



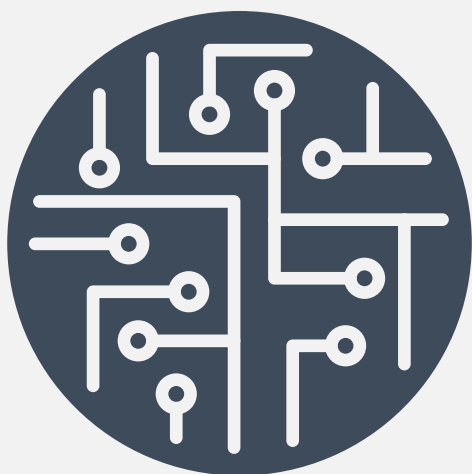
AI-Driven Customer Experience

What it means for financial services



MANDO

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About Mando

Mando is a digital experience agency that exists to simplify people's lives. We create solutions for large financial services, manufacturing, utilities & telecoms organisations who need to offer their customers simple and efficient digital experiences. Our customers include TSB, Together Money, United Utilities, Electricity North West, Norican Group, TalkTalk Business and Bentley Motors.

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About Digital Doughnut

Digital Doughnut connects the global marketing community both on and offline. Members of the community gain access to skills and resources, the latest thinking on key marketing topics, crucial insights and best practice learnings that enable them to make better business decisions. Digital Doughnut both leverages and provides value to the community by tapping into the collective intelligence of the network to create high-value content that's based on actual market conditions and informed by practitioners' experience.

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Foreword by Mando



Jonathan Seal
Strategy Director
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Customer experience is the new battleground for financial services businesses. And it's a ground that digital disruptors — unhindered by legacy technology — are excelling within. Price, trust and brand alone are no longer considered the ultimate differentiators, as customer expectations continue to rise, and be driven by CX leaders such as Google, Amazon and Facebook; 31% of consumers would now consider purchasing banking services from these tech giants. As customers demand more from their financial services providers, businesses are increasingly turning to artificial intelligence (AI) as a means to keep pace.

To delve into the opportunities and risks that go with bringing AI into your customer experience strategy, we held a roundtable dinner with 30 experts from leading retail banks, payment providers and other financial services organisations. We discussed the potential for AI to drive up customer engagement through proactive and relational support based on customer activity and AI-driven site search; the opportunities it unlocks for personalisation and leveraging big data to improve customer service; deep learning on customer behaviours to drive product and service innovation; and how it can be used within contact centres and provide real-time insights.

The debate also looked into the thorny issues related to AI; the fast-approaching General Data Protection Regulation (GDPR) and the risks around storing customer data; the black box problem of machine decision-making; the gap between the majority of organisations and those that are differentiating; and the risks related to trust and privacy.

Having heard a wide range of perspectives and some interesting predictions around the extent to which AI could impact financial services and the type of opportunities it might unlock, it's clear that while some had already started on that journey, others had not yet brought their ambitions for AI to the forefront of their customer experience strategy.

Brands investing in customer experience have seen a **19%** increase in revenue.¹

87% of consumers think brands need to work harder to create a seamless experience for customers.²

By **2020**, the demand for an omnichannel customer experience will be amplified by the need for nearly perfect execution.⁴

For every dollar or pound invested in improving the customer experience, businesses generated an average of **three dollars (or pounds)** in return.¹

Marketers and digital professionals regard customer experience as the **most exciting opportunity** for the year ahead.³

By 2020, more than **85%** of a brand/customer relationship will be managed without a human.⁵

Sources: ¹Sitecore / Avanade; ²Zendesk / Loudhouse; ³Econsultancy; ⁴PwC; ⁵Gartner



Harnessing the AI opportunity

Many financial institutions are already reaping the benefits of AI. Robo-advisors help asset managers find the best portfolio mix for their clients, while machine learning can help us identify anomalies, making it easier to prevent fraud. As the financial services space becomes more competitive, how can AI capabilities be used to create better customer experiences?

The rise of AI in financial services

Although the concept of artificial intelligence (AI) has existed for more than 60 years, only recently have we had the computing power and data to take advantage of it and its practical applications that can benefit businesses.

Machine learning – the mechanism by which computers learn from data to adapt their behaviours to make predictions – is already a presence in our everyday lives. Anyone who has been surprised by the uncannily accurate recommendations made by Amazon or Netflix has experienced machine learning in action.

Machine learning is also playing an increasingly significant role in the way we interact with financial organisations and relate to money itself. In a financial context, it has long been used in high frequency trading, credit assessment, and to prevent fraud.

Letting AI take care of more routine or computational tasks makes businesses more efficient, and gives humans more time to focus on tackling complex issues. But how can AI help financial institutions face their greatest challenges?

Since the financial crisis, re-establishing consumer trust has been at the top of the agenda in finance. Rapid technological advances in other sectors have also raised customer expectations – we increasingly demand the seamless experiences we get from pureplay digital companies such as Uber, Amazon, Facebook and Google. What is the solution to taking on these challenges? Improving the customer experience.

As the importance of bricks and mortar declines, the playing field is far less dependent on current brand reputation and far more dependent on delivering CX

through flexible, personalised services driven by deep insights at scale.

In this white paper, we'll look at the opportunities AI holds for financial institutions, consider the risks involved in using what is – despite having existed in some form since the 1950s – still a nascent technology, and look ahead to what AI holds for the future of finance. In an effort to rebuild the customer experience from the ground up, it makes sense to start with the front line – where the customer first interacts with your company.

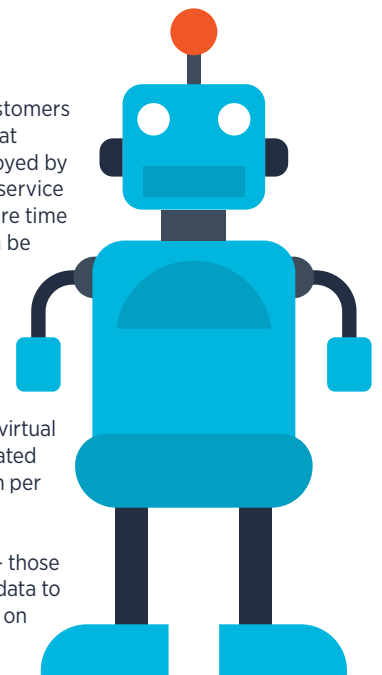
How can I help?

Chatbots – automated online services that customers can engage with through messaging apps, chat windows or with their voice – have been deployed by many businesses to handle routine customer service queries, leaving their human counterparts more time to resolve more complex issues. Chatbots can be 'trained' with the help of data from previous customer interactions, and are often ready to get to work in a matter of weeks.

Research by Accenture has found examples where chatbots can resolve more than 80% of chat sessions, and the cost savings of using virtual assistants to answer basic questions are estimated by the National Australia Bank to be \$16 million per annum for its organisation alone.

Mando predicts that more sophisticated bots – those that can break down, categorise and evaluate data to support customers or internal teams – are also on the horizon, simplifying employees' work and helping people make better decisions.

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Simplifying personalisation

But AI can go further than the front-line. As well as providing a seamless experience when customers come to you, how about approaching them with something they might find useful? With the predictive insights offered by AI's algorithms, it's possible to determine and offer what customers need next, before they even know it themselves.

Mando believes that real opportunity lies in moving beyond the analysis of data to real predictive insights, spotting issues or opportunities ahead of time based on specific data, aggregate trends, changing habits or even physical locations.

This treatment of data allows businesses to personalise customer experience, which customers increasingly expect, and many financial institutions are already adopting this approach. In fact, according to research by Econsultancy, 55% of financial services and insurance (FSI) companies saw targeting, personalisation and customer journey management as their top priority for 2017, and 33% of FSI companies see bots as the most exciting prospect for 2020.

The ability to personalise customer experience will serve as the best possible differentiator in an increasingly competitive field.

"You can definitely see this world emerging where the people with the best AI win," says Saf Iqbal, senior digital project manager and strategist for **HSBC**.

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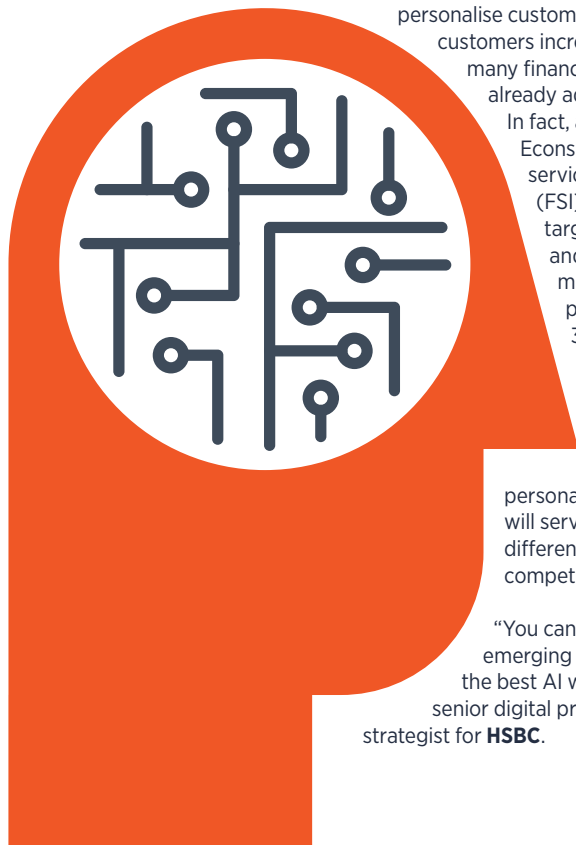
According to separate research by Econsultancy, customer experience represents the single best opportunity financial services companies have to deliver on their priorities. Indeed, customers no longer just want access to their information. They want insights from their data, and a personalised service from the financial services they engage with.

The rapid rise of challenger banks like Monzo is a great illustration of this. Having launched in 2015, Monzo now has more than 200,000 customers. Growing at a rate of 5% a week, it expects to have between 500,000 and 800,000 account holders by the end of 2017.

Why has Monzo been so successful? Because it offers far more than a pre-paid contactless card or what many banks can offer. Monzo customers enjoy an accompanying app, which provides real-time spending notifications and helps users budget, offers zero fees when travelling abroad, and allows free instant cash transfers to other Monzo users. Many banks aren't yet able to provide such service, evidently so craved by consumers, and so users are turning away from them to make Monzo their de facto current account.

The success of Monzo demonstrates just how important customer experience is, and how organisations who cannot adapt at speed to ever-increasing expectations will lose market share.

"Open banking enables organisations to deliver a far greater customer experience, at the same time as putting the customer truly in control for the first time," says Chris Michael, head of technology at **Open Banking**. "Organisations who rise to the challenge and optimise this opportunity will flourish; those that don't could fade away."



Transforming everyday banking

As competition in financial services intensifies, and more consumers turn to competitor banks or other private companies to manage their finances, Kathleen Scully, business development manager at **Mastercard**, predicts that in the future, we may instead look to incumbent banks for 'identity management services'. "Banks are still a trusted entity," she says. "Stay that way, and become an identity management platform [for customers], not just financial services."

AI could also enable an 'accept-reject-accept' model for loan approval, where if an individual is denied a loan, they are immediately recommended alternative offers. Scully explains that instead of being flat-out rejected, and having to do the search process again, thus damaging their credit score, they are directly referred to providers who might be better suited to them.

KPMG describes a future where mass market retail banks will be "largely invisible" to consumers. Taking their place will be AI-powered personal assistants like EVA, or "enlightened virtual assistant", which will seamlessly combine banking with our everyday routines.

Dan Bolland, a director for KPMG, explains that as well as having the capability to make payments at the user's beck and call, by accessing the user's schedule, location data, or analysing any other pieces of information about the user's behaviour, EVA can make personal recommendations or actions.

For example, it can remind the user of upcoming events that may require spend, such as birthdays: "I see that X's birthday is next week. Would you like me to order a gift?" or the morning after a night out, say something like: "I see from your location that you were out with Bob last night but there were no payments made. Do you need me to send any money to square the bill?"

The capabilities of tools such as KPMG's imagined EVA, or personal assistants such as Amazon's Alexa, go beyond simple accounting. They're going to become more proactive, even offering advice. So if the user is due to go overseas in the near future, and there is FX volatility, EVA might suggest hedging your money so you exchange half now, and half later.

It's also possible to imagine a future where data-rich brands such as Amazon are in a position to offer more rigorous financial advice.

Bolland says that, in five years' time, one could imagine a place on Amazon's Prime service that has a treasury algorithm that advises where, and how, to invest money in the short term. This function doesn't even have to be visible to the user – it can just run in the background.

Like Monzo, these brands will be able to offer an intermediary service that removes the need for the customer to interact with their bank.

It's possible to imagine a future where data-rich brands such as Amazon are in a position to offer more rigorous financial advice.



Mitigating the risks

The opportunities described in the last chapter depend on access to vast amounts of customer data. This raises challenges related to privacy, especially in a climate of lowered trust among customers, and with the soon-to-be introduced EU General Data Protection Regulation (GDPR). How might financial institutions ensure they handle this data? Also, what problems can arise when we put too much trust in the data we use to train our systems?

Trust and privacy

In recent years, the financial services industry has had a bit of an image problem. At the time of writing, it's been nearly 10 years since the financial crisis, and it appears consumers still aren't ready to trust the banks again.

A 2017 study by YouGov found that more than half of British consumers don't trust banks to work in their best interest. According to Financial Services Compensation Scheme (FSCS), in the UK, financial services is the second least trusted industry, only ahead of media.

"The nature of trust has changed," says Catherine Rigby, a strategy consultant at **Mando**. Trust must now be earned, which can only be achieved if financial institutions are transparent. This is especially important in the context of personal data and after GDPR — the updated directive that governs data protection — comes into effect.

GDPR was drafted with the intention of giving individuals greater control over their personal data, and extends the definition of personal data to include location data and IP addresses. Organisations found to be in breach of the directive will be subject to greater penalties than before – 4% of annual worldwide turnover or €20 million – whichever amount is larger.

From a consumer's point of view, GDPR has come at a great time, as research indicates that they feel they're losing control over their personal data. This is a problem that has also been identified by the world wide web inventor Tim Berners-Lee, who in an open letter, named loss of control over our personal data as one of the greatest threats to his creation.

Although the directive does present some initial challenges for financial institutions, it also offers opportunities.

Stefan Pata, head of total customer experience at **RCI Financial Services**, the UK subsidiary of RCI Bank and Services, says that GDPR gives financial institutions the opportunity to get their houses in order, and adopt a position where they can more readily take advantage of the benefits afforded by organised data sets.

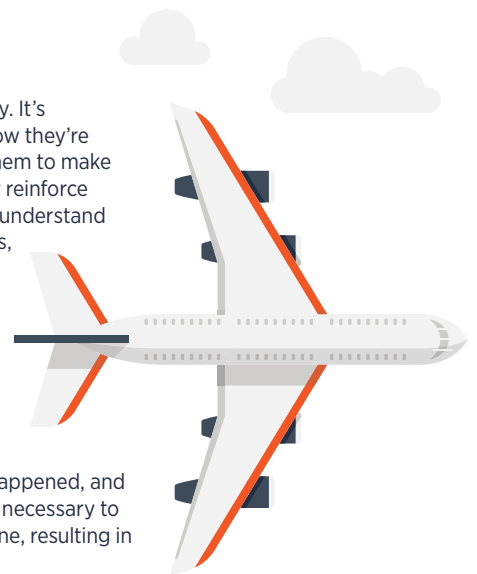
"It forces me to know every bit of data that I have in my systems," he says. "Now [data is] scattered everywhere. I have data, and my partners have data, inside everything – databases and so on and so forth." He says that the directive grants him the opportunity to layer other tools, including those powered by AI and big data, on top of this data, making his business more productive and efficient.

When algorithms betray us

Data-based problems don't stop at privacy. It's important for organisations to consider how they're training machines so that they can trust them to make fair decisions that don't alienate people or reinforce structures of inequality. It's also crucial to understand when humans might need to take the reins, to avoid bad AI decisions that could bring the business into disrepute.

United Airlines will struggle to recover from a highly publicised incident in April 2017, when it called the police to forcibly remove a customer from an overbooked flight. A disturbing video of the incident went viral, leading many to ask how this happened, and under what circumstances it was deemed necessary to drag 69-year-old Dr David Dao off the plane, resulting in injuries that needed hospital treatment.

Trust must now be earned, which can only be achieved if financial institutions are transparent.



If we can't understand why a machine made a decision it did, who can be made accountable when things go wrong?

United needed to vacate four seats on the fully booked flight and, according to reports, offered passengers ever-increasing amounts of money, up to the sum of \$1,000, as an incentive for disembarking. When there were no takers, four passengers were randomly selected – by algorithm – to leave. While three of them chose to leave the plane, Dr Dao refused to, and front-line individuals at United felt compelled to take drastic action.

Clearly this situation might have been avoided, for example if United had continued to offer more money, instead of prematurely turning to the machine algorithm to make a difficult and very human decision. Also, when it emerged that United had used an algorithm to select the unlucky passengers, its reputation was damaged further. There was speculation that its selection was not, in fact, random, but that it had, based on passenger information, selecting the company's "lowest value customers".

The incident illustrated how things can go wrong if we blindly follow the algorithms that we create or place too much trust in them.

There tends to be a belief that the decisions made by AIs are perfectly logical, fair and objective, but the data they are trained with is collected and selected by illogical, fallible people. This means that training data can create AIs that unwittingly propagate existing human prejudices.

"All of these systems are just encoding human biases," says Robert Belgrave, CEO of cloud hosting agency **Wirehive**, who recommends that, when thinking about how to design interactions with customers in ways that will work for users, analysts consider what biases might exist within a dataset.

As AI becomes a greater force in our lives, the AI Now Institute at New York University works to understand its social and economic implications.

The institute argues that automation and early AI systems are already changing the nature of employment and the job market, and collaborates with social scientists, economists and labour organisers to understand who benefits and who bears the costs of the rapid changes brought by AI.

"Data reflects the social and political conditions in which it is collected," it says, adding that AI can only "see" what is in the data it is given. "This, along with many other factors, can lead to biased and unfair outcomes." A major study has found that a predictive policing programme, which by using an algorithm attempts to identify individuals in a population likely to commit violent crimes, has been wholly ineffective at preventing violence in Chicago. The programme has also been criticised for using an algorithm that is inherently biased against minorities.

The black box problem

These challenges often arise when we lose sight of why an algorithm arrived at a decision. Deep learning is a type of machine learning in which computer algorithms are left to learn and improve on their own. It works using neural networks, structures inspired by the human brain. Deep learning already lets us recognise faces in photos, translate text into different languages and identify spoken commands.

However, we inherently can't fully understand why systems powered by deep learning come to the decisions they do and, as the technology becomes more advanced, AIs will only become more inscrutable. If we can't understand why a machine made a decision it did, who can be made accountable when things go wrong?

The 'black box' problem could pose a major stumbling block for financial institutions who use machine learning techniques to make decisions that affect their customers' lives, such as approving credit cards, loans or pricing insurance policies. In the US, the law requires that businesses can explain the reason behind these decisions being made to prospective customers, and the EU is soon to follow suit.

As well as applying harsher penalties for mishandling personal data, the GDPR, due to be introduced in Europe in May 2018, will also prohibit any automated decisions that can "significantly affect" EU citizens, such as their economic situation.

Capital One has launched a research project committed to unpicking the black box problem, and making the decisions made by these machine methods more explainable. While the intent is admirable, the practical reality of this is far from simple and some people would argue violates a necessary principle for deep learning to take place.



Future applications of AI

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AI is already improving outcomes for businesses and customers alike, with customer-facing chatbots efficiently handling routine queries, and devices such as smart speakers, which use natural language processing, taking care of things in the home. Both Facebook and Google use machine learning systems to drive ad targeting. So what capabilities of AI can we expect in the near future?

Facial recognition has advanced rapidly in recent years, to such an extent that Apple's newest iPhone model can use it as a primary means for authentication.

Stefan Pata, from **RCI Financial Services**, says that his peers are looking into customer facial recognition more deeply, as he says it is the only way you can truly know whether a person is who they say they are.

"If you want to sell both products and associated finance 100% online, how are you going to make sure that the person who is actually in front of the computer is not a bot or – worse – a fraudster?... The answer is: you open his camera, and you do facial recognition," he says. "Adding different layers to fight fraud using machine learning and cutting-edge AI technology is our focus and strategy short term."

Sentiment analysis, or the practice of using AI to determine how a customer is feeling by natural language processing, linguistics and text analysis, allows customer experience agents to be more empathetic towards an individual's state of mind.

For example, when people are contacting customer services in the financial sector, they may be in a high state of distress. If the business can detect the customer's emotional state, whether through the way they've written the email or in their tone of voice, it can advise and provide the best possible service which, in the long run, can build trust.

AI also has the potential to take care of some of the more routine back office tasks, presenting great gains in accuracy and efficiency. For example, auditors at EY and PwC, among other companies, are piloting a new initiative that uses drones, artificial intelligence and image recognition to analyse accounting information.

This approach makes it possible to assess greater volumes of data in a much faster time, and to generate different kinds of insights.

As regulators apply greater penalties for misconduct in auditing – in September 2017 the UK's Finance Reporting Council fined PwC £5.1m for 'extensive misconduct' in its audit of RSM Tenon – the Big Four firms are increasing their investment in this area.

Due to launch in early 2018, **Jaja Finance** is a challenger credit card company with AI and machine learning at its core. Its executive director and CIO, Jostein Svendsen, says that many of the incumbent banks haven't embraced machine learning to a great extent when it comes to credit cards, and this is where Jaja saw an opportunity.

"We want AI and machine learning to be one of our USPs," he says. "We can use it on every step of the customer journey, from marketing and onboarding, to ongoing management and even in collections. Our goal is to improve customer service and product offering, while lowering costs which ultimately lead to a better product for our customers, and higher customer satisfaction."

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Conclusion

Although machine learning has been in place for some time within the financial services sector, this has largely been to address very specific challenges and not as a broader business tool or as an accelerator for customer experience.

However, it's clear that the direction is towards applied intelligence that directly connects and engages with customers. From service and transactional chatbots, through to predictive insights that can impact decisions and lifestyles, AI has the potential to be a powerful force for businesses to deploy.

In this, simplification seems to be the watchword. If AI solutions can simplify people's lives and, therefore, improve the customer's experience, then they can create real competitive advantage and drive value for customers and businesses alike. In a market where customer experience dominates, AI and the data this demands are rightly being seen as an important area for investment and attention for financial service organisations.

In this race for insights to feed the machine, we start to see some of the potential problems that are beginning to surface. Trust in established financial institutions has taken a hit, and concerns around how personal data is treated, protected and used have resulted in greater regulation and public scrutiny.

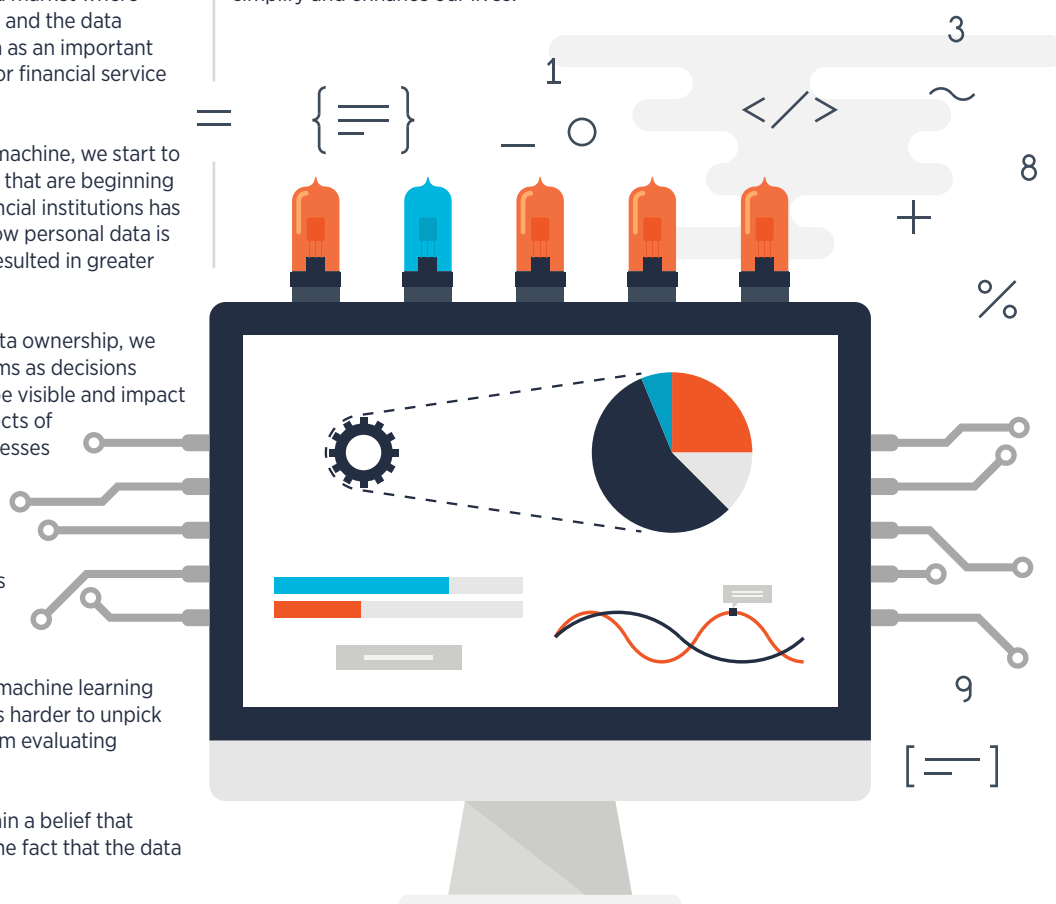
In addition to challenges around data ownership, we are also seeing the teething problems as decisions from learning algorithms begin to be visible and impact customers. As more and more aspects of our lives become governed by processes powered by machines, we are exposed more obviously to their shortcomings and errors. The 'human in the loop' is more critical than ever as we navigate this complexity, but evidence suggests human agents are often wary of contradicting the findings of a computer. The black box nature of machine learning compounds this issue as it becomes harder to unpick the reasons for a decision made from evaluating potentially millions of data points.

Worse still, many organisations retain a belief that algorithms are impartial, ignoring the fact that the data

they train them on can contain existing prejudice or errors, resulting in AIs that have subjectivity built into them at the core.

Both these factors – the inscrutable nature of machine learning and the biased nature of training data – mean that if people blindly follow decisions made by an AI based on poor data or incorrect assumptions, then the impact on customers and organisational reputation can be severe.

Regardless, the world of financial services – along with every other field – is being disrupted and transformed at pace by the application of AI. The challenge laid down, by competitors, regulators and customers, is to balance the very real concerns of privacy, bias and oversight with the opportunity and value that AI can bring to simplify and enhance our lives.





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