overall bias



Embracing diversity and inclusion

For employees, the benefits of feeling part of an eclectic, diverse and ethically minded organisation are also myriad. As one participant during our AI-augmentation social experiment in the financial sector said: "If everyone comes from the same background, you are going to get very similar opinions all the time. You need people from all walks of life to actually service clients better and come up with better ideas."

The challenge emerges when turning the right words into the right actions. While workers at all levels aspire to be part of a diverse, inclusive environment, there remains some scepticism among leaders and staff as to whether AI will, if it continues to be deployed as it is now, actually have a positive impact on the make-up of the future workforce.

According to the 2019 Edelman Trust Barometer survey, 71% of employees strongly expect to have a voice in key decisions and that their employer's

culture is both values-driven and inclusive.⁸ Yet our research shows only 23% of business leaders think AI will lead to improved diversity in the workplace in the next five years while just 18% think it will create opportunities for people with different backgrounds in their industry.

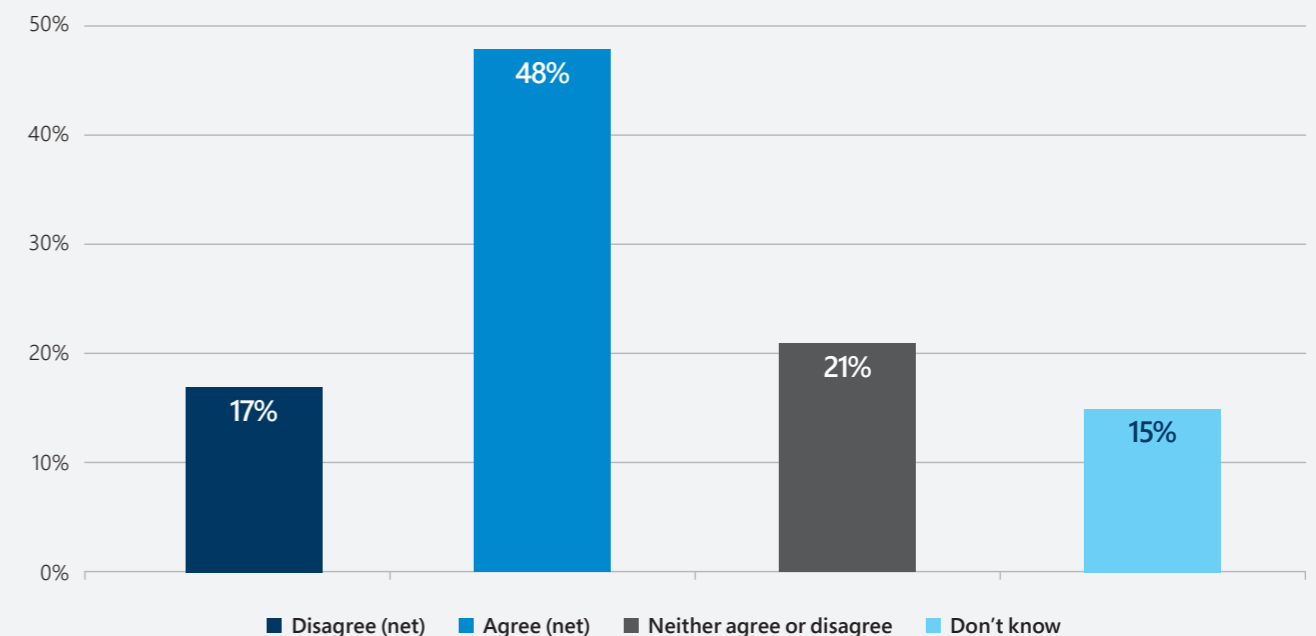
Meanwhile, fewer than half of employees (48%) currently trust their organisation to use AI responsibly. (See Figure 10.) This is likely due in part to a lack of inclusion and education of how the technology is being deployed and, in part, down to a lack of awareness about the way AI reaches its conclusions. (See Chapter 2.)

Indeed, as several participants in our social experiment confirmed, many people are unaware they are collaborating with intelligent technology at all, which makes it difficult for them to spot the potential for ethical violations. "I find it hard to understand how a machine can generate the wrong data but I am sure it does happen," one told us.

"If you want to create a truly diverse team, you need a strong corporate culture that genuinely celebrates diversity and alternative perspectives."

—Robbie Stamp, Chief Executive Officer, BLOSS International Ltd

Figure 10.
Extent to which employees trust their organisation to use AI responsibly



These figures are concerning – should they remain this way. Yet if UK leaders can act now to tackle the issues head-on and embed diversity and inclusion in their AI strategies moving forwards, there is no reason to believe the positive cultural impact we have seen the technology have in AI-advanced organisations will not be felt more widely.

Walking the walk

Perhaps the greatest challenge organisations face in scaling AI ethically comes when responsible action and commercial ambition are at odds. In other words, there will inevitably be times when doing the right thing from an ethical perspective is not the same as doing the right thing for the business bottom line.

Here, companies must be resolute in walking the walk, focusing on the long-term reputational and cultural benefits of implementing and deploying AI responsibly compared to the short-term financial gains of pushing on regardless. As Hugh Milward, Director, Corporate, External and Legal Affairs at Microsoft UK, acknowledges: “It’s hard for a company to make a decision that looks like it is against its own short term commercial interests but that is the point where ethics really hits the road. Having the right process by which making the ‘right’ decision is eased for the Chief Executive Officer and management of the company is really important.”

Often, doing so will mean taking decision-making out of the core team, department or even organisation implementing the solution. As philosopher and technology ethicist, Dr Blay Whitby, says: “Every organisation needs an external point of view concerning their ethical practices. You need an outsider saying, ‘why do you think that assumption is right?’”

While seeking third-party guidance may not always be possible, establishing an objective ethical review panel with the knowledge to understand the possible consequences of an AI application as well as the power to hold leadership to account when things go wrong is therefore a key element of any large-scale implementation programme.

For example, Microsoft’s AI and Ethics, our AI and Ethics in Engineering and Research (AETHER) committee includes senior leaders from all over the business, focusing on the proactive formulation of internal policies and responses to specific issues in an appropriate way.

Crucially, these reviews should not be restricted to times of crisis. Regular real-time analysis and frequent review cycles during both the design and implementation phases of an AI project can help avoid unconscious bias, stereotyping and ‘bad data’ being baked in before things get too far down the line. Adding feedback mechanisms so users can flag inappropriate responses

can also help mitigate harm and allow for ongoing improvements.⁹

The next level

However an organisation is using AI technologies and whatever the steps they are taking to ensure they harness it effectively from a technical point of view, understanding the ethical implications of embedding and scaling that solution is now equally important.

As shown, it has long been accepted that fostering a diverse, inclusive and collaborative culture pays dividends in terms of business performance, innovation, staff retention and customer engagement. Through AI-led digital transformation, organisations now have the chance to take that to the next level, creating a better, fairer, more inclusive world within their own four walls and beyond.

As Benedict Dellot, Head of AI Monitoring at independent UK body The Centre for Data Ethics & Innovation, points out: “Bias has always been with us. Our success in job interviews, our ability to secure a bank loan, the likelihood of being stopped and searched in the street – each of these decisions has always entailed a degree of bias. The use of algorithms could certainly amplify this type of discrimination, but it could also be the solution to it. As an observable set of rules, algorithms give us an opportunity to spot and eliminate bias in a way that wasn’t previously possible.”

“Every organisation needs an external point of view concerning their ethical practices. You need an outsider saying, ‘why do you think that assumption is right?’

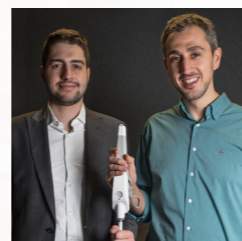
- Dr Blay Whitby, Philosopher and Ethicist



Case study:

WeWALK

WeWALK is a project that helps visually impaired people improve their overall mobility and orientation. It is a sleek and ergonomic device that attaches on top of any regular white cane, transforming it into a smart cane that can pair with smart phones to provide GPS navigation, a voice-user interface and many other features. It has an ultrasonic sensor that warns the user of above-ground obstacles via haptic feedback. Here, Gökhan Meriçlile, WeWALK co-founder and Jean Marc Feghali, PHD candidate at Imperial College London and UK R&D Lead, WeWALK explain how the innovative AI capability of WeWALK is helping offer a more personal experience for everyone.



WeWALK

Why did WeWALK first decide to use AI?

GM: Mobility is fundamental in dictating a person's ability to attend daily activities such as employment and social participation. This is naturally tougher for the visually impaired who rely heavily on the white cane to achieve greater mobility and, ultimately, the confidence to travel independently. Previously, there was no way of really seeing how a visually impaired person uses their cane on a day-to-day basis – how they move around, how they manoeuvre it and how it affects their walking. Using the sensors and gyroscope already built into the cane, we realised AI could help us gain a holistic view of how people use it and provide them with a better, more personalised level of service.

How does it work?

JMF: We take all the data gathered by the cane's sensors and then process it through our AI system. Essentially, we are making the cane aware of how it is being moved and used. Analysing this data lets us differentiate between different visual impairments, scenarios and motions, which we can then use to inform and personalise our mobility training programmes for users.

How do you ensure AI is being used safely?

GM: We are developing an Integrity Framework that ensures that if there is ever an issue, or if the AI ever deviates or mispositions the user, it will realise where it misbehaved, the amount of time it misbehaved for and how we rectify that misbehaviour in the future. Crucially, we do not wait for the cane to accidentally lead the user down a flight of stairs they were not expecting! We envision a system where the cane can say 'OK, I realise there is a set of stairs next to you. I should not lead you to this set of stairs because of your previous mobility behaviour'. And if it is unsure whether there is a set of stairs or not, it still tells the user rather than simply leading them on. We also work directly with our users to establish feedback loops. We are constantly on the phone with them to find out how the technology is working and what could be better. It's a very personal experience.

How are you scaling the technology?

JMF: To scale any AI project, it must be a) statistically possible and b) unbiased. We cannot just say we have made this mobility training application, we have tested it on some people and now we are going to deploy it to the rest of the world. As the use extends, the AI is going to come across something that has not been thought of before and try to apply whatever it has learnt already. That will not work and can mess up the experience for everyone. The best way to think of it is that AI will never be a full solution. There has to be a fall-back, an integrity plan where the system is self-aware but where those who create it and use it are aware of what the system is doing too.

4 practical steps to making AI work for everyone

Hugh Milward, Director, Corporate, External and Legal Affairs, Microsoft UK



Using AI effectively, responsibly and inclusively across an organisation starts with very clear internal communications from leadership to embed a culture of integrity and ethical behaviour. This way of working and making decisions must become routine practise for everyone. Organisations also need to win, lose and learn together, dealing in accountability rather than blame while treating failures as an opportunity to learn and improve.

My top tips for making AI work for everyone are therefore:

- 1 When things do not work, talk about them, rather than trying to hide them. Be willing to share data rather than retain data.
- 2 Clearly role model what ethical behaviour looks like and create a set of standards for individuals to use to make decisions around ethics independently.
- 3 Be prepared for conflict. As ethical decisions are escalated, sometimes you need to make a decision that is ethically correct but against the organisation's commercial interests.
- 4 Establish a proper review process, which seeks to understand the consequences of using an AI solution and interrogates learnings when something does not go according to plan.





Industry Spotlight

AI in Financial Services

Against a backdrop of ongoing political and economic uncertainty, concerns around cybersecurity, reputational damage following 2018's widespread digital banking shutdowns and a shifting regulatory landscape, the UK financial services industry is changing rapidly. Consequently, the organisations currently finding a competitive advantage are those with the courage and foresight to place themselves at the forefront of innovation.

But even they must continue to evolve in order to keep up with changing market dynamics and business models and avoid being disrupted themselves. After all, the next chapter for the nation's financial institutions will involve highly personalised products and services throughout the customer journey, along with state-of-the-art fraud prevention and enhanced technical security. And

although this progress will, primarily, be made possible by automation, it is vital they equip employees with the skills and knowledge to work alongside AI and deliver smarter product recommendations, better investment advice and improved personal performance.

Global AI investment in the financial sector will top \$5.6 billion in 2019.

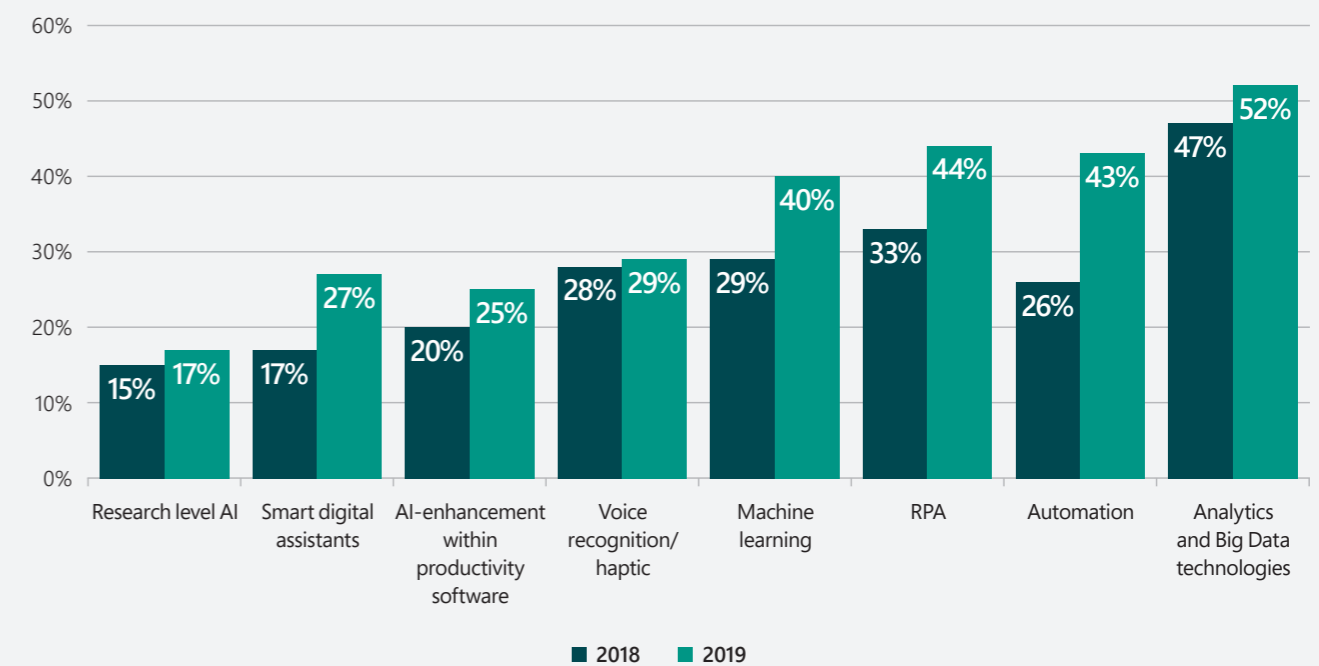
Meanwhile, both market opportunity and investor enthusiasm continue to grow. According to market intelligence firm, IDC, global AI investment in the

financial sector will top \$5.6 billion in 2019,¹⁰ once again underlining the faith being placed in AI's transformative potential. The latest estimates from Business Insider also suggest the technology could save banks around \$447 billion in costs by 2023, of which \$416 billion will come from the automation of front and middle office accounting.¹¹ This, in turn, can help them rebalance their cost/income ratio.

Progress amidst uncertainty

No surprise, then, that nearly three-quarters (72%) of the nation's finance leaders say their organisation is currently using AI – a 7% increase from 2018 and considerably higher than the national average of 56%. This includes a near-across-the-board rise in deployment of the various AI solutions available. (See Figure 11.)

Figure 11. Use of AI in Financial Services



Alongside this burgeoning use of AI technologies, there is also a growing motivation among financial leaders to be seen as pioneers. Just over half (51%) want their organisation to be leaders in AI innovation while 46% believe the industry has the necessary structures in place to use AI to gain a competitive edge on the world stage. Again, both these figures are significantly higher than the national averages (38% and 30% respectively.)

This ambition and confidence, not to mention the investment discussed earlier, will stand the sector in good stead. The job for organisations now is to accelerate their AI journey by swapping small projects and experimentation for AI implementation at scale.

As Craig Wellman, Director of Financial Services at Microsoft UK, explains: "AI has the potential to transform the financial services industry as we know it, so it is encouraging to see our research reveal that the sector is reporting both a readiness and ambition to lead. This, coupled with AI's ability to drive cost-savings and efficiencies, is driving our sector towards a crucial moment in its history. Organisations that now strike the balance between technical innovation and responsible deployment while creating a culture of participation and reskilling are well-poised to set the industry standard and reap the benefits in the future."

"The focus now for the financial sector is on scaling AI – how do we do that in the right, safe way while generating tangible value?"

– Abhijit Akerkar, Head of AI Business Integration, Lloyds Banking Group

Understanding is key

Indeed, despite the positive picture, there is still much work to be done, particularly when it comes to truly getting to grips with AI itself. Our research found that half (51%) of financial services leaders say they do not know what to do if they disagree with an AI application's course of action while nearly three in five (59%) admit they are unaware of how the technology reaches its conclusions.

This begs the obvious questions of how they can possibly know if the technology is doing what they need it to and how they can step in and correct things if it is not.

"One of the biggest issues around AI for financial services is explainability. As you bring in more data and make more decisions based on that data, you need to understand how those decisions are being made."

– Janet Jones, Head of Industry Strategy - Financial Services, Microsoft UK

Increasingly, leaders are looking to external experts and software providers to help them rectify this explainability gap. Yet they must also recognise that solving it does not begin and end in the C-suite. We found that 60% of employees in the financial industry are yet to complete training on how to use AI in their job, while 93% say they have never been consulted by their

boss about the introduction of AI in their organisation.

While slightly lower than the national average of 96%, this is still a worryingly high figure and one that is certainly not conducive to fostering the collaborative and communicative culture that is evident in fully AI-enabled organisations.

Taking responsibility

As well as creating a more inclusive and empowering environment for staff, establishing this kind of open and democratic structure can help financial institutions tackle the other pressing issue at the heart of their AI-led digital transformation: responsible deployment.

Currently, just over half of leaders (53%) believe their organisation has the capability to identify bias and slightly under half (49%) know what steps to take when they do so. These are both marginally ahead of the national average although, less positively, so too is the view that addressing bias is someone else's job.

Again, the path to success lies with collaboration. A sense of shared responsibility and joined-up action – not just for getting the best out of AI technology but for ensuring it delivers the best possible outcomes for everyone involved too.

Charles Radclyffe, Data Philosopher and Co-author of *Stories from 2045*, recently created an online platform through which employees can raise concerns about what AI should and should not be allowed to do. And the advantages when it comes to promoting a transparent approach to ethics can, he says, be significant: "Whereas most organisations tend to follow a similar approach to ethics – i.e. meet behind closed doors – establishing a public platform in front of employees means you get to open these discussions up."

Business performance and cultural benefits aside, being able to demonstrate a fair, inclusive and open

approach to AI could also have a positive reputational impact for UK financial organisations – a welcome boost for an industry not unfamiliar with criticism and public scrutiny in recent years.

Ready and willing?

Clearly, then, compared to other industries, the financial services sector is well-positioned for change. There is a strong awareness of the benefits AI can offer, investment in the technology is rising and there is an evident enthusiasm to lead both domestically and internationally. Yet, at the same time, improvements are required in terms of re-skilling staff, building principles for open and responsible AI use and increasing understanding of how the technology actually works.

Indeed, perhaps above all, financial institutions find themselves at a tipping point. Operationally, financially and reputationally, AI offers a real and lasting opportunity to transform for the better. But to take it, they must act immediately to scale it at an organisational level. From the boardroom to the trading floor to the retail counter, now is not the time to let progress stall.



The expert view

Chris Skinner, Financial Author and Blogger



“For AI in the UK financial services industry, it is very early days although I would say that UK banks are pretty much on the same plain as the rest of Europe’s financial firms, if not slightly ahead.

The banks in America and China are doing some really impressive stuff. For example, using an AI engine to analyse all contracts and do in one second what previously took 360,000 hours of legal time.

Of course, the biggest issue most institutions face is the fact they have 50 years of infrastructure that they need to now turn into a rationalised structure for intelligent customer servicing and marketing. For my new book, I interviewed five of the biggest banks in the world across Europe, Asia and

America to find out how they have been dealing with that.

The key thing that came out is nearly all of them started working out what to do by studying technology leaders and then trying to replicate how they organise internally using data intelligence. That means no hierarchy, no middle management, just a flat structure of small teams. For banks, this is a radical change, which I have not seen any of the UK institutions go through yet.

In fact, that is the bottom line in all this. Scaling AI is not a technology shift, it is a structure and mindset shift. Banks cannot embrace AI and digital transformation if they are just doing it as a project. They have to embrace it as a cultural change in the whole organisation.”

“Scaling AI is not a technology shift, it is a structure and a mindset shift. Banks cannot embrace AI and digital transformation if they are just doing it as a project.”

– Chris Skinner, Financial Author and Blogger

Case study:

NatWest



NatWest believes people want a bank that puts their interests first. Here, Roshan Rohatgi, Senior Innovations & Entrepreneurship Professional at NatWest, discusses the importance of establishing the right blend of procedure, governance and innovation in order to develop and deploy AI solutions that deliver real value for customers.



From your experience, what is the best approach to deploying customer-facing AI solutions?

AI that touches customers is – and will always be – subject to a very high level of scrutiny and governance. Before any kind of technical development or deployment it is important to establish how and why the AI solution will benefit the customer and what the risks are. Continuous human involvement is a prerequisite with business and specialist teams supporting efforts to implement and manage the technology ongoing. The most important thing is that the whole process is done in a safe, secure and repeatable fashion. Having a framework that supports and guides the development, procurement and deployment of AI is desirable.

How do you ensure the AI is being developed and used inclusively and responsibly?

Robust controls and measures are important tools where they support getting stuff done and are not prohibitive by nature. A transparent and clear approach for example using common terminology; having agreed principles; easy-to-follow governance that promotes consistency and helps facilitate effective collaboration between business and functional teams to achieve objectives and deliver value to customers. As the adoption of AI matures over time teams will become increasingly self-sufficient hence a systematic approach may be optimal efficiency wise. AI models also need to be evaluated and managed continuously for their performance, efficacy and relevance for example providing assurance around operating metrics like precision, consistency, resilience, fairness, explainable output, ethics and more. This requires business-friendly systems and procedures as well as the right mix of talent.

How do you then move towards scaling AI elsewhere?

Working at NatWest, I’m keen to support learning, exploration and innovation. In my opinion a workable medium between centralisation and federation supports collaboration as well as self-sufficiency and empowers teams to explore and innovate and promotes consistency where the emphasis is on what problem(s) you are trying to solve or opportunity we are trying to explore. The last thing you want is to have too much replication hence all staff should have visibility across all AI projects firm wide. That way, any part of the firm that is looking to introduce operational or consumer-facing AI can learn from and build on solutions that have already been proven to work elsewhere.



Industry Spotlight

AI in Healthcare

According to the latest figures, one in five AI start-ups in the EU operates in the healthcare industry, with a third originating in the UK.¹² As a nation, this places us at the forefront of healthcare AI innovation. What is more, this trailblazing position is likely to continue in future thanks to the £50m in government funding allocated this year to support five new university-based healthcare AI centres in London, Glasgow, Oxford, Leeds and Coventry.

As Stephen Docherty, Industry Executive – Health at Microsoft UK, puts it: “We live in exciting times where the speed of technology adoption is rapidly increasing and there are multiple opportunities to use AI to benefit healthcare. Above all, we need to give clinicians back the gift of time while using AI to determine insight from the data we have.”

A progressive picture

Indeed, our research reveals that nearly half of healthcare leaders (46%) say their organisation is now using AI, which

although below the national cross-industry average of 56%, represents an encouraging 8% rise compared to 12 months ago. It is also made even more impressive given many public sector organisations are often seen as being behind the curve when it comes to technological innovation.

8% - the increase in AI use in the healthcare sector in the past 12 months.

As we see in Figure 12, the biggest leaps have been made in research level AI (up 13%), Robot Process Automation (RPA) and general automation (both up 10%), as well as voice recognition and touchscreen technology (up 9%).

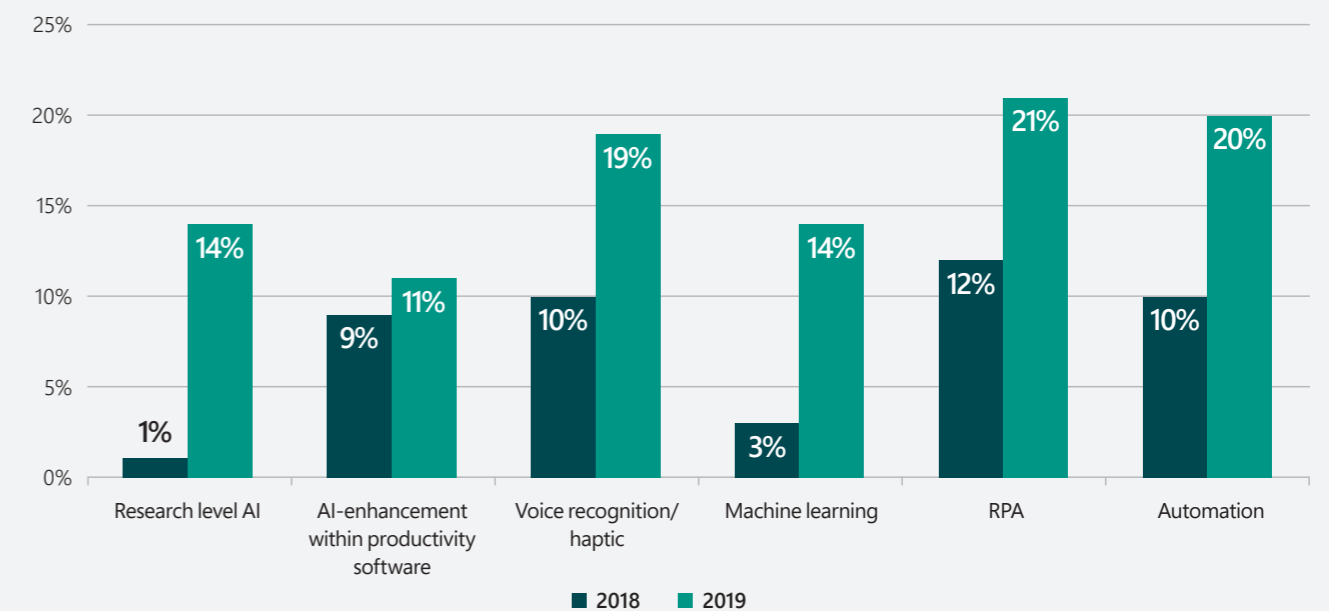
It seems, then, that recognition of AI’s transformative potential for healthcare

organisations is becoming increasingly widespread – not just when it comes to central or so-called ‘back office’ processes but by genuinely enhancing the quality of patient care.

“AI in healthcare is an extremely exciting prospect. It’s not about replacing staff, but allowing them to maximise their skills, be more efficient, spend more time with patients and, ultimately, get better outcomes.”

– Darren Atkins, Chief Technology Officer, East Suffolk & North Essex NHS Foundation Trust

Figure 12.
How use of different types of AI has changed from 2018-2019



The next step

Yet while the level of investment and enthusiasm is promising, the use of AI in healthcare remains, by and large, restricted to smaller, localised pilot projects geared towards specific, practical outcomes. This reflects how the industry, overall, is currently more focused on exploring the technology, rather than embedding it at scale. Moving from experimentation to full implementation is the next big challenge.

Of course, front and centre of the need to do so is the desire to provide patients with better experiences – from diagnosis, through treatment and, ultimately, into recovery. Yet when it comes to delivering against this objective, the critical role of the industry’s staff cannot be overlooked either.

Currently, 96% of healthcare employees say they have never been consulted by their boss about the introduction of AI in their organisation while two-thirds (69%)

are yet to complete training to improve their understanding of how to use the technology in their job. These figures need to improve dramatically for the industry to truly harness AI at scale.

69% of healthcare employees are yet to complete training to improve their understanding of how to use AI in their job.

Likewise, there is a pressing need for the industry to get to grips with its data. More than a third (37%) of healthcare leaders say preparing usable data represents their

biggest challenge to scaling AI. While, as Laura Robinson, Senior Director for Healthcare at Microsoft UK, explains: “The biggest flaw in the UK health system is that it has the data that a lot of companies would happily pay for but there is no way to guarantee clarity of ownership or governance.”

“The requirements of AI projects are data quality, engagement, integration, all things that are going to make positive changes.”

– Chris Carlin, Consultant Physician, NHS Greater Glasgow and Clyde

Put another way: the information is there and so, increasingly, is the will to use it. What healthcare organisations have to do now is develop a plan for doing so that is effective and responsible.

The ethical question

Indeed, a big part of this data effort revolves around ethical usage – perhaps more so than in any other industry we surveyed. Protecting patient privacy and security, promoting diversity and inclusion, and eliminating the risk of bias are all key considerations for any healthcare organisation looking to move from AI experimentation to full-scale deployment.

Here, again, work needs to be done. As we see in Figure 13, when it comes to both identifying bias and knowing what steps to take to address it, healthcare leaders lag behind the national average.

As Valentin Tablan, Senior Vice President for Artificial Intelligence at cognitive behavioural therapy platform, leso Digital Health says, “If AI is going to work in healthcare, the industry needs to start with ethics. In fact, it’s so important that if you ignore ethics and education in order to speed things up, it will end up costing you. In the end - it may even lead to projects failing.”

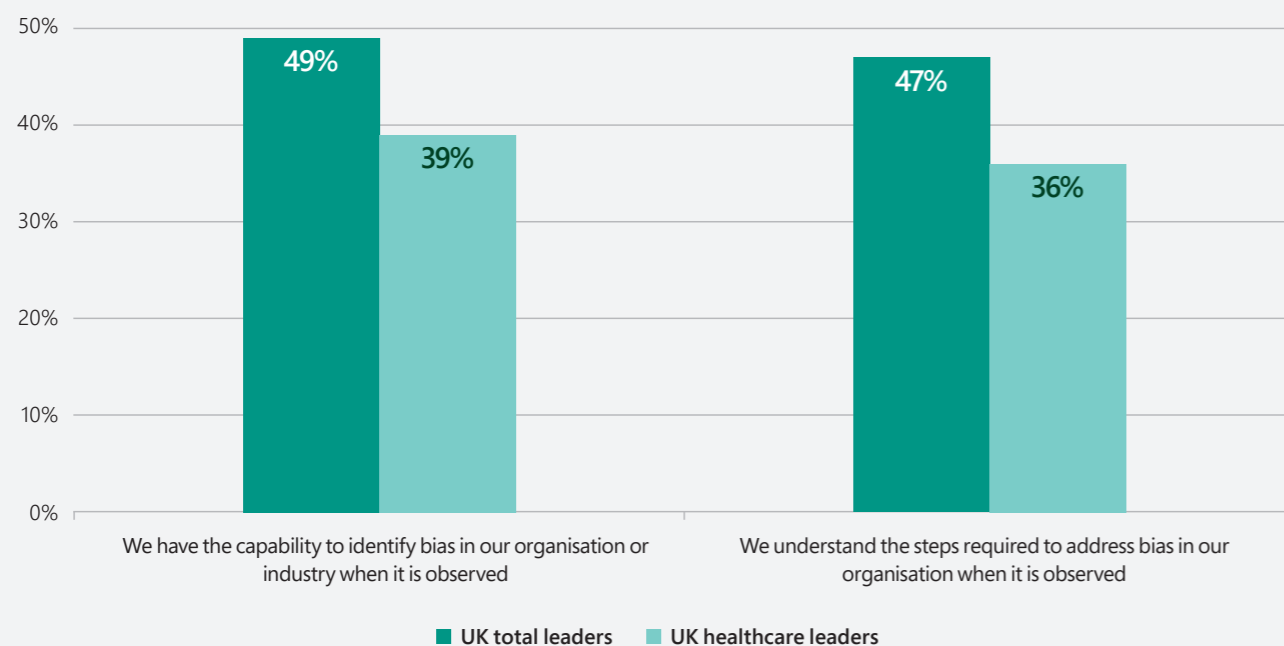
Time to lead

In other words, establishing a clear ethical framework, then training leaders and staff in what responsible AI use looks like, how to spot issues and what steps to take when problems arise, is going to be critical to the healthcare industry’s journey to becoming truly AI-enabled.

Not only for organisations themselves, but also for the UK as a whole. Indeed, if the UK is to continue to lead the world in healthcare AI, now is the time to step up, scale up and seize the incredible opportunity the technology presents – for care trusts, medical professionals and patients alike.



Figure 13. **Tackling bias – UK leaders overall vs UK healthcare leaders**



The expert view

Terry Walby, CEO & Founder of Thoughtonomy



"In spite of some inherent challenges for the sector, AI implementation is accelerating in healthcare. In growth areas such as robotic process automation (RPA), trusts are realising that they have now picked off the low-hanging fruit and automated a lot of the high volume, low complexity tasks. However, without having the intelligent oversight of AI there are limitations as to how far you can scale.

Key to deciding what to focus on next, is to decide what is the most important

problem AI could help you solve. Is it staff productivity? Is it performance? Could you use AI for genuine business transformation?

Whatever you decide to focus on, it is important the healthcare industry gets its approach to data, skills and ethics right. It is entirely appropriate to take the time to achieve this but without fear and caution slowing them down unnecessarily."

"It is important the healthcare industry gets its approach to data, skills and ethics right."

– Terry Walby, CEO & Founder of Thoughtonomy

Case study: Ieso Digital Health



Ieso Digital Health delivers cognitive behavioural therapy (CBT) over the internet, helping people access 1:1 therapy securely through its online platform at a time and location that is convenient to them. Here, Valentin Tablan, the company's Vice President for Artificial Intelligence, discusses how AI can be used to improve patient outcomes in mental healthcare.



Why do you think AI is the ideal tool to support therapists dealing with mental health?

In mental health, progress in terms of clinical outcomes for patients has been stagnating. An average patient has a roughly 50% chance of recovering and that has been the case for 30-40 years now. We think that in order to start improving this situation, we need to understand in greater detail the active ingredients of effective therapy – what works for different conditions, different types of patients, and with different personalities. We have accumulated anonymised data from more than 100,000 therapy transcripts and believe it holds the answers to these questions. However, the sheer quantity of data makes manual analysis impossible. With the support of natural language processing and AI we are able to unlock the potential from this data and achieve a previously impossible level of insight for our patients.

So, what steps do you believe are necessary to truly utilise your data?

It is critical to prioritise data quality, data cleanliness, data consistency and data storage. This includes building defences against bias, while acknowledging that in some areas, a certain level of bias can occur. For example, someone's gender and ethnicity is often relevant for diagnosis and treatment. You also have to remember that AI systems should not just reach conclusions on their own; they provide an intermediate step from which domain experts can use their own expertise and knowledge to make a final decision. This way, we can explain to a patient why we have reached a decision and why the AI has given a particular output.

How are you measuring success?

Success has to ultimately be about the patient. Every effort must translate into better clinical outcomes. In our case, that means we want more patients to improve their symptoms, achieve 'clinical recovery' and remain engaged in the therapy process itself. Over the past year we have grown the number of patients we have treated by 50%. AI has allowed us to scale our quality control of therapy and this is only the beginning. I think it is a bit of an iceberg situation where the AI that is visible today in healthcare is just an indicator of its true potential for the future. That is incredibly exciting.

Industry Spotlight

AI in Manufacturing & Industry

Following a slow-down at the turn of the year prompted by ongoing economic and political uncertainty, the UK manufacturing industry is beginning to bounce back. First quarter figures from the Make UK/BDO Manufacturing Outlook survey suggest that both investment and employment are on the rise¹³, while the UK government's 2019 Industrial Strategy initiative will see £110 million of funding injected into AI development for the sector.

Yet as manufacturing companies seek to position themselves for success in Industry 4.0, they are facing a number of other challenges regarding the pace and scale of AI adoption. Indeed, while there is widespread support for technologies that improve productivity and safety,

fears among unions and workers remain about the risks automation poses to jobs. These concerns must be addressed and allayed if the industry is to truly move forward on its AI-led digital transformation.

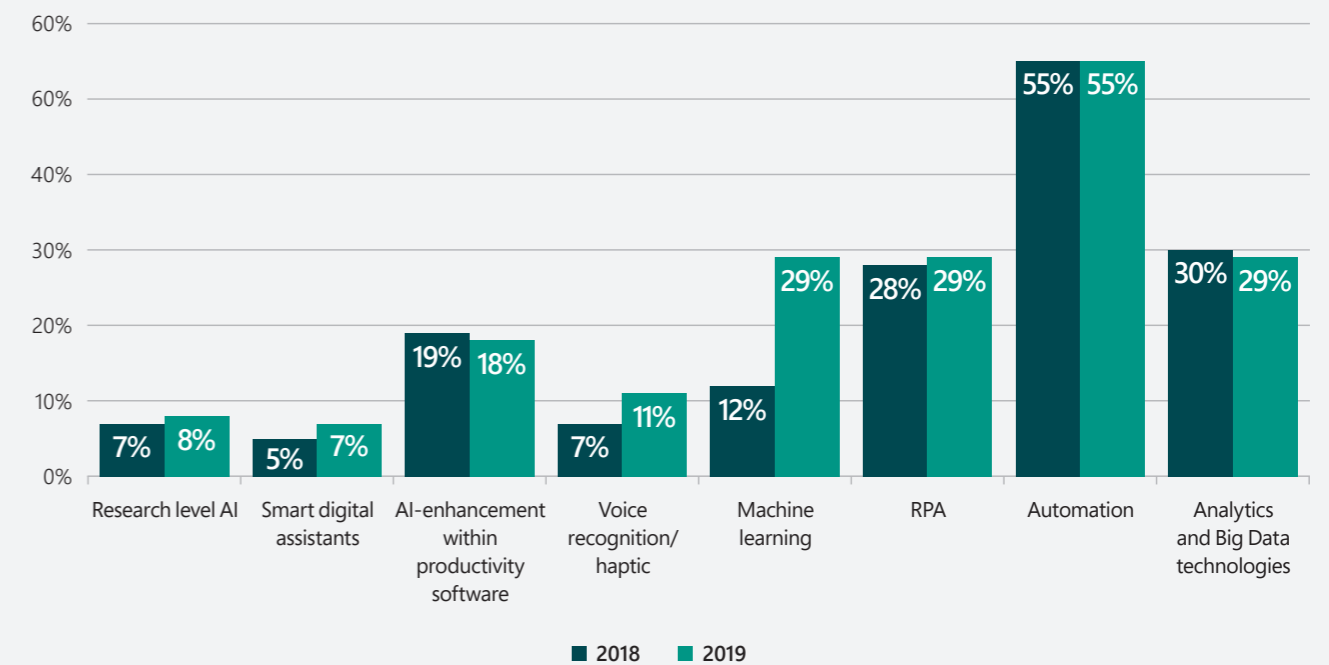
As Richard King, Head of Manufacturing and Resources for Microsoft UK, explains: "For manufacturers, there are broadly four stages of the AI journey: driving visibility and insights; creating predictability; automation and being prescriptive; and being cognitive and autonomous. Currently, organisations tend to be largely operating at stage one. So, to derive full value from AI, they need to start accelerating their progress. And that is as much about a cultural transformation as it is a technological one."

AI on the rise

The good news is that deployment of AI technologies across the industry is on the rise. Our research reveals that more than half of UK manufacturers (51%) are currently using the technology to some degree – an increase of 3% since 2018.

Compared to other industries surveyed, manufacturing also reports strong adoption rates in a number of the 10 AI solutions, scoring especially highly on smart digital assistants, voice recognition and machine learning. (See Figure 14.)

Figure 14.
Manufacturers moving ahead



Leadership required

The challenge now for manufacturers is to build on these positive beginnings and move towards becoming fully AI-enabled organisations – a step that will require strong leadership.

In particular, industry leaders need to immerse themselves in the technology, fully getting to grips with how it works, where in the value chain it can be most beneficial and what to do when teething problems or conflicts occur.

Currently, more than half of manufacturing leaders (54%) say they do not understand how their organisation’s AI solutions arrive at their conclusions while half (51%) admit they would not know what to do if they ever disagreed with their AI’s recommendations. Although lower than the national average (63% and 57% respectively), both these figures still leave a lot of room for uncertainty – and improvement.

“The capabilities of AI are growing, but you need to know what you are trying to fix before implementing anything.”

– Mark McNally, Challenge Director, UK Research and Innovation

As well as making it harder for people to be truly technically competent when using specific AI solutions, this knowledge gap can also lead to uncertainty about exactly where in the organisation AI can drive the most value.

“You need to understand what you hope to achieve and what steps you need to take to get there,” points out Mark McNally, Challenge Director at non-governmental organisation UK Research and Innovation. “The

danger is having a technology solution looking for a problem. The capabilities of AI are growing, but you need to know what you are trying to fix before implementing anything.”

An internal disconnect

Alongside the operational challenges this presents, there is also an important cultural impact to consider. In a sector where automation is increasingly commonplace, workers continue to feel uncomfortable about the effect this may have on their job roles. If leaders cannot communicate where, why and how their organisation’s AI solutions are working, it will be difficult to create a culture where workers are empowered to re-skill, participate and work alongside machines rather than feel threatened by them.

Indeed, our research indicates a situation in which leaders are not telling and staff are not asking. Of the manufacturing employees we surveyed, 95% say they have never been consulted by their boss about the introduction of AI in their organisation while 85% of leaders claim workers have never approached them about AI either. And when asked if teams in their organisation are able to share knowledge and experiences from using the technology to help each other, 38% of manufacturing leaders said ‘yes,’ but only 26% of staff agreed.

The next step

It seems, then, that the biggest barriers to the UK manufacturing industry’s move through King’s “four stages” and into full AI implementation at scale are more cultural than technical.

Staff at all levels need a chance to re-skill and participate in shaping the technology’s impact on their day-to-day work. Employees on the front-line need reassurance about their future job prospects in a sector where automation is commonplace. And communication needs to flow freely in both directions to foster a culture of collaboration, inclusiveness and responsible use.

As Nancy Rowe Head of Inclusion & Diversity at digital transformation firm Publicis Sapient, puts it: “From a structural perspective, organisations must instil processes for educating leaders, managers and employees across the business. They have to know what inclusion looks like, then help people build the skills required to be an inclusive manager or team member.”

Put another way: in an industry that, compared to others, is forging ahead on its AI-led digital transformation, it is vital organisations ensure they know exactly what problems they are trying to solve while keeping their eyes firmly fixed on the humans too.



The expert view

Mark McNally, Challenge Director, UK Research and Innovation



“Because AI is a term that is often thrown around quite flippantly, people can get confused between data acquisition, machine learning and full-blown intelligent systems. This misinterpretation of what the technology is and how it can be used, can, in turn, be a barrier to scale, so business leaders need to understand what problem they are trying to fix and what solution can help them do it.

In manufacturing, there is a challenge to secure and analyse the right data. At the moment, there is a tendency to look at the front-end of the process around products, services and demand, rather than how that data and analysis can fly back into the whole ecosystem. Knowledge sharing

between sectors and within companies would therefore be hugely beneficial. For example, the marketing department’s data around how a product is bought and used needs to get back to the engineering team.

So much of the transition from AI experimentation to implementation comes down to education. As the next generation of workers comes into the industry, they will be far more receptive to technology. But organisations must still be conscious of whether information feels right or passes the human litmus test. We need to be open to new technology while remaining faithful to our own knowledge and experience to ensure we use AI in the right way.”

“We need to be open to new technology while remaining faithful to our own knowledge and experience to ensure we use AI in the right way.”

– Mark McNally, Challenge Director, UK Research and Innovation

Case study: Renault F1 team



In the high-octane world of motorsport, the difference between success and failure can be a split-second. Here, Pierre d’Imbleval, Chief Information Officer for the Renault F1 Team, reveals how AI is helping the team unlock the power of its data and make not just every second count – but every millisecond.



What role does AI play in Renault’s Formula One strategy?

At Renault, we are constantly looking at how we can maximise the performance and reliability of our cars on the track. Within that, data is one of our most important assets. Thanks to AI and machine learning, we have seen a huge opportunity to enhance productivity, raise ambitions and gain a competitive edge on race day.

What is the tangible impact of this for you and your team?

Our cars have more than 200 sensors that collect over 50 billion data points, all of which are analysed to improve aerodynamics, performance and handling. To manage this, we have built an AI model that analyses this data, deals with normal feedback and highlights any anomalies, meaning our engineers can focus on the data points that matter and require attention. As a result, some work that used to be time consuming is now done in real-time. This is a massive productivity saving for us, particularly when our ROI is measured in tenths of seconds.

How important is it to create a learning culture when innovating with AI?

AI can help you raise the ambition and the enthusiasm of your staff, providing them with new opportunities and helping them transform their skillsets. So, if you are not thinking about constantly training and educating your staff to make the most of AI, you have a problem and the speed of adoption could be slower than expected.

Utilities

Utilities businesses are facing a number of challenges in 2019. From ever-tightening regulation and pricing controls, to the integration of renewable energy sources, and the need to update an ageing grid infrastructure, these issues are combining to place unprecedented pressure on the industry's traditional operating models.

Consequently, the sector finds itself moving towards a more data-driven approach where the focus is on delivering customised energy management solutions as opposed to just access to gas or electricity. And within this space, the value of AI cannot be underestimated.

Indeed, 50% of UK utilities employees are now using AI to some degree, whether that is to automate business processes, reduce costs, smarten decision-making or enhance customer experiences. (See Figure 15.)

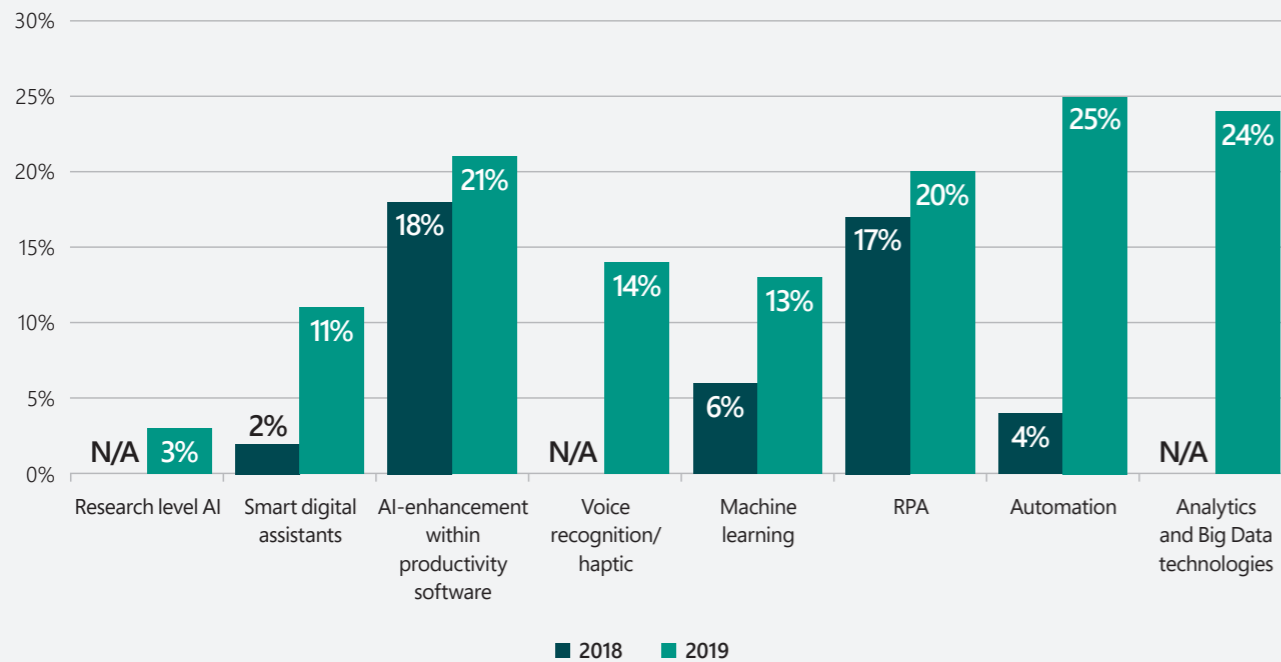
The task now is to take this progress to the next level, moving from deploying AI in pockets to understanding how and where it can deliver the tangible, lasting value that organisations need to become truly AI-enabled.

As Daljit Rehal, Senior Vice President, Digital & Data Systems, at energy and services company Centrica, explains "The foremost challenge everybody is facing is confusion about where to use AI and where not to. Leaders see demos and

they read about the claims, but then they have difficulty translating how they could actually benefit from these solutions in practice."

Furthermore, as we see in the Centrica Case Study that follows, utilities businesses must also take steps to foster the right culture for the benefits of AI to be felt by all. One in which staff at all levels can use the technology in their day-to-day jobs, feel empowered to participate on the journey ahead and are supported in learning new skills to thrive in an AI-led future.

Figure 15.
Use of AI in the utilities industry



Case study: Centrica



centrica

Centrica is an energy and services company supplying businesses and consumers in the UK, Ireland and North America. Here, Senior Vice President, Digital & Data Systems, Daljit Rehal, explains how the growing use of AI started small for the British Gas owner but now involves staff at all levels of the organisation.

How did Centrica start its AI-led digital transformation?

As a project-driven organisation, nothing gets done unless somebody creates a business case. But the issue for us was that the people who normally do make that case were unaware of the range of capabilities AI has. So, we had to do it almost like an exceptional project. But once we demonstrated the benefits, it generated a lot of excitement. We also created the Acceleration Hub, an online forum where ideas can be submitted and developed in a cross-functional way prior to any projects kicking off.

Can you share an example of a successful AI project at Centrica?

One of our biggest successes has been an assisted webchat function for our customer support agents that has been rolled out to 8,000 staff. Developed internally, it is called 'Ask Wilbur' and it uses natural language processing techniques to understand what the customer is asking for. It works by popping up on screen and asking the agent what the customer wants. They can then type the answer in – for example, 'I've got a customer here who wants to move home'. Wilbur then deconstructs the task and comes back with a list of questions for the agent to ask the customer. The benefits have been extremely notable. Staff feel well-supported while the Net Promoter Score from customers who are serviced with Wilbur's help tends to be higher than for those who were not.

How are your employees participating in your AI projects?

As well as the Acceleration Hub I mentioned, we have created a digital academy where employees can train themselves on various aspects of the technology. There are three levels: first, the basics, like just familiarising yourself with all the AI jargon; second, where they learn more about how the technology works; and third, at the highest level, where they receive training on complex projects, such as developing an app. The academy has proved incredibly popular and made a tangible difference to staff skills.



Industry Spotlight

AI in Retail



The UK high street continues to face considerable economic challenges. A study of government data shows that 20,143 retail shops in England and Wales were converted to other uses between 2010 and 2019, with only 14,314 new shops built in that period and a further 8,500 expected to be lost within the next five years.¹⁴ Meanwhile, the retail vacancy rate has climbed to 10.2% (43,302 vacant shops), a four-year high.¹⁵

Yet despite that, there is also cause for optimism. Retail is far from dead or dying. Instead, physical stores are transforming into customer experience centres and sales are increasingly moving to a virtual space, where the industry is booming. Here the combination of borderless sales and AI optimisation can help businesses grow revenue and drive profits like never before.

Indeed, according to figures from Accenture, retail profitability is expected to increase by as much as 60% by 2040 thanks to AI.¹⁶ Meanwhile, Capgemini

predicts AI will net retailers around \$340 billion in annual cost savings by 2022.¹⁷

By 2040, retail profitability is expected to increase by 60% thanks to AI.

Missing the bus

For retailers who can harness the power of AI, then, the opportunity to gain a competitive edge and secure a bright future awaits. But how many are actually poised to seize it?

As Louise Watkins, Head of Sector Retail, Consumer Goods, Travel & Transport at Microsoft UK, explains: "With customers demanding new, more personal experiences, retailers have to move beyond the perception of AI as just a tool

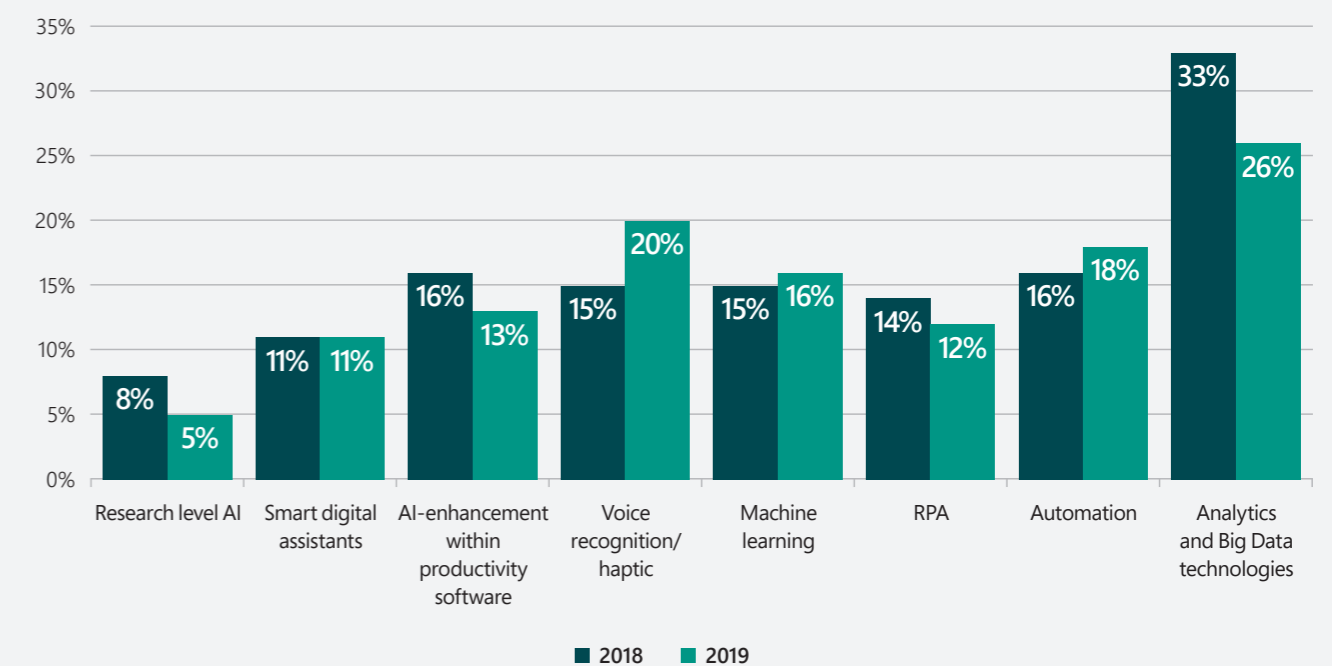
to provide answers. Instead, they need to see it as a way to utilise the insights from the incredible amount of data they capture every day and, in doing so, create ubiquitous, multi-modal, hyper-personalised consumer experiences for all."

Yet our research reveals that, of all the industries we surveyed, retail is perhaps at the earliest stage of its AI-led digital transformation. Currently, more than two in five (43%) retail leaders say their organisation is using AI, compared to a national average of 56%. Crucially, this represents an increase of just 1% since 2018. In some cases, the use of AI technology has even declined. (See Figure 16.)

In other words, while retailers do, by and large, acknowledge AI's potential to enhance business performance and customer experiences, many are either moving too slowly to capitalise on it or, worse, at risk of missing the bus altogether.

Figure 16.

How use of different types of AI has changed from 2018-2019



A people problem

Interestingly, one of the biggest challenges they face when it comes to adopting and scaling AI is a very human one. Namely, the need to reskill employees to make the most of it. Just one in 10 (11%) employees and one in five (19%) leaders say they have completed training to improve their understanding about how to use AI in their job while only a fifth (19%) of retail leaders say people in their organisation can describe how AI can help achieve the organisation's goals, compared to 25% for UK businesses overall.

Meanwhile, nearly half (44%) of leaders admit to being unsure about how to start preparing employees with the skills they need for the future and just a third (33%) say teams are able to share knowledge and experience acquired from using AI to help each other.

This is clearly a challenge that cannot be solved overnight, particularly in an industry where staff turnover is traditionally high and workforces often seasonal. Yet there is, according to Alex Sbardella, Senior Vice President of Global Innovation at retail innovation consultants GDR Creative Intelligence, a solution out there: "Due to the high-churn nature of the retail workforce, staff are relatively underinvested in and can be lower skilled than other industries. However, this challenge can be flipped on its head because it means there is an opportunity to invest in more intelligent tools to help them. This is an area where retail can actually play to its AI strengths."

Adopting this positive mindset to supporting staff and filling the AI skills gap will likely be critical to retailers' ability to thrive in an AI-enabled future.

The power of data

In contrast to the challenges faced around engaging an often transient workforce, there is a trump card in retail's hand: data. Every time someone taps a contactless payment card, checks out online or joins a loyalty scheme, retailers are given another nugget of information to analyse and act upon.

Unlock the value of this data (albeit responsibly, transparently and in a way that is in keeping with the product or service being sold) and the opportunities to optimise performance and enhance customer experiences are myriad.

This begins with knowing what they want to achieve. What is the business problem they are trying to solve and why can AI help them do it in a way that delivers a tangible benefit for stakeholders across the organisation?

These are questions that the most successful retailers of tomorrow will start answering today. The ones who, in the words of Kyle Fugere, Global Head of dunhumby Ventures & dunhumby Labs, "do not see AI as a catch-all for their data challenges but, instead, identify the areas where it can add most value then develop a roadmap with clear outcomes and metrics."

Scaling the right way

As with any organisation, there is one further key question retailers must ask as they seek to scale their use of data and AI technologies too: what do we need to do to ensure we are deploying the technology ethically and in a way that is free of bias?

As Gökhan Meriçlile, Co-founder WeWALK, a mobility project for visually impaired people, points out: "To scale

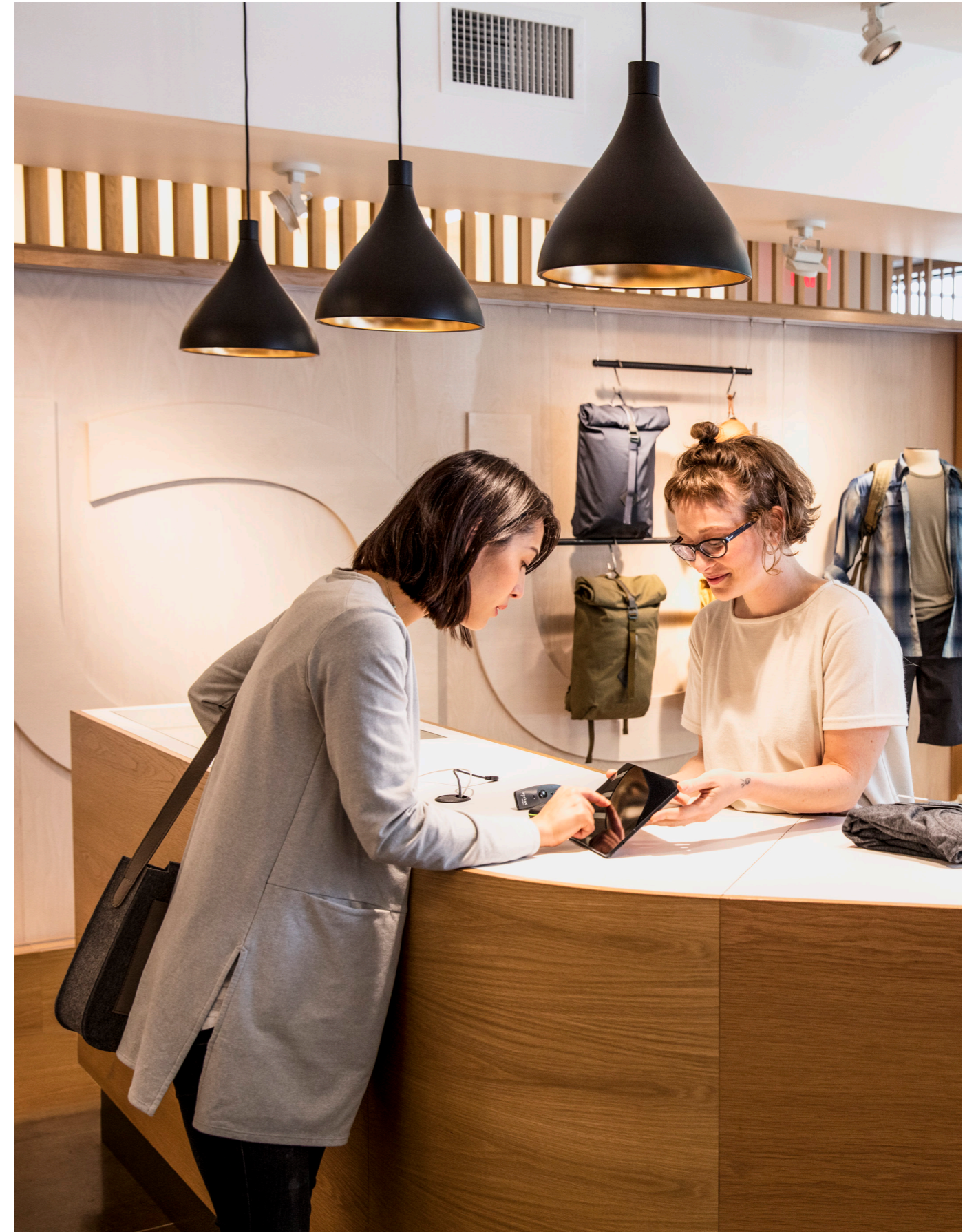
AI, you must have a solution that is both unbiased and statistically possible."

Encouragingly, only a fifth of retail employees (19%) do not trust their organisation to use AI responsibly (although this is still two points higher than the national average.) Yet on the other hand, fewer than half of the industry's leaders (43%) agree they have the capability to identify bias and just a third (33%) understand the steps required to address bias in their organisation when it is observed.

Only 33% of retail leaders understand the steps required to address bias in their organisation when it is observed.

Perhaps most tellingly, only around a third (34%) understand why their organisation's AI systems make the recommendations they make, thereby making it very difficult for many leaders to judge if the technology is working either effectively or responsibly.

This brings us full circle, back to the pressing need for retailers to close the skills gap when it comes to AI – not just among front-line staff but at all levels of the industry. Do that and they have the chance to cash in on an industry booming with online possibilities. But fail to, and the UK High Street may not be the only place battling to survive.



The expert view

Alex Sbardella, Senior Vice President, Global Innovation, GDR Creative Intelligence



“UK Retail is continuing to go through a period of unprecedented transformation, with reinvention now deemed necessary for business survival. As change becomes the sector’s only constant, and retail business leaders increasingly realise AI’s potential, we are seeing a growing appetite for the technology across the board.

Fortunately for retailers, there are areas where they have a natural advantage for developing AI. As well as having access to masses of data, consumers’ comfort with forms of AI like chatbots has increased a great deal as the technology has quietly matured. Over the next few years, it will be fascinating to see if new areas of AI, such as visual search, can transform the in-store experience too.

Where retailers are struggling with AI is what I call ‘the what’ and ‘the why’. AI projects suffer when retail leaders start with the technology and not the problem they are trying to solve. By doing this you are putting the (shopping) cart before the horse. Any innovation project must begin with the customer or business need before you work out which solution you need. If AI is deemed the right solution, then do your due diligence, get your data in order, your systems and people ready.

In the next five years, I hope to see AI move from being a special project case to an expected part of every business strategy. There is definitely an appetite for transformation, it just needs to be realised.”

“In the next five years, I hope to see AI move from being a special project case to an expected part of every business strategy.”

— Alex Sbardella, Senior Vice President, Global Innovation, GDR Creative Intelligence

Case study:

M&S

Since 1884, M&S has been a cornerstone of UK retail with a longstanding and much-admired reputation for quality, products and service alike. Here, Paul Dasan-Cutting, the company’s Innovation Product Owner, explains how M&S is using AI to enhance its relationship with customers even further.



What role does AI play in M&S’s ambition to be a truly digital-first business?

AI will be central to M&S’s strategy in the coming years. If you think about how retailers, and indeed anyone in the modern world is operating, the amount of data being consumed by organisations and individuals is absolutely massive. The datasets being generated simply cannot be assessed and investigated by a single person, which means we have to come up with a set of models to help us interpret that data more efficiently. Doing so can help us offer even better products to our customers and also rethink how we manage our operations.

How is this improving the experience for your customers?

Customer experience is a key differentiator for us. We recognise that more of our sales are going online but 70% of those orders are still collected in store. We have to make sure that customers have a seamless experience however they shop. Our Innovation Framework determines the process we follow for delivering proof-of-concepts into stores. It helps us define the problems we are trying to solve and challenges us as an organisation to stay focused on the customer experience. Essentially, it is the opposite of using technology for technology’s sake.

Where do you expect to see the most value for your employees?

I think AI, in some way, shape or form, will be prevalent across most areas of retail. Within M&S itself, the most value it has to add is around our supply chain and our forecasting, looking at big datasets to become more accurate in our product management. A priority for us is to educate our workforce about the benefits of AI in their day-to-day jobs. This includes partnering with Decoded, a data training organisation, to run workshops for 1,000 of our leaders along with an 18-month data science fellowship for 150 colleagues across the company.

Conclusion



At a time of great political and economic uncertainty, when UK organisations across sectors could be forgiven for looking to consolidate rather than initiate, we began this report with a clear call to action. Namely that if 2018 was the time to start their AI-led digital transformation, then 2019 is the year to accelerate it.

While many businesses have made good progress in formulating an AI strategy and introducing the technology into their day-to-day operations, we now find that simply exploring AI in local or departmental pockets is no longer enough. Instead they must now take steps to embed AI at a company-wide level, unlocking its transformative potential for employees, customers and business performance.

Any organisation looking for a reason to expand its use of AI need look no further than the fact that those businesses managing to do so are currently outperforming those that are not by 11.5% – a gap that has more than doubled in size during the last year. AI-advanced organisations are also doing significantly better in establishing the cultural and ethical principles that underpin the successful use of this technology at scale.

Yet if the ‘why’ is indisputable, what about the ‘how’?

As we have discussed, there are three core areas that any organisation looking to accelerate its AI journey must consider and act upon:

1. Moving from experimentation to implementation by scaling AI across the whole organisation, not just in local or departmental pockets.

2. Creating a culture of participation in which staff at all levels feel empowered to re-skill and actively contribute to the implementation of AI technologies.

3. Making AI work for everyone by establishing a clear set of developmental standards and operating principles to ensure the technology is deployed ethically, without bias and in a way that actively promotes diversity and inclusion.

All are equally important and, when done right, allow organisations to truly transform and prosper in an AI-enabled future – operationally, culturally and ethically.

Yet there is also a bigger picture to consider. As a country, AI offers a chance for the UK to go toe-to-toe with the likes of America and China and lead on a global stage.

Put another way: by taking action to drive their own organisation forward on its AI journey, the nation’s business leaders have a clear and unprecedented opportunity to gain a competitive edge – not just for themselves but for the UK as a whole. All they need to do now is seize it.

“The successful organisations will be the ones that transform both technically and culturally, equipping their people with the skills and knowledge to become the best competitive asset they have. Human ingenuity is what will make the difference – AI alone isn’t enough.”

– Clare Barclay, Chief Operating Officer, Microsoft UK

Appendix



Appendix

Methodology

All elements of this study were conducted by Microsoft in partnership with Dr Chris Brauer, Goldsmiths, University of London and Thread in summer/autumn 2019 and YouGov. We explored the current state of AI within the UK in four key industries – finance, healthcare, manufacturing and retail – and analysed how organisations can implement AI in an optimal way to stay at the forefront of AI innovation. The process used a mixed-method approach to provide business leaders with insights on how best to move forward responsibly in an AI-enabled world, including:

Literature review – an in-depth review of academic, industry and media sources were utilised to form initial thinking, expand the hypothesis and inform us about key issues and opportunities identified in the report.

Model development – from the literature review and expert interviews we developed a set of dimensions as a lens through which to consider the opportunities for AI in the UK today.

Subject matter expert interviews and case studies – a variety of academics, professionals and organisations were interviewed around both the research model and the findings of this project. Quotes were analysed and used as evidence to support our hypothesis.

Survey of leaders and employees was conducted online by YouGov – we surveyed 1,010 UK organisation leaders and 4,002 UK organisation employees based in large enterprises (500+ employees.) Fieldwork was undertaken between 15th – 23rd July 2019. 2018 survey conducted online by YouGov between the 11th and 21st September 2018 to 1,002 UK organisation leaders and 4,020 UK organisation employees. Data findings were then analysed using complex variable and single variable analysis. Using Cronbach’s alpha, the analysis looked at how correlated items appear in the same index model. The items within index/scales were sufficiently inter-correlated to justify aggregation. We used an extreme groups design to analyse our data, which looked at the difference in performance outcomes experienced by firms scoring very low (i.e. the bottom quartile) and very high (i.e. the top quartile) on variables describing AI adoption and AI intentions.

Social experiment on augmentation – focused on the financial sector, our experiment used a mixed method embedded design in which findings were combined across both qualitative and quantitative methods. Through the implementation of the ‘Augmentation Opportunity Framework’ combined with intermittent points of reflection and semi-structured interviews, we monitored, interviewed and analysed eight participants at their place of work, exposing how employees in augmented roles navigate decision-making, uphold their values, and find meaning in their work performance.

Sentiment analysis – through using a frequency matrix, we analysed the accumulated text from the open question in the survey in order to highlight key findings across all four sectors. By using two dictionaries of positively and negatively balanced words, we calculated the number of times each sentiment appeared, resulting in the creation of a word cloud for all industries.

Participants

Third Party Experts

- Alex Sbardella, SVP Global Innovation, GDR Creative Intelligence
- Benedict Delloit, Head of AI Monitoring, Centre for Data Ethics & Innovation
- Blay Whitby, Philosopher and Ethicist
- Calum Chace, Writer and Speaker on Artificial Intelligence
- Charles Radclyffe, Head of AI, Fidelity International
- Chris Skinner, Financial Author and Blogger
- Dan Housman, Founder, CTO Graticule
- Dr Robert Elliott Smith, Author
- Dr Lee Howells, Head of AI at PA Consulting Group
- Gary Gallen, Founder and Chief Executive Officer at rradar
- Kyle Fugere, Global Head of dunnhumby Ventures & dunnhumby Labs
- Lord Clement Jones, Chairman, House of Lords Select Committee on Artificial Intelligence
- Lydia Gregory, Co-Founder at FeedForward AI
- Mark McNally, Challenge Director, UK Research and Innovation
- Maureen Metcalf, Author and Chief Executive Officer and Founder, The Innovative Leadership Institute
- Nancy Rowe, Head of Inclusion & Diversity, Publicis Sapient
- Nick Swanson, Senior Policy Officer for Technology, Greater London Authority
- Robbie Stamp, Chief Executive Officer, BLOSS
- Roger Taylor, Chair, Centre for Data Ethics and Innovation
- Theo Blackwell, Chief Digital Officer, Greater London Authority
- Thomas Wood, Director / Consultant Data Scientist, Fast Data Science Ltd
- Tracey Groves, Chief Executive Officer and Founder, Intelligent Ethics Limited
- Wendell Wallach, Chair Technology & Ethics Research Group, Yale Interdisciplinary Centre

Organisations

- Abhijit Akerkar, Head of AI Business Integration, Lloyds Banking Group
- Chris Carlin, Consultant Physician, NHS Greater Glasgow and Clyde
- Daljit Rehal, Senior Vice President, Digital & Data Systems, Centrica
- Darren Atkins, Chief Technology Officer, ESNEFT
- Gökhan Meriçliler, Co-founder, WeWALK
- Jean Marc Feghali, UK R&D Lead, WeWALK
- Nick Wise, CEO, OceanMind
- Paul Dasan-Cutting, Innovation Product Owner, M&S
- Pierre, d’Imbleval, CIO, Renault Sport Racing
- Priyank Patwa, Head of AI & Machine Learning, M&GPrudential
- Roshan Rohatgi, Senior Innovations & Entrepreneurship Professional, NatWest
- Terry Walby, CEO, Thoughtonomy
- Valentin Tablan, SVP AI, IESO Health

Social Experiment Participants

- Female, 27, Banking
- Male, 23, Insurance
- Female, 34, Investing
- Male, 27, Investing
- Male, 34, Financial Services
- Male, 34, Accounting
- Female, 34, Investing
- Female, 31, Investing

Microsoft Experts

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- Clare Barclay, Chief Operating Officer, Microsoft UK
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- Annette Garner, Industry Principle Solution Specialist, Healthcare
- Craig Wellman, Director of Financial Services
- Janet Jones, Head of Industry Strategy, Financial Services
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- Laura Robinson, Enterprise Sales, Healthcare
- Louise Watkins, Head of Retail, Consumer Goods, Travel & Transport
- Paul Denn, Sr Sales Manager, Retail Consumer Goods
- Richard King, Head of Manufacturing and Resources
- Ruptesh Pattanayak, Director Industry Solutions
- Scott O'Neil, Senior Software Developer
- Stephen Docherty, Industry Executive, Healthcare

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