Microsoft

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%.)

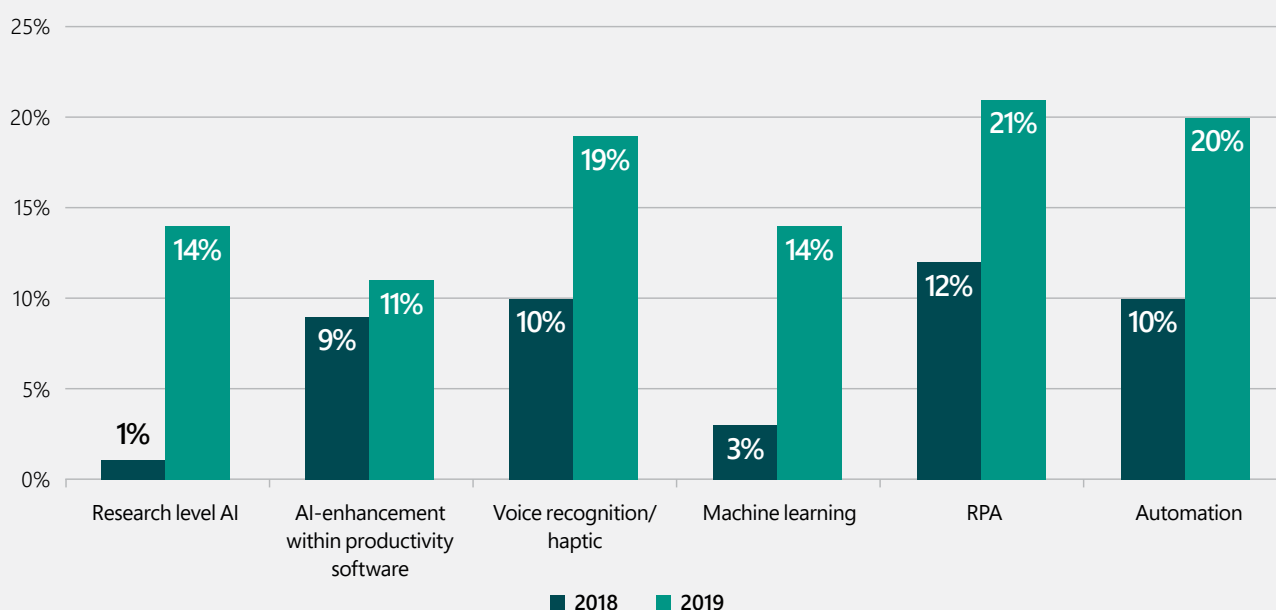It seems, then, that recognition of AI's transformative potential for healthcare organisations is becoming increasingly widespread – not just when it comes to central or so-called 'back office' processes but by genuinely enhancing the quality of patient care.

"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

	Research level AI	AI-enhancement within productivity software	Voice recognition/haptic	Machine learning	RPA	Automation
2018	1%	9%	10%	3%	12%	10%
2019	14%	11%	19%	14%	21%	20%

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.

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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

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Figure 13.

Tackling bias – UK leaders overall vs UK healthcare leaders

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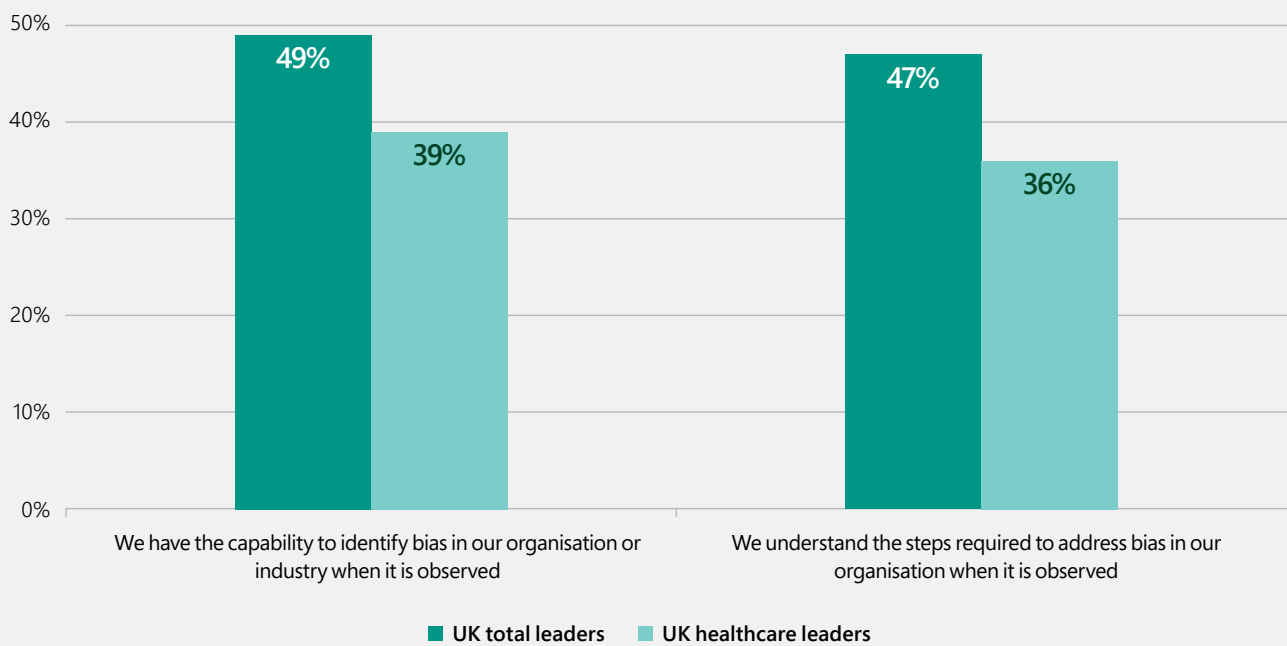
Put another way: the information is there and so, increasingly, is the will to use it. What healthcare organisations have to do now is develop a plan for doing so that is effective and responsible.

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, Ieso 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.

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."

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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.

ieso
digital health

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.