AI FOR BUSINESS

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COMPETITION

Is the UK still an AI leader?

It may be one of Europe's major players when it comes to artificial intelligence, but a lack of skills and strategic investment may be holding the UK back from its full potential

Marina Gerner

The UK has been at the cutting edge of artificial intelligence (AI) innovation, from Alan Turing, the pioneering mathematician and computer visionary, who launched the field, to DeepMind's AlphaGo, the first computer program to defeat a professional Go player in 2015.

Several pioneering AI companies were founded in the UK, including DeepMind, SwiftKey and Magic Pony, all of which were acquired by US companies – Google, Microsoft and Twitter – for $500 million, $250 million and $150 million, respectively. Over the last few years, the UK government has launched its Office for AI and Centre for Data Ethics and Innovation. But is the UK still an AI leader?

In 2019, McKinsey Global Institute placed the UK in the top quartile for "AI readiness". How is the UK maintaining this position in a competitive landscape, both in a business sense and a governmental one?

No country can hold a candle to the United States and China when it comes to AI, but the UK is one of Europe's leaders, according to the McKinsey report. The UK is globally in the top quartile for research, startup investment, digital absorption, innovation foundation and ICT connectedness. It does, however, rank lower on automation potential and human capital.

The UK has many leading researchers, who are published in the top academic journals. Christine Foster, chief commercial officer at The Alan Turing Institute, says: "The UK has eminent researchers, such as Christina Pagel, who works on mathematical tools to support delivery of health services; Mark Girolami, who is developing and applying advanced statistical and computational techniques to engineering challenges; Maxine Mackintosh, who has founded One HealthTech," which supports under-represented groups in health tech innovation. There are many others.

Lee Harland, founder and chief scientific officer at SciBite, an Elsevier company, says: "We're very good at the basic science; a strength of the UK has always been our intellectual output. The Cambridge-Oxford-London triangle is a hub for talent. Because AI is a broad skill that can fit just as much into gaming as it does into healthcare, within the triangle there is a lot of opportunity for people to move around, even into different industries, without trekking halfway across the world."

Diego Barbieri/Shutterstock

The question is whether this skillset filters down to a broader population. "Recruiting talent from outside the UK will always be important, but we need to bring the AI skills closer to our schools and universities," says Harland.

"You don't need a degree in mechanical engineering to drive a car and you don't need a degree in statistics to use machine-learning. There are some great initiatives for data science and AI-centric courses appearing in our universities; this needs to be accelerated and cascaded down, at least conceptually, to school age." Like most countries, the UK faces a shortage of people with advanced technological skills. Wider education could remedy that.

Foster adds: "In the UK, we are fluidly connecting and convening across the public sector, private sector and third sector. Look at the AI Council [an independent expert committee that advises the government]; it's a great example of what can happen when people from industry, public sector and academia come together, sharing their broad range of background and expertise to the AI ecosystem."

Despite slightly higher investment in AI, the UK lags behind France, Germany, Japan and South Korea when it comes to AI patents, according to McKinsey. What's more, an independent review commissioned by the government noted that "universities should promote standardisation in transfer of intellectual property". This would make it easier to create spin-out businesses.

Taking an idea and turning it into a business takes a combination of factors, says Harland. "There are a lot of institutions out there to advise – Innovate UK, Digital Catapult – but it's often very obtuse in terms of what they can do and how they help." He says other European countries are better at being explicit about which agencies do what for startups. "I think it's very hard to understand that in the UK landscape," says Harland.

There is something of a "space race" in the AI realm, says Dr Michael Feindt, strategic adviser of Blue Yonder. America is investing fifty times more in AI than the UK, and China is investing eight times more. "We are increasingly seeing promising UK startups being acquired by large US companies before they can mature, limiting the UK's ability to make up ground on other countries," says Feindt.

Historically, many innovations in the computer industry have been pioneered by women. The first computer programmer was Lady Ada Lovelace, while actress Hedy Lamarr invented the technology that enabled wifi, GPS and Bluetooth. In the mid-80s, almost 40 per cent of US computer graduates were women. But the AI industry now faces what Bill Gates called the "sea of dudes problem". A greater diversity of people and data would counteract some of the bias that algorithms have ingested so far.

To stay at the forefront of AI, the UK needs a long-term strategy spanning ten to fifteen years, rather than just one or three, argues Foster at The Alan Turing Institute. This strategy needs to ensure data is more accessible to AI companies, that innovative pilots can be scaled and ethical frameworks applied.

"We have a long history in AI. Our researchers know they're standing on the shoulders of giants and that we have the ability to move the whole field forward," she concludes.

Boost to the UK economy that could be provided by AI by 2030
+22%

+20%
Increase in the AI gap between Europe and the US in the past 3 years

TOP 25%
The UK sits in the upper quartile for global AI readiness

TUC/BritainThinks 2020

Smith Collection/Gado/Getty Images

CASE STUDY

Transforming the workforce with AI in talent management

There are often concerns that artificial intelligence will replace people's jobs, but in the case of forward-thinking multinational Schneider Electric, the opposite is true

James Lawrence

Until early this year, Schneider Electric was living with an uncomfortable truth. Some 47 per cent of employees who left the global energy management and automation business said they were leaving because they couldn't see any future career opportunities. It was clear that, in this company of 140,000 people, the traditional means of internal talent recruitment and career progression were not working.

To solve the problem, Schneider launched its Open Talent Market, an innovative application of artificial intelligence (AI) in human resources that is helping to place the company's considerable internal expertise where it is most needed.

The platform currently performs three functions: matching employees to vacant roles, helping them find a mentor and connecting them to side projects. Crucially, it puts employees in control of their own careers. People are free to share whatever personal information they feel is relevant, such as skills and goals, which is then matched by the system's algorithms to the company's requirements.

"Previously, we would humanly try to make matches, but we weren't able to bring the supply and demand together," says Jean Pelletier, vice president of digital talent transformation at Schneider, who played a leading role in launching the project. "We'd been asking to do this for years, as we outgrew our ability to operate without it. The spirit was there, but the technology was missing, and that's where AI is the game-changer."

Despite this only being rolled out globally in April, Schneider is already seeing the business benefits. Although it's too early to say exactly how the system has affected the employee attrition rate, the early signs are encouraging. Some 38,000 of the company's 75,000 white-collar workers have already enrolled and there's a plan to make it available to blue-collar employees via on-site kiosks. Meanwhile, an immediately visible upside is that managers looking for suitable internal candidates for vacant roles have been able to reduce the time taken for sourcing "from months or weeks to seconds", says Pelletier.

Helping people find suitable side projects is also transforming employee experience at Schneider, whose workforce are encouraged to spend 10 to 15 per cent of their time on areas that fall outside their usual role. "We're measuring that as 'unlocked hours'," says Pelletier. "Those hours are not only the employee making discretionary effort for development, it's us actually sourcing internally for the skills we don't have resident on our teams."

But the overarching business benefit of using AI in HR in this way is the visible increase in dynamism the talent market is fostering. "We have created an internal gig economy within Schneider that is delivering exactly the agility we need," she says.

> **Don't underestimate the people part of it and the fact you have to rethink how managers and employees are equipped to deal with this**

What's more, applying technology-driven solutions like this is particularly crucial in organisations that are undergoing a digital transformation, says Josh Bersin, a leading HR industry analyst who specialises in HR technology.

"The more 'digital' your company becomes the more project-based it needs to be," he argues. "So we need tools and systems to facilitate this new world of work and I'm excited to see them here at last. Creating a talent network in your company will greatly improve your retention. And when your people feel safe to try new things, contribute to other projects and share their expertise, they can innovate and solve problems faster than ever."

A further benefit is the way it helps to enhance the company's diversity and inclusion initiatives, says Pelletier. "We can't help but be human and have unconscious bias. But AI looks at hard facts, it looks at skills, it's making things agnostic," she says.

However, she is also aware of the possibility of in-built prejudices lurking within the system's algorithms. "We're super vigilant towards that," she says, but is confident when the technology is combined with human skills, the result is far superior to where Schneider was before. "It's brought science to where we used to only have art and now we've found a good balance between the two."

Of course, rapidly implementing and scaling a system like this in a 184-year-old global enterprise is always likely to throw up challenges. "This is by far the most disruptive technology we have brought into Schneider. It's a complete rewrite of HR," says Pelletier.

She explains the company failed to predict the effect that rapidly rolling out the platform would have on some of its people, particularly those in middle-management roles. Frequently, they have felt their staff are more open to being "poached" internally, while being unable to see the broader business benefits of a more dynamic workforce.

"What I don't think we did incredibly well was the change management around mindsets," says Pelletier. "Do not underestimate the people part of it and the fact you have to be open to shifting and rethinking, not only your HR department, but how managers and employees are equipped to deal with this."

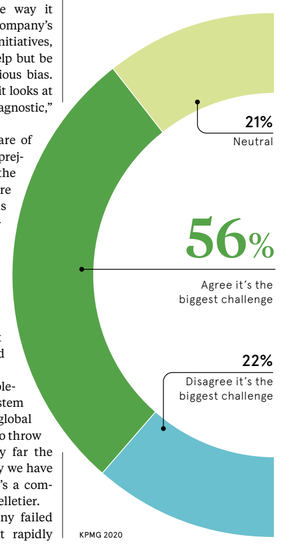
However, once these human elements are addressed Schneider's team leaders are usually able to see the bigger picture. "Most progressive managers get it," she says.

As for the future, Pelletier's boss, chief human resources officer Charise Le, is clear about how Schneider needs to double down on the outcomes the Open Talent Market is delivering. "When it comes to talent, we need to achieve empowerment for all," she says. "Expectations of employees may change, but the need to make your own career choices will not."

Pelletier is excited about the possibilities of using AI to unlock further value, particularly when it comes to operating at pace. "Speed is the key to winning in the market, whether it's with talent or with our business," she says. "AI has brought speed to us that we've never had before. And that's why we continue to keep looking at it." ●

IMPLEMENTING AI IS AN HR CHALLENGE TOO

1300 HR executives from across the globe were asked whether preparing the workforce for AI was the biggest challenge for their function
(Values rounded)



KPMG 2020

Commercial feature

AI comes into its own in the fight against financial crime

With the financial crime landscape constantly evolving, AI is now providing banks with a faster, smarter way to reduce false positives, gain a more holistic view of customer behaviour and reduce costs in the process

Money laundering techniques have evolved significantly as criminals have leveraged technological advances. With business and society becoming more connected, financial criminals have adapted quickly. Meanwhile, increasingly stringent regulations and increased numbers of fines levied against banks mean financial services organisations are spending $180.9 billion annually on financial crime compliance, 62 per cent of which goes on labour expenditure in the Europe, Middle East and Africa region, the LexisNexis Risk Solutions Global Study found. All of this to recover less than 1 per cent of all the criminal proceeds, according to the United Nations.

Identifying this activity using traditional methods is extremely difficult. While banks have been seeking to adopt technology that does this more efficiently by simply doubling down on existing systems, anti-money laundering (AML) processes tend to remain significantly siloed, with a lack of cohesion between systems and departments. Legacy technology is a great inhibitor, slowing down banks at a time when open-source technology is enabling criminals to adapt and evolve more quickly. It's imperative that banks find ways to look for vulnerabilities in systems more generally, and intelligently, while promoting closer alignment between departments.

"Banks have always kept information restricted, sharing it on a need-to-know basis between departments. Consequently, they're unable to get a holistic view of their clients," says Dr Janet Bastiman, head of analytics at regtech company Napier, whose intelligent compliance platform helps banks increase efficiency and minimise risk. "They tend to have multiple teams for onboarding, client life-cycle management, transaction monitoring and sales. Each of these teams can also be split geographically, so they don't interact well or share data and insights. Things are quite literally falling through the gaps.

"The cybersecurity sector is very good at communicating new threats quickly, so everybody can immediately start patching. We need to have the same approach with money laundering. If somebody knows there has been suspicious activity, that information and how to recognise the new patterns needs to spread quickly to prevent recurrence. This isn't happening because banks don't have the systems, processes or technology to share the information and get a truly holistic view."

Napier's award-winning compliance platform provides the comprehensive view of customers that banks need. The company's intelligent approach, which successfully combines big data technologies with artificial intelligence (AI), robotic process automation and machine learning, is applied to underpin policy, process and procedure. The Napier platform is fast, scalable and modular, meaning that financial institutions don't need to replace their existing systems immediately and can build their sophistication incrementally.

The software helps different departments work together more effectively. As information runs through the system, it forms a top-level overview that then provides alerts to the appropriate teams at the right time. Client onboarding and KYC (know your customer) checks, for example, can be powered by contextualised information from numerous sources, and compared with behaviour from other customers and entities. A customer's behaviour may look normal when viewed in isolation, but looking at it more holistically, next to all other sources of information, could show some unusual patterns.

"We want to make compliance officers sleep easily. With Napier, banks can better understand the fundamental interconnectedness of their data," Bastiman adds. "You have the customers and how they're connected to other customers and all their transactions, and being able to see that spider-like view really exposes any inconsistencies. But to do this you need that holistic view, a customer-centric approach, rather than just looking at siloed transactions."

Taking this more intelligent approach also brings other benefits, including freeing up the time of compliance analysts who no longer have to sift through reams of transactions to try to spot patterns. Reducing the number of people required on these kinds of investigations, and feeding people with accurate information quickly, means humans can focus on more sophisticated tasks.

The technology is powering better explainability in a regulatory sense too. It's not enough to say an issue was flagged by AI. Analysts need the detail in a simple, digestible language so they can explain to regulators exactly what caused concern. Historically, AI has not been successful here, with any explainability focused only on metrics for data scientists. Napier's Client Activity Review has AI flags that show in plain English what the unusual transaction was in that period for the client, and why it was unusual. This enables anyone in the team to work with the insights, without requiring a data scientist to interpret the data.

"Criminals will always be trying to hide their activities and be one step ahead," says Luca Primerano, Chief AI Officer at Napier. "As economics change in the world, whether that's political or through major world events we've seen this year, it's going to bring them new opportunities and also new challenges. The financial industry must really adapt to those challenges while stopping the opportunities for criminals as fast as they can.

"An AI engine can look at the transactional activities of customers much better than a human. It's a completely independent set of lenses that can go through billions of transactions across multiple dimensions to detect anomalies, something that would take humans years to complete at great cost. The AI then collates that information into a simple summary of the top suspicious behaviours, including why they are unusual, so that a human analyst can make better decisions. Napier provides a completely unified solution with these capabilities, eliminating silos and combining everything together to gain that holistic view of customer behaviour. This helps banks work faster and smarter to fight financial crime, while at the same time reducing costs."

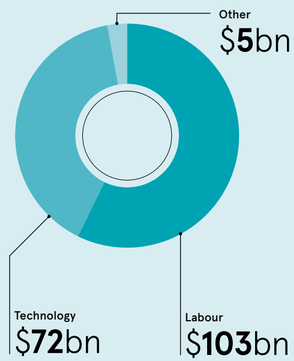
> **We want to help compliance officers sleep easily**

For more information, visit napier.ai

NAPIER
INTELLIGENT COMPLIANCE

MAKING THE CASE FOR AI: THE HUGE COST OF FINANCIAL CRIME COMPLIANCE

Overview of global compliance spend of technology and labour

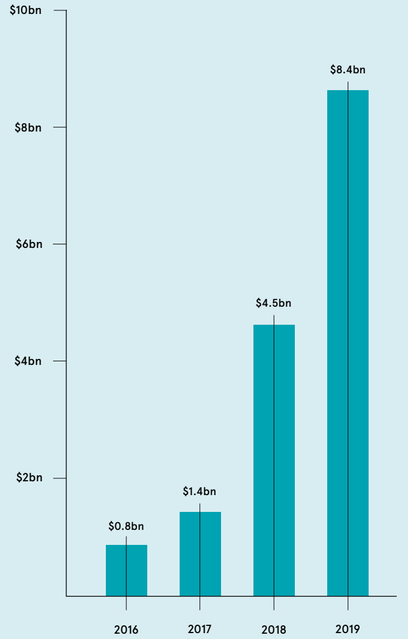


$180.9bn
Financial institutions spend globally

to catch less than 1% of money laundering

LexisNexis Risk Solutions True Cost of Financial Crime Compliance Study Global Report 2020

Global compliance fines against Financial Institutions

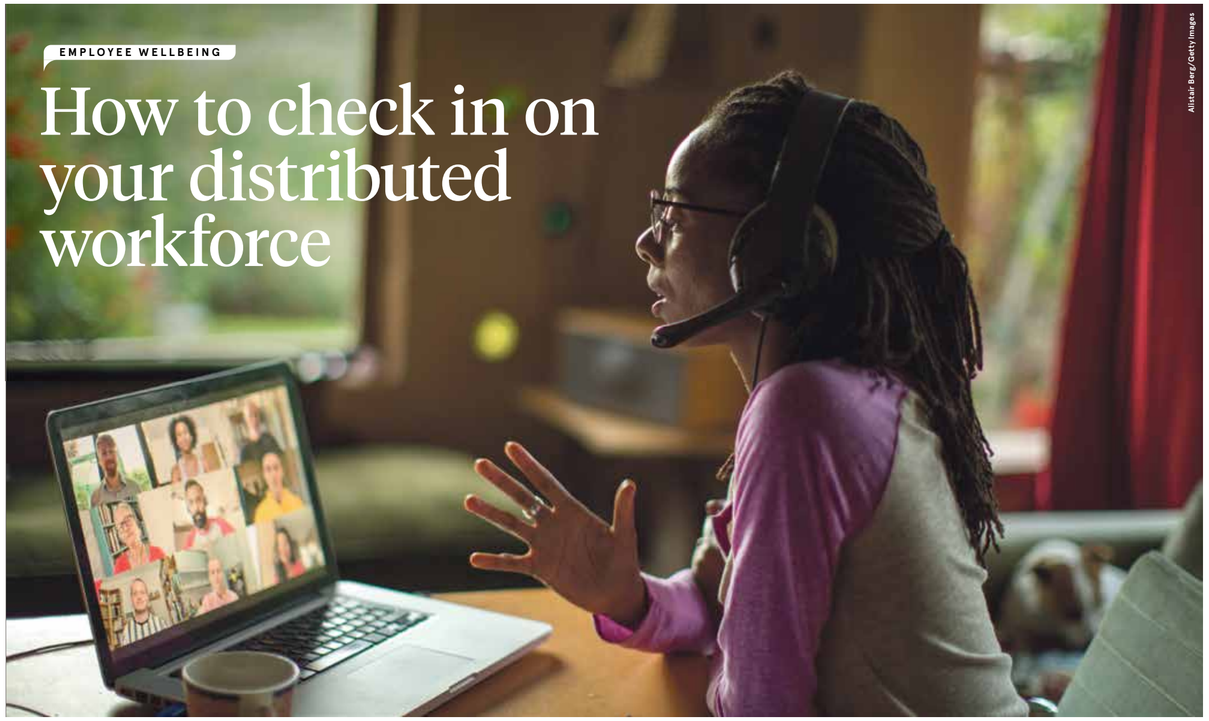


Fenergo Global Financial Institutions Fines Report

Cost of compliance in Europe makes up

75%

of the total global cost (LexisNexis Risk Solution Study)



EMPLOYEE WELLBEING

How to check in on your distributed workforce

Alistair Berg/Getty Images

As employees' wellbeing is tested to its limits, caring employers are using a range of AI tools to ensure concerns are being heard and properly addressed

Chris Stokel-Walker

As remote working becomes increasingly commonplace, keeping employees engaged and interested in their work, while struggling with the stresses and strains of life during a pandemic, is no easy task. But AI and employee engagement can dovetail together to provide employers with an overview of how to ensure wellness runs through an organisation and pick up on issues before they arise.

All of us are being tested in ways we have never been before, as we struggle under the pressure of rolling lockdowns, time away from family and juggling work-life balances. Sentiment analysis can help ensure an engaged employee remains engaged, and can pick up on issues with health and wellbeing from those who feel uncomfortable, at a time when unemployment is reaching record highs, about coming forward.

The movement in AI and employee engagement is being spearheaded by a range of startups that are working with major employers, helping them feel more able to get a grip on where employees are facing issues, and offering solutions to problems when they arise.

"We've built an extension arm, an anonymised dashboard, which aggregates this pool of data that says, 'It looks like in your population of employees in London, 67 per cent are at risk of stress or anxiety, 43 per cent of diabetes. And literally 100 per cent of your people are at risk of musculo-skeletal conditions,'" explains Lorena Puica, chief executive of iamYiam, a big data analytics firm.

The company takes countless anonymised data points and, using machine-learning, translates them into a predicted cost of whatever the issues raised will be to an organisation, providing suggestions on how to support employees from the top down. "The idea is to have this integrated end-to-end, from the employee to the corporate and then back to the employee," says Puica, whose clients include large consulting organisations, law firms, insurance companies, and healthcare services and enterprises worldwide.

The real challenge is tackling the productivity crisis in workforces and ensuring workers feel supported at a time when things are highly uncertain and a number of different aspects of life tug and pull at their time. The UK has some of the worst rates of absenteeism and presenteeism in the world, according to the Chartered Institute of Personnel and Development, which has a knock-on effect on productivity.

iamYiam has managed to reduce absenteeism in the companies with which it works by between one and two days per person a year. But presenteeism, where people turn up but aren't engaged with their work, is a bigger drag on businesses' bottom lines. Here iamYiam claims to improve presenteeism by between ten and twenty days a year.

"Productivity is that elusive term everyone talks about, but no one can grasp," says Puica. But iamYiam's analysis of key performance indicators in a company, and suggestions on how to improve it, can increase productivity by 10 per cent in professional services firms and by between 5 and 7 per cent in retail.

> **When you have something that changes so fast, the challenge is you're not catching downsides or mistakes fast enough**

51%

jump in demand for employee surveillance software since the start of the coronavirus pandemic

Top10VPN 2020

The twinned roles of AI and employee engagement are known by many people. Bupa, the private healthcare provider, uses AI to monitor health and wellbeing among its employees worldwide, with a tool developed by Glint, a Silicon Valley startup.

"In the past, you had to employ data scientists to understand what's going on in your organisation," says Nigel Sullivan, chief people officer at Bupa. "You try and pull out the drivers of engagement. They are things specific to your organisation that might have a disproportionate effect on engagement. It might be communication or the prospects of the firm. It'll be different depending on the circumstances." But AI enables Bupa to get to the heart of what's troubling employees and offers suggestions how to fix it.

"It's like skittles: you hit one and get the whole shebang," says Sullivan. "Your bang for your buck is a lot better if you can find out what the drivers are. AI helps you get that." Bupa uses natural language processing to filter through free text responses, in eight languages worldwide, to its survey of 83,000 workers and pinpoint what are each of their concerns. Three quarters of Bupa's employees completed the most recent survey, conducted in late-November, providing 68,500 comments.

"We can really analyse that and find out what it is people are thinking about and what's on their mind," says Sullivan. "What's important to people working in our hospitals in Spain or insurance companies in Hong Kong? What do they think?" Glint enables Bupa's team managers to identify the drivers of employee engagement and provides advice on how to maintain or improve them.

Other companies rely on bots to communicate with workers and collate their responses. Moneypenny, which manages call centres and live chat environments for 21,000 clients in the UK and United States, has rolled out the use of bots on Workplace from Facebook to keep in touch with workers, identify their issues and communicate changes.

"For our people, it helped that true human interaction continued as we embraced this new normal, recreating those water-cooler moments, which are the lifeline for a people-focused business like ours," says Joanna Swash, Moneypenny's chief executive. "We have used it proactively to distribute positive and uplifting news and messages.

"We try to not impose too many top-down initiatives, but use Workplace as a tool to get feedback and ask questions about how the management teams can better support frontline staff."

And this is the concern, that the shift to AI and employee engagement could backfire as already stressed workers begin to worry about support turning into surveillance. Some have expressed concerns with the rollout of what detractors say is "employee surveillance" software.

Demand for such tools is up 51 per cent since the start of the coronavirus pandemic, according to data compiled by Top10VPN. Search traffic for "employee monitoring software" has risen 65 per cent between March and September, while searches for "work-from-home monitoring tools" are 2,000 per cent higher than they were pre-pandemic.

Some companies, struggling to keep tabs on their employees and worrying about a decline in productivity as the pandemic bites, are changing their approach to using AI and employee engagement from one that benefits employees to benefiting bosses.

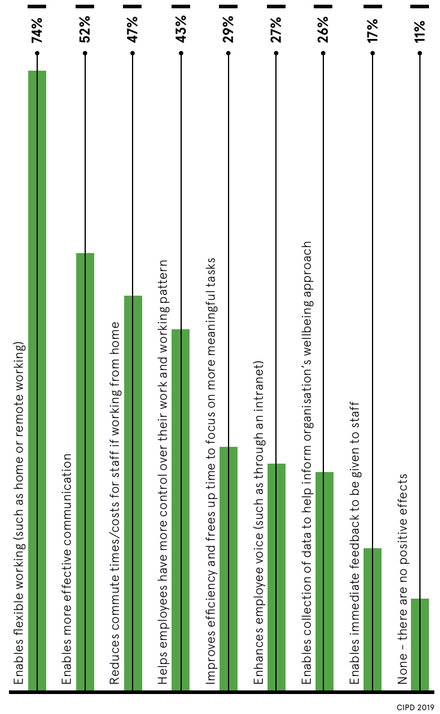
It's being exacerbated by the unprecedented situation in which we find ourselves during the pandemic and the sheer newness of the technology. "The speed of change in this space is truly unprecedented," says Puica at iamYiam. "When you have something that changes so fast, the challenge is you're not catching downsides or mistakes fast enough."

Caution is required and clear thinking about why you're rolling out the use of AI. Employees may be discomfited by the immense changes going on in their workplace and need reassurance and stability. "We need to create a value set that drives policies," says Puica, before we jump into the unknown.

> **What's important to people working in our hospitals in Spain, or insurance companies in Hong Kong? What do they think?**

WHAT DO EMPLOYEES REALLY WANT TECH TO DO FOR THEM?

UK employees on which advances in technology have had a positive effect on their workplace wellbeing



CIPD 2019

A DAY IN THE LIFE OF AI

From chatbots and digital assistants to facial recognition or biometric scanners, our daily interactions with artificial intelligence have surged over the past few years, most of them without us even realising it. This infographic explores some of the ways that AI has infiltrated our day-to-day lives and how consumers generally feel about it

Speaking to smart assistants

Virtual assistants such as Alexa and Siri rely on voice recognition software and natural language processing. They break down questions or phrases into individual sounds, then run those sounds through a database, using sophisticated algorithms to find the right answer. As more people use the assistants, the database of sounds expands and the algorithm learns as it goes.

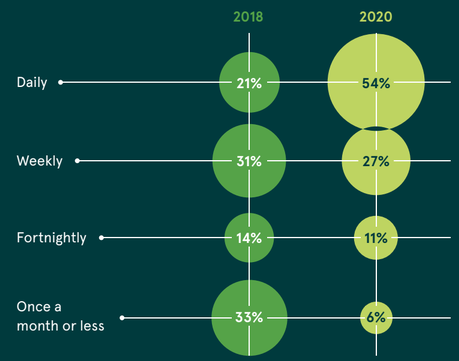
4.2bn

Number of digital voice assistants in use worldwide

Juniper Research 2020

AI INTERACTION FREQUENCY

Share of global consumers who have AI-enabled interactions with organisations over the following frequencies



Capgemini 2020

Blocking unwanted emails

Sophisticated spam filters such as those used by Gmail rely on deep learning, where the algorithms learn from users clicking 'report spam' and 'not spam', and adapt accordingly. It tailors inboxes to users' habits, for example learning to filter out emails that individuals tend to quickly delete or ignore. Gmail also uses a so-called artificial neural network, which recognises and filters out certain kinds of messages, such as sneaky phishing attempts.

99.9%

of spam, phishing and malware is blocked on Gmail

Google 2020

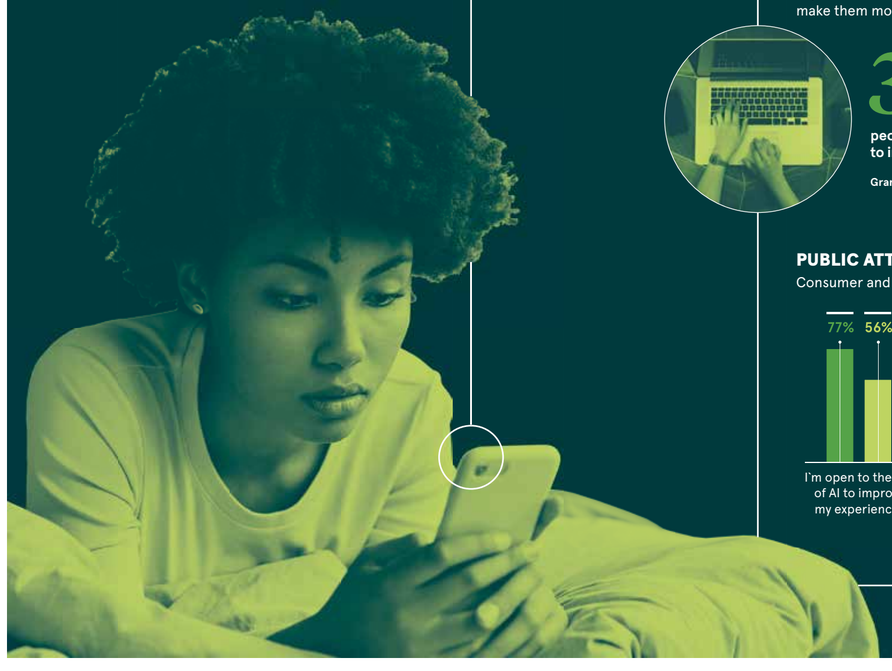
Unlocking your phone

It will be the first thing many do as soon as they wake up, but some may be surprised to know that the simple act of unlocking a smartphone by looking at it relies on AI. Apple's TrueDepth camera, for example, projects 30,000 invisible dots on to a user's face to create a so-called 'depth map', and compares that to the saved data to allow access. It can even automatically adapt to changes in appearance, such as facial hair or make-up.

79

Number of times a day that Gen-Z consumers unlock their phones

Verto Analytics 2019



Spell check

Doing something as simple as composing an email can call in the use of AI. Grammarly is an AI-powered writing assistant that suggests improvements to grammar or spots errors in users' writing. The company says its AI also listens to feedback from humans – for example if several users choose to ignore a certain suggestion, adjustments are made to the algorithms to make them more accurate.

30m

people use Grammarly to improve their writing

Grammarly 2020

Netflix recommendations

Netflix says its recommendation system "strives to help you find a show or movie to enjoy with minimal effort". It assesses a variety of factors, such as your viewing history, how you rate titles, what others with similar tastes have watched, which actors or genres you like to watch and things like the time of the day you use the service. These all feed into Netflix's algorithm, which is improved every time you watch something new.

195m

Number of Netflix paid subscribers in the third quarter of 2020, up 37 million year-on-year

Netflix 2020

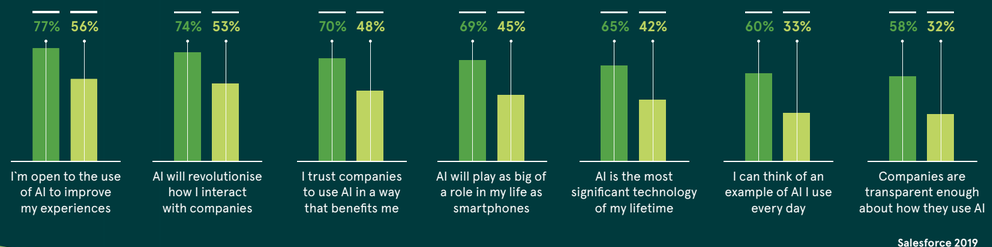
SATISFACTION WITH AI INTERACTIONS

Percentage of global customers who are satisfied with AI interactions by industry

Capgemini 2020

PUBLIC ATTITUDES TO AI

Consumer and business buyer attitudes towards AI worldwide



Salesforce 2019

Chatbots

Designed to simulate human conversation, chatbots operate via chat interfaces on customer service portals, interpreting written words inputted by customers to provide a pre-set answer. Their ability to respond to complex questions is limited, but they have come a long way over recent years.

93%

increase in chatbot usage by B2B customers from 2019 to 2020

Drift/Heinz Marketing 2020

SUSTAINABILITY

Using AI to save the planet

From facial recognition technology that monitors brown bear populations, to intelligent robots sorting recycling, these initiatives are having a positive impact on the environment

Sam Haddad


Michele Aldeghi/Shutterstock

1

Conserving species

The Living Planet Index produced by WWF estimates that wildlife population sizes have dropped by 68 per cent since 1970. The charity advocates the use of artificial intelligence (AI) as a tool of conservation technology to monitor and curb this alarming rate of decline.

One of the most useful applications is in acoustic monitoring, recording the sounds of wildlife ecosystems on weatherproof sensors. Many animals, from birds and bats to mammals and even invertebrates, use sound for communication, navigation and territorial defence, providing reams of rich data on how a species population is doing. AI provides a fast and cost-effective way to analyse hours of recordings for patterns of behaviour.

Conservation Metrics, a California-based company, has used acoustic listening and machine-learning to monitor endangered populations of both red-legged frogs in Santa Cruz, diverting water to help them mate successfully, and the forest elephants of the Central African Republic, helping to protect them from poachers.

Facial recognition technology is another application of AI that could help track wildlife populations, when combined with camera traps in the wild. BearID, an open-source application, which was trained on brown bears in Canada and the United States, is a recent AI triumph as, unlike primates, zebras or giraffes, bears don't have distinguishing features, so the deep-learning algorithm had to find patterns in their facial make-up instead. The researchers hope this AI will be used to monitor other species in the future.

Improving recycling

More than 2.1 billion tonnes of rubbish is generated in the world each year, yet only 16 per cent of it is recycled, according to research by Maplecroft. To make matters worse, a quarter of waste put into the recycling is not actually recyclable at all, hindering the whole process.

Several startups are now looking at how AI and sustainability goals can be combined to make recycling more efficient, even when dealing with mixed materials. Colorado-based AMP Robotics uses an AI-powered robot with optical sensors to quickly identify rubbish as it passes on a conveyor belt. It then sorts it with its robotic arms, using the company's AMP Neuron AI platform, which can recognise different textures, colours, shapes, sizes and even brand labels.

The AI constantly updates itself and is designed to run 24/7. It has already been rolled out in the United States, Canada and Japan, and will soon be coming to Europe.

In Bali, Gringgo Tech has designed an image recognition tool to help informal waste collectors identify the different monetary values of various recyclable materials. In a pilot study, it improved recycling rates by 35 per cent. They're now working with Google to build AI into the platform to help improve how quickly and efficiently the system can categorise waste.


Rawpixel.com/Shutterstock

2


Gerard de Klerk /Unsplash

3

Protecting forests

Forests are home to 80 per cent of the world's terrestrial biodiversity, and they absorb and store a third of current carbon emissions. Halting the loss and degradation of forest ecosystems is essential to meeting the objectives of the Paris Agreement on climate change, according to the International Union for Conservation of Nature.

Rainforest Connection seeks to combat illegal logging using acoustic monitoring in forests on hidden solar-powered smartphones, which have been recycled from consumer use. The charity then uses AI to analyse this sound data in real time. If the AI detects the sounds of chainsaws, logging trucks or gunshots, an alert is sent to rangers. According to Rainforest Connection, research shows that if illegal loggers are interrupted once or twice, they leave and don't return until the next logging season.

Dryad Networks has secured seed funding to use the internet of things and AI to detect wildfires. Dryad uses AI-based solar-powered sensors to capture gases emitted at the smouldering stage of a wildfire which, combined with real-time analysis of temperature, humidity, air pressure and wind data, will alert forest rangers when a wildfire is imminent. They are also developing a long-range wireless environmental monitoring sensor network to cover large forest areas where there is no mobile-phone signal.


Gino Crescoli/Pixabay

4

Cutting air pollution

Nine in ten of the world's urban residents breathe polluted air, prompting the United Nations to make access to cycling, walking or public transportation one of its 17 Sustainable Development Goals.

To meet this challenge, London-based Vivacity uses AI technology to capture and classify live transport usage with the goal of enabling more environmentally sustainable transport use in cities. The company has been working with Transport for London since 2018 to determine where new cycling infrastructure should be targeted.

London's Walking and Cycling Commissioner Dr Will Norman says: "By getting more people cycling and walking, we can help to tackle congestion and pollution in London and improve our health. Our Healthy Streets approach is based on evidence and data, and we welcome new technology that supports this."

Vivacity's AI has allowed local authorities across the UK to assess the effectiveness of their temporary street layouts to encourage physically active travel during the coronavirus crisis. The company has also helped Transport for Greater Manchester roll out smart junctions across the city, which prioritise pedestrians and cyclists over motor-vehicle traffic.

Minimising food waste

Some 9.5 million tonnes of food is wasted in the UK every year, according to the Waste and Resources Action Programme, 70 per cent of which could be avoided. The waste, which includes food from supermarkets, households and hospitality, generates 25 million tonnes of greenhouse gas emissions.

Winnow is working with HCL Technologies to use AI to tackle the problem in hospitality, where their data shows up to 15 per cent of purchased food is being wasted. Winnow Vision is an AI tool that takes pictures of food as it's thrown into the bin, teaching itself to recognise what's been discarded and tracking the data. IKEA has deployed Winnow Vision in its UK stores, cutting food waste by an average of 50 per cent.

Last year, UK supermarkets signed up to a government pledge to halve food waste by 2030. According to data from Blue Yonder, using AI in supermarket supply chains could help the UK's eight largest retailers cut seven tonnes of food waste a year, saving £144 million. As Wayne Snyder, vice president of retail strategy, Europe, Middle East and Africa, at Blue Yonder says: "AI monitors goods from farm to fork, resulting in an increased understanding of the environmental impacts across the supply chain and identification of the areas that need improving."


Nito/Shutterstock

5

Reducing sewage pollution

Raw sewage was discharged onto beaches in the UK almost 3,000 times over the last year, according to a report by Surfers Against Sewage. The environmental charity advocates stricter monitoring of sea and river pollution, and operates an app called the Safer Seas Service, which warns swimmers, surfers and other water users when untreated sewage has been released at their beach.

But the app, which began in 2010 as a text alert system, relies on voluntary data provided by water companies, which isn't always reliable. So, this year, Surfers Against Sewage added a health report function to the app, using a citizen science approach to warn others about beach cleanliness issues in real time, but also to hold water companies to account. Southern Water, for example, had released no notifications during 2020 due to reporting mechanism errors, yet over 20 per cent of health reports submitted to Surfers Against Sewage allegedly came from beaches within Southern Water's jurisdiction.

In the future, application of AI will enable even more precise, live seawater quality assessments. Scientists working with the National Research Foundation of Korea have already shown that artificial neural network models can accurately predict microbial contamination at beaches, using variables including tides, temperatures, wind speed and direction, rainfall and recent sewage discharges. Southern Water has set a target of zero pollution incidents by 2040 and say they will use state-of-the-art machine-learning in that mission.


Debby Hudson/Unsplash

6

Commercial feature

Democratising AI education

A new company, DataWorkout, is raising awareness of disruptive innovation through cinematic filmmaking. Why? Founder and chief executive **Angel Javier Salazar** says it's crucial to democratise education of technologies as powerful and transformational as artificial intelligence

Q How has artificial intelligence evolved over the years?

A It goes back further than many people realise. Alan Turing took the first steps to test a machine's ability to model human intelligence in post-war Britain and Frank Rosenblatt's 1958 invention of the perceptron algorithm accelerated the idea that artificial intelligence (AI) could mimic human thinking. But the next truly major milestone didn't arrive until 1997 when IBM's Deep Blue defeated chess grandmaster Garry Kasparov. The new millennium flared inspiration. Honda launched ASIMO, a humanoid robot purposed to offer home assistance for people with mobility issues. IBM's new super computer Watson was victorious in the American quiz show *Jeopardy* and Google's AlphaGo became the first machine to beat a human professional at Go, a complicated board game. AI is no longer just an abstract sci-fi concept; it is part of our everyday lives, through smart cars, robotic devices and virtual assistants such as Siri and Alexa.

Q What did you learn about AI in your time in academia?

A I spent 29 years in academia including 19 years as a lecturer. What struck me was how little the average person understands about AI and what it can and can't do, as well as the lack of alignment on the subject between scientists, academics, technology professionals, business leaders and wider society. At its simplest level, AI enables human integration with intelligent sensors feeding data, progressing to levels of hyper-connectivity within all economic spheres. But nobody is explaining this in a way that is easily digestible and understandable or dispelling fears. Some people restrict AI education because they try to mystify it. They'll charge thousands of pounds for courses they deliver over numerous weeks. We make it mainstream by delivering the same information in a highly engaging, feature-length cinematic film. We're democratising AI education and we're the only ones doing it in this format, partly because nobody else has the courage to do it.

Q Why is it so important that people are better educated on AI?

A A big question is how we support and protect people as the AI revolution explodes. As cloud computing takes over the world of data, the workplace is no longer in one physical location, it is atomised and scattered. The puzzle of co-ordinating product quality, service and operations, and worker performance in the AI era, will need a new map of clues, dramatically changing management styles from traditional top-down structures to decentralised and remote-working practices. AI is interweaving into our lives in ways we would never have imagined; people need to understand its impact.

Q A lot of people fear AI will steal their jobs. Are they right to have these concerns?

A A power struggle is in the process of erupting as a shift towards automation and predictive systems will displace workers. Those carrying out roles that can largely be automated may feel they are losing power, while incomprehensible volumes of power will be placed in the hands of others. Our AI journey must be clearly mapped out. AI cannot be left to drive its own train of progress. Its flexibility gives everyone the freedom to steer it in different directions. The destination must be clear from the onset, with a societal sat nav of directions. This is why democratising AI education is so vital.

Q What films do you have in the pipeline to achieve that democratisation?

A Visitors to our website can now rent our first film *The Quest for Super Intelligence*. The cinematic educational experience provides a comprehensive view of the evolution, risks and challenges to implement AI in businesses and for the benefit of society. We explore how intelligence is evolving to mimic us as humans, the fears of automation, the new skills required, the platforms available, and issues around employment, diversity and inclusion. Released in January, our second film *The Lord of the Blocks: Blockchain Unchained*, directed by Dr Christian de Vartavan, takes viewers back to a medieval setting of castles, wizards and knights to explain this revolutionary new technology. We are planning several more films with engaging stories to demystify new technologies. Our mission is to inspire and help enthusiastic people enjoy learning from the comfort of their home. DataWorkout will directly contribute to developing the skills of the future workforce through entertaining "edu-films" that spark innovation.

For more information please visit dataworkout.com/SuperAI

TRUST

When to rely on robots

If you need recommendations or advice, who are you likely to turn to? New research suggests artificial intelligence can help, even in cases where most of us normally prefer a human response

Luis Alvarez/Getty Images

When do we trust AI to suggest something to us, and would we ever take a robot's recommendation over a human's?

67%

of test subjects picked an AI-recommended hair product when asked to focus on performance, practicality and chemical composition

58%

picked a human-recommended product, when asked to focus on scent, indulgence, and spa-like vibe

Harvard Business Review 2020

MaryLou Costa

As more of our everyday life, from shopping and dating, to learning and exercise, takes place digitally, there's an opportunity for artificial intelligence (AI) to serve large online audiences and create business efficiencies.

IDC analysts forecast worldwide spending on AI will double to $110 billion in 2024, while data from digital assistant company Amelia reveals 88 per cent of US organisations have scaled up their use of AI since the pandemic began. But have we reached a tipping point where consumers trust an AI recommendation system more than a human?

Not yet, according to new research published in the *Journal of Marketing*, based on data from more than 3,000 people who took part in ten experiments. When it comes to AI and trust, the key factor is whether consumers are assessing the practical aspects of a product – its utilitarian value – or its experiential, sensory aspects – its hedonic value.

"When people are looking for things that have to do with practicality, functionality, decisions that are more cognitively driven, that's where they tip over to AI," says Dr Chiara Longoni, co-author of the study and assistant professor of marketing at Boston University's Questrom School of Business. "When it's a question of anything sensory related, a human is usually perceived as best."

Yet these "lay beliefs" don't "fully correspond to the facts" about the competency of both human and AI recommendation systems, Longoni adds.

And as Dr Luca Cian, fellow co-author and assistant professor of marketing at the University of Virginia's Darden Business School, elaborates: "It's not that humans, in reality, are always better at making recommendations when it's something sensory related. And computers in reality aren't always better when it's something utilitarian.

"Humans can be as good as computers in establishing something utilitarian. And there are many times when AI is good at making decisions that are sensory related. For example, spice and drinks companies use algorithms to create new flavours and they work well."

Human biases do mean AI recommendation systems lend themselves more to certain sectors, says tech entrepreneur Emma Smith, founder and chief executive of Envolve Tech, which has created a virtual shopping assistant used by brands including We Buy Any Car.com and BHS, now an online-only retailer.

In mass-market retail verticals with huge product variety, such as fashion, cosmetics or gardening, Envolve Tech's AI performs well in areas where people don't want to speak to a human, such as an online condom retailer. Meanwhile, the same AI on a medical device retailer's site has been less successful.

"When shoppers need an exact answer for a complicated situation, humans still come out on top, at least for now," Smith notes.

Two more important distinguishing factors between a human and AI recommendation system are the vast amounts of data AI can process and being free of personal biases, she says.

"Even the best human customer service agent can only possibly stay on top of a fraction of the information AI systems can, which means human product recommendations are always based on a smaller dataset," says Smith.

"A human agent will also bring their own personal biases in. For highly bespoke, artisanal purchases this can be desirable, but for most purchases it's better to have a more objective recommendation."

So if consumers' perception of AI isn't reflective of its actual recommendation abilities, with our beliefs ingrained by portrayals of robots in popular culture, what does this mean for businesses looking to leverage it?

Longoni and Cian recommend a hybrid approach, over a potentially "creepy" or misleading overt humanisation of AI recommendation systems.

"People are more amenable to AI in cases where there's a human component. It doesn't make people prefer AI to a human, it simply equalises the preference for human or AI advice," says Longoni.

Mishandled uses of AI have become urban legend, from Target's faux pas of outing a teenage girl's pregnancy, to Amazon's same-day shipping pricing calculation inadvertently deprioritising certain demographics, making it hard for consumers to make the connection between AI and trust.

Cian thinks with more exposure to effective, unbiased AI, consumer views will change. But Dr Keith Grimes, clinical AI and innovation director at digital healthcare service Babylon Health, believes it's also essential to help consumers understand AI's decision-making process, especially in sensitive areas.

"People get concerned about this 'black box' phenomenon, the idea that decisions get made, and they can't work out why they're made, or they can't challenge them. When you're working in healthcare, you have to be able to explain how automated decisions are made," he says.

"If we take care with the messaging around how we use AI, we can help reduce some of that anxiety and people will feel more comfortable," Grimes concludes. It's sound advice for businesses across all sectors.

> People are more amenable to AI in cases in which there's a human component

Who we trust and when?

Marketing researchers Chiara Longoni and Luca Cian's newly published paper, *Artificial Intelligence in Utilitarian versus Hedonic Contexts: The "Word-of-Machine" Effect*, highlights varying scenarios where consumers are more likely to favour an AI recommendation system and, conversely, where human input is preferred.

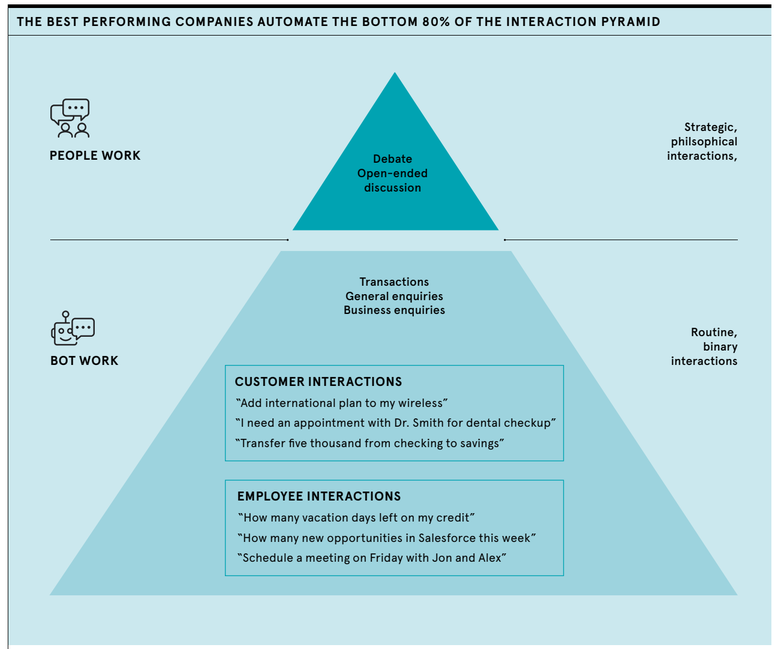
In real estate, haircare, food and clothing, the majority of users chose the human recommendation over artificial intelligence (AI) when asked to focus on experiential and sensory attributes, such as style, taste or scent. When tasked with focusing on practical elements, such as use-case and function, most people opted for the AI recommendation.

Yet the researchers note it doesn't mean AI should only be used when it comes to more utilitarian products, such as technology or household appliances, or that companies offering more hedonic items, such as fragrances or food, shouldn't be using an AI recommendation system. In an experiment where they framed AI as supporting human recommenders rather than replacing them, the AI-human hybrid recommender fared as well as the human-only one.

Commercial feature

As the glow of back-office RPA fades, spotlight turns to front-office virtual assistants

Evolution of virtual assistants, driven by robust natural-language processing and ease of use, is allowing businesses to automate customer support and improve employee productivity



How well a company handles business interactions defines its performance. Within most companies, customers and employees wait too long for support, from getting answers to simple questions to executing complex transaction, and support channels provide limited self-service and poor personalisation.

The flood of routine tasks into contact centres drives up operational cost and reduces agent efficiency, and limited IT resources makes it difficult to automate routine interactions internally.

Building chatbots to automate front-office interactions using components from Big Tech players, such as Google, Amazon and Microsoft, requires IT resources, time and big budgets. All this has driven companies, particularly banks, to explore a new way to automate business interactions.

Leading companies are turning to virtual assistants powered by conversational artificial intelligence (AI). Gartner predicts that by the end of 2021, 40 per cent of digital workers will use a virtual employee assistant daily, up from only 2 per cent in 2019, and virtual assistants will automate 69 per cent of front-office workloads by 2024.

The first wave of chatbot offerings left much to be desired. Chatbot 1.0 technology was expensive and difficult to use and could automate only simple FAQ (frequently asked question) interactions. The limited ability of chatbots to understand, manage and lead customer conversations compromised customer satisfaction and capped the containment rate, which is the measure of how many interactions are automated without escalation to a live agent.

"Gone are the days of chatbots that can't actually have a conversation," says Raj Koneru, chief executive at Kore.ai, which provides a conversational AI platform for configuring virtual assistants and pre-trained industry and functional virtual assistant products. "Improvements in ease of use and the robustness of natural-language technology have helped companies start and scale their front-office automation programmes faster and deliver a better customer and employee experience."

Knowing where to aim virtual assistants and understanding how much can be automated has been a key challenge for companies. "If you think about the types and volumes of interactions within a business as a triangle, where simple FAQs are at the wide bottom and strategic debates are the peak, the bottom 80 per cent of interactions can be automated with virtual assistants," says Adam Devine, chief marketing officer at Kore.

Both customers and employees follow a similar journey into and within a business, starting with FAQs during onboarding, followed by a series of transactions along with efforts to retain and develop, whether that's upselling customers or making human resources and IT support effortless for employees.

> Gone are the days of chatbots that can't actually have a conversation

The key to automating this continuum of interactions, while ensuring a great experience, is natural-language processing that can identify both intent, for example "transfer funds", and entity, for example "from current account to savings", and manage and lead dialogue with contextual awareness and empathy across any channel.

Intelligent conversational user experience gives people instant, personalised responses from a business, and integrations between virtual assistants, enterprise systems and robotic process automation (RPA) make these conversations actionable by automating a wide range of transactions.

Virtual assistants also improve contact centre agent performance by identifying successful outcomes and prompting agents with next-best actions. By managing omnichannel business interactions on a single unified platform, conversational AI users get advanced operational analytics that not only show containment rates, but also provide nuanced trends and insights into customer and employee behaviour and agent performance.

The inevitable question for businesses, particularly banks, is build or buy? Microservices from Big Tech players allow businesses to create purpose-built bots with full control, but it's cost, time and resource intensive. On the other side, pure-play vendors offer prebuilt virtual assistants that enable organisations to go to market almost instantly, but with limited customisation and a heavy reliance on vendors for support and product updates.

A newer option that eliminates the cons and accentuates the pros is a no-code conversational AI platform. With this approach, business users get all the tech components they need to configure customised virtual assistants along with the option to buy prebuilt industry solutions, such as banking, and prebuilt functional solutions, like HR and IT service management. Neither the platform nor product paths require coding, which democratises virtual assistants for any size company and every stakeholder with a use-case for a virtual assistant.

Kore is one of a few next-generational virtual assistant software companies pioneering this approach and giving customers a faster and more efficient alternative to Big Tech. It is the conversational AI partner to 100 Fortune 500 companies, including the top four banks and top three health organisations, and 500,000 employees and 70 million retail consumers interact with its virtual assistants.

"The benefits speak for themselves," says Devine. "Typically, businesses that use conversational AI are able to reduce 30 per cent from their front-office costs. That's a huge win for support teams. Even a single percentage point for big contact centres, which spend hundreds of millions of dollars each year on live agents and technology, really adds up. The speed of service increases tenfold, which increases speed to revenue.

"But probably most importantly, when you're talking about financial services business in particular, you're able to improve your customer satisfaction or net promoter score by 25 per cent and fend off competition by born-digital fintech competitors."

Customers have chosen Kore to ride the virtual assistant wave for its unified conversational AI platform that provides a single user experience across all digital channels and superior natural-language processing capabilities, combining machine-learning, fundamental meaning and industry-focused knowledge graph to deliver the highest automation rates and accuracy.

Asked what is the biggest barrier for Kore and other next-generation virtual assistant providers, Devine had a one-word answer: "Awareness. If chief information officers, chief operating officers and customer service executives knew how easy and efficient it is to spin up a virtual assistant that delivers human-level performance, there would be no such things as wait times, dropped calls and customer attrition, and employees would get more done and be a lot happier." This is good news for customers and a challenge to expensive, black-box Big Tech.

For more information please visit kore.ai

kore.ai

DATA STRATEGY

How to implement AI successfully

No employee can make a good decision without all the relevant information and neither can artificial intelligence, making a solid data strategy the first step for any ambitious organisation

Jonathan Weinberg

Are you prepared for artificial intelligence (AI) implementation? Do you know what your accompanying data strategy should be? If not, it is likely you aren't alone. According to research by Secondmind, 82 per cent of supply chain managers are frustrated by AI systems and tools during the coronavirus pandemic.

In its survey of 500-plus supply chain planners and managers across Europe and the United States, 37 per cent cited a lack of reliable data to feed into AI systems as a concern, at a time when accuracy and speed of decision-making were of the essence.

They don't doubt AI's capabilities; 90 per cent agreed AI will help them make better choices by 2025, but a third raised another critical issue in their leadership's lack of understanding of what is currently needed to make faster, data-driven decisions.

So how do chief executives and the C-suite approach solving this? Listening to experts, most agree on the main problems. These include incomplete, dirty or duplicated data, siloed data, inherent bias in data programmed for AI models and a lack of focus or knowledge at board-level on what they hope AI can, and will, achieve.

Leila Seith Hassan, head of data at the UK arm of global marketing agency Digitas, believes it pays not to treat AI as a buzzword. She says: "This leads to a bit of naivety or even ignorance. Many don't really understand what AI is or does and often apply a futuristic and/or simplified view.

"Too often, expectations of AI are mandated without consideration of what's feasible given an organisation's data maturity. AI requires an organisation to have infrastructure, process and people in place before embarking on any serious project. If you don't, you need to be prepared for the time and cost that comes with getting the organisation fit for purpose.

"Ultimately, AI is making decisions instead of humans. If you're building your AI on bad data, it's going to make bad decisions."

True AI implementation with the right data strategy requires investment, time, and the best and most experienced people. Get it right and the positives are clear, with increased profitability, productivity and reduced fraud among them.

> **Siloed data stores severely restrict AI's ability to influence the digital ecosystem around it, rendering it little more than an expensive brain in a box**

Get it wrong, though, and things can be very different, especially if the data used fails to represent society or enforces existing biases. Trust and consent is also crucial to the process.

Dr Alan Bourne, chartered occupational psychologist and founder of Sova Assessment, explains: "When embedding AI into any business system, it is essential that a real person is placed front and centre of the process, so humanity, laws, regulations and ethics are considered with as much importance as technological capabilities. The opportunities to do this are vast, whether it be using an internal human resource, an advisory board or using AI to audit other forms of AI being applied to the business."

Data-hungry algorithms must also be continually tested says Alix Melchy, vice president of AI at Jumio. "Another process that business must implement in their AI practices is a pilot testing phase, to ensure the algorithm is working as expected and to better understand why an algorithm is making a certain decision. By running a test in the early stages, and before the algorithm is put into the real-world scenario, feasibility, duration, cost and adverse events are all assessed," he says.

Where the data comes from and how clean it is will be paramount in AI implementation. Historic data silos are often still needed for reasons of privacy and security, but this can cause problems, while the lack of a connected cloud solution serving all parts of the business can be a huge barrier too.

Paul Crerand, field chief technology officer for Europe, Middle East and Africa at MuleSoft, recommends an application programming interface strategy to easily connect any application, data source or device together over an app network, where data can flow freely.

"Siloed data stores and a lack of connectivity between enterprise applications severely restrict AI's current ability to influence the digital ecosystem around it, rendering it little more than a rather expensive brain in a box," he says.

"Businesses must build a central nervous system that enables AI to plug in and out of any data source or capability that can provide or consume the intelligence it creates. Point-to-point integrations of the past will lead to atrophy in the AI-driven world, where things can change in an instant and even the near-future is uncertain. Organisations must decouple very complex systems and turn their data stores and digital capabilities into flexible, discoverable building blocks."

Adrian Tam, director of data science at New York-based Synechron, offers a similar solution. "We have a term called 'data lake'. It means to keep the data in its natural format in an accessible form. I think it doesn't matter if the data is spread across servers and across geographic locations as long as we have a single, unified way to access it. So, if there are data silos, you just need to build an interface to use it," he says.

"Of course, this is easier said than done because there are issues like back-up, version control, system resilience and availability. This is another engineering problem, but should not be part of the AI. It is a bad engineering practice to blend two problems into one unnecessarily."

Dr Neil Yager, co-founder and chief scientist of Phrasee, addresses the cleansing of data. "It is not widely appreciated how much effort goes into data cleaning and preparation," he says. "A model built using machine-learning is only as good as the data it was trained on. Poor quality data leads to poor quality models. Unfortunately, pristine data sets are rare in the wild; most datasets are riddled with problems.

"The sets are often distributed across multiple incompatible sources and missing or incorrect entries are common. A recent survey of data scientists concluded they spend around 45 per cent of their time on data preparation."

Combating all these challenges means having the right skills widely dispersed across an organisation to achieve AI implementation. A partnership approach between a traditional data scientist alongside a data engineer could be the answer, according to Dr Greg Benson, chief scientist at SnapLogic and professor of computer science at the University of San Francisco.

He says the former can "determine how to apply models and derive training examples from existing data sources" and the latter "understands how to navigate existing IT data systems, understands regulatory compliance considerations and ultimately knows how to build data pipelines".

Elsewhere, research from Qlik with IDC showed just 16 per cent of knowledge workers globally are equipped to do AI and machine-learning analysis. This figure is predicted to rise to 25 per cent over the next two years, with the proportion of those with data literacy skills increasing from 45 to 63 per cent. Two-thirds in another Qlik study believed data literacy training would make them more productive.

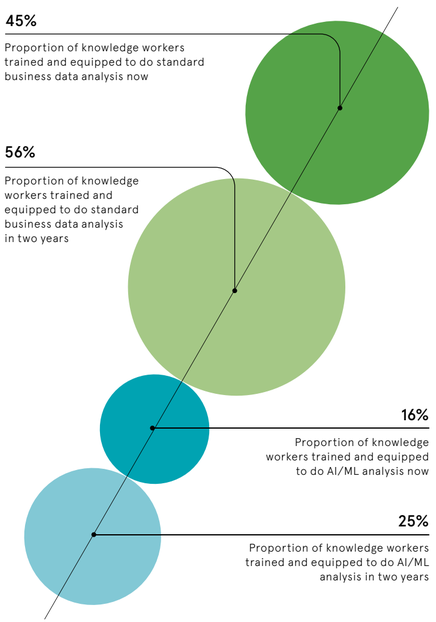
> **AI requires an organisation to have infrastructure, process and people in place before embarking on any serious project**

Adam Mayer, senior manager at Qlik, says: "Many business leaders are recognising that having these capabilities siloed in business intelligence teams will prevent them from generating the greatest value from their data."

Despite all the complication though, could the answer to AI implementation and data strategy be easier than we think? Jamie Hutton, chief technology officer of Quantexa, says: "There is usually a simple test: if there is not enough data for a human to make an accurate decision, then neither will the machine be able to do so."

EMPLOYEE DATA SKILLS NOT YET WHERE THEY NEED TO BE

A study of 1206 respondents across 10 countries and all sectors rate their current in-house data skills.



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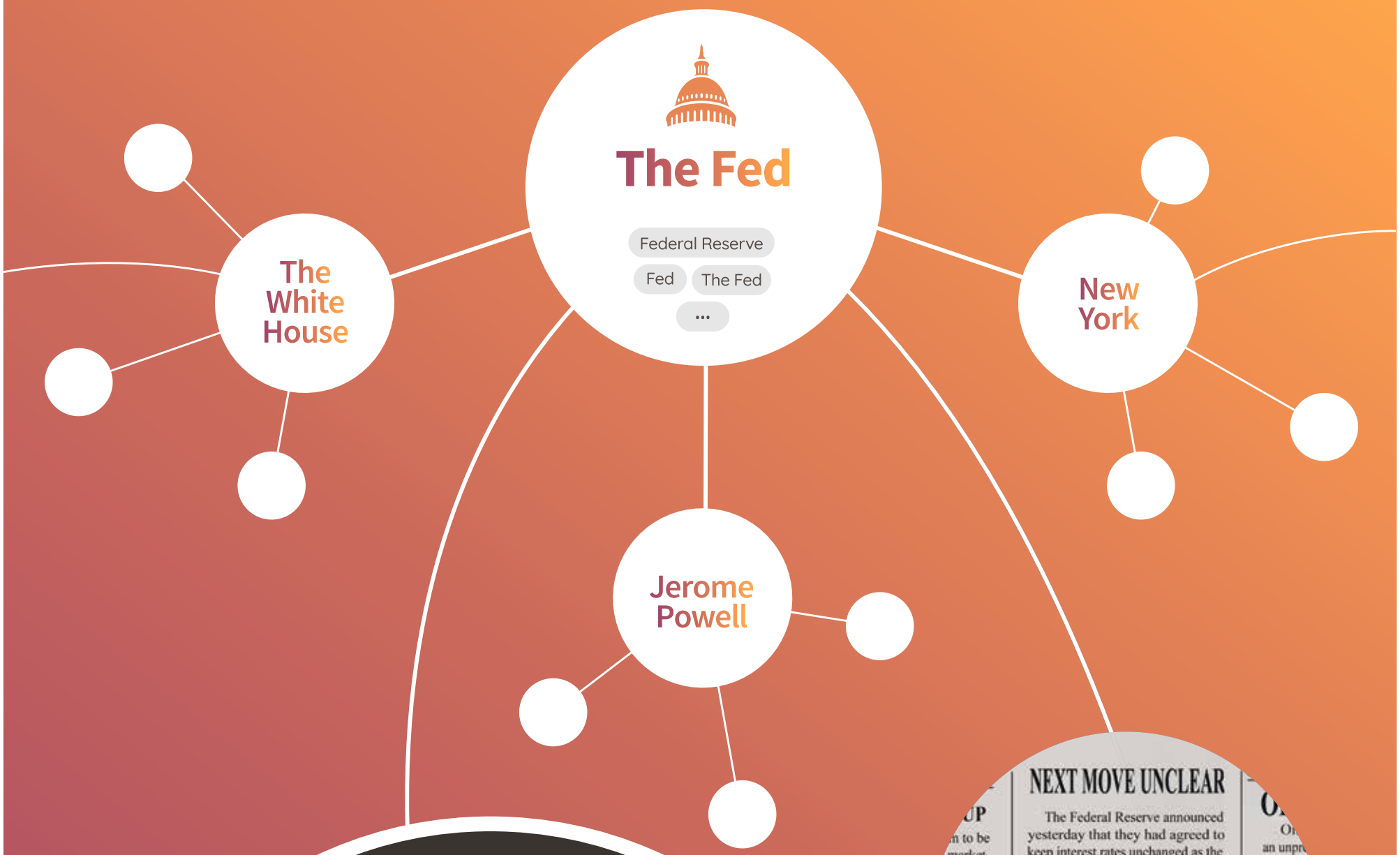

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NEXT MOVE UNCLEAR

The Federal Reserve announced yesterday that they had agreed to keep interest rates unchanged as the Fed continues to struggle with both a slumping economy and renewed inflationary fears.

As the economy limps along at a near recessionary pace, the Federal Reserve continues to balance the economy and fears of higher prices.

With oil at record prices and no relief in sight, the Fed chairman is largely seen as powerless in a struggle that threatens not only the U.S. economy, but the economies on both sides of the Atlantic and Pacific.

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