

FINDINGS OF RESEARCH CARRIED OUT BY FINEXTRA IN ASSOCIATION WITH OPENTEXT

APRIL 2018

# AI IN FINANCIAL SERVICES: NEXT STEPS TO REALISING THE POTENTIAL

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# FOREWORD

AI has generated a lot of excitement in the past few years. While it is a disruptive technology, its potential to add value in Financial Services firms is enormous. It already exists in our lives and we know that it has much further to go. Every day we hear more about driverless cars, chatbots, robots, robo advisors and so much more. Where will AI go, how will it change our world are questions worth pondering.

Firms across the globe are becoming aware of the power of these technologies. They have started to explore how AI could improve the customer experience, enter new markets and gain revenue more quickly, reduce operational and business expenses and enhance compliance efforts. Banks always want to know their customers better and improve their relationships. AI will clearly help here.

At OpenText we realize that the AI journey will be a long one, with firms in different places along the way. We thought about how best to confirm and measure this. Our research led us to conclude fairly quickly that the best approach would be a survey. It would cover Financial Services firms around the world. It would help to bring clarity and insight, and most importantly capture the thinking about AI that is going on right now. A greater understanding of AI in Financial Services today is what we hope to accomplish with this survey. To make this happen we engaged Finextra. They conducted the survey. We want to know how firms are approaching AI, the areas in Financial Services that they expect it to impact the most, what they consider the benefits and what they view as barriers to success. Other questions included deployment stages for key AI technologies such as Machine Learning, Natural Language Processing, Robotic Process Automation (RPA) and others as well.

One question asks respondents about commercial banking practices, and how much will they be disrupted by the advent of AI in the next five years. The survey allows for free text responses. Some of the responses are very surprising. Our knowledge about the potential disruption by AI has been expanded. The respondents address businesses and issues that they think



will be the most disrupted and transformed. The responses include algorithmic trading and risk management, foreign exchange trading, supply chain finance and smart contracts that will transform derivatives.

We hope you find the survey results as compelling as we do. We think it is a great example of how much can be learned by asking the right people the right questions.

OpenText acquired Actuate several years ago to add Business Intelligence, Analytics and Reporting capabilities. We have now announced Magellan which enhances our portfolio of Enterprise Information Management products. Magellan is an AI-powered platform that combines open source machine learning with advance analytics that may help leverage the growth of your business.



# TOP LEVEL FINDINGS

- Awareness of the potential benefits to financial organisations from using artificial intelligence (AI) is high, with 80% ranking their awareness as 4 or 5 out of 5;
- Outside the survey group, those who have self-selected to participate in a survey about AI, wider business understanding of the technology is deemed the major hurdle to successful implementations (40% say this is the first or second biggest challenge);
- More than half (61%) of respondents believe that AI is already mainstream or will be within two years. Only 45% have so far implemented any of the different AI technologies;
- There are some regional differences – 31% of North American respondents believe AI to be mainstream already (compared to 25% for UK, and only 11% of other Western European respondents);
- IT, digital product and operations people are more likely to consider AI mainstream now than line of business executives (26% to 14%), and less likely to say it will take five years (7% to 14%);
- In commercial banking practices fraud prevention, compliance and anti-money laundering are seen as the areas most likely to be transformed by AI in the next five years (52% say transformed, 32% say seriously disrupted);
- But those surveyed also offered a wide range of other suggestions of areas that would be transformed, from machine learning-based quant trading through to client onboarding and smart contracts for derivatives trading. This demonstrates the breadth of possibilities for AI within sophisticated financial organisations;
- Among AI technologies, machine learning and natural language processing are most likely to be already deployed or on the roadmap. Over a third of all respondents say these and chatbots are already in place;
- Fraud and risk reduction are not surprisingly seen as the most likely business outcomes from AI deployment. This is followed closely by customer retention;
- Executive sponsorship is seen as the most important requirement for developing use cases for AI within a business. This is likely because backing from the top can help overcome a wider lack of understanding about the application of AI, which is considered the biggest challenge to achieving successful implementations. If the executive team are prioritising, that can quickly encourage greater understanding of the technology and its application;
- Customer service and retention is seen as the part of the value chain where AI will have the biggest impact (according to 66% of respondents) followed closely by back office operations (61%).



# EXECUTIVE SUMMARY

Artificial intelligence (AI) as a concept dates back to the dawn of the computing age. And while it took decades for technology to deliver practical applications beyond fuelling science-fiction writers' imagination, recent years have seen rapid changes that have pushed AI from research labs into high level industry across the globe.

The exponential rise of computer processing power, network bandwidth, cloud computing and hosted data storage have provided the means to efficiently analyse the immense amounts of information in today's enterprise, and led to the development of increasingly complex algorithms to provide pattern recognition, natural language processing and machine learning.

These can be applied to all manner of business problems, from discovery of previously hidden risks and opportunities, through to greater automation and improved decision support.

The financial services sector, which is largely based on the acquisition, management and movement of data, is particularly fertile ground for the application of the technology.

IT, digital product management and operations professionals believe they have a good handle on the potential for AI in their organisations, (and in 45% of cases have some experience in already implementing machine learning, natural language processing or similar AI disciplines in live projects). But they have more education to do across lines of business to fully realise the potential.

Getting the wider business to understand where and more importantly how AI can, and can't, be applied to business problems has been identified as the biggest challenge to making the most of the technology.



Getting executive buy-in is seen as a crucial to the success of identifying and building out use cases, but this is not considered a big challenge for most respondents. In many cases this in-principle support for having AI on the technology roadmap will already be in place. When the most common problem the financial services sector is turning to AI for help with is in fraud and risk management, and customer service improvement, the internal pitch to the board is an easy one to make.

But as with most complex technology, and even more so with complex business problems, the devil is in the detail. For IT and product folks, there's a realisation that getting the right data sources identified and shaped is a critical step. While both IT and line of business respondents are concerned about the need for more detailed organisational understanding, the business respondents were also concerned about their organisation's ability to keep up with a rapidly changing AI landscape. But for those close to the technology, this pace of change was considered business as usual, and issues such as data governance were of more concern.

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# RESPONSE PROFILE

The research is based on a survey conducted from December 2017 to January 2018 and completed by 102 respondents from 85 financial groups across 32 different countries. Where respondents represented the same financial group, it was from different country operations or lines of business.

39% of respondents were classified as IT, digital product or operations professionals, while 61% were line of business or senior banking executives.

Sample job titles include:

- Group Head of Digital
- Innovation Lead
- CTO
- Data Scientist
- Head of Strategy
- Banking Solutions Leader
- Head of Payments
- Head of R&D
- Head of Regulatory strategy
- Chief Operating Officer

Sample organisations represented include:

- Bank of China
- BNP Paribas
- Bank of America
- Barclays
- Citi
- Credit Suisse
- Deutsche Bank
- HSBC
- Santander
- State Bank of India
- United Overseas Bank

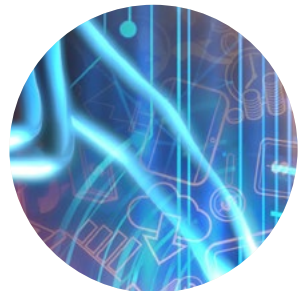
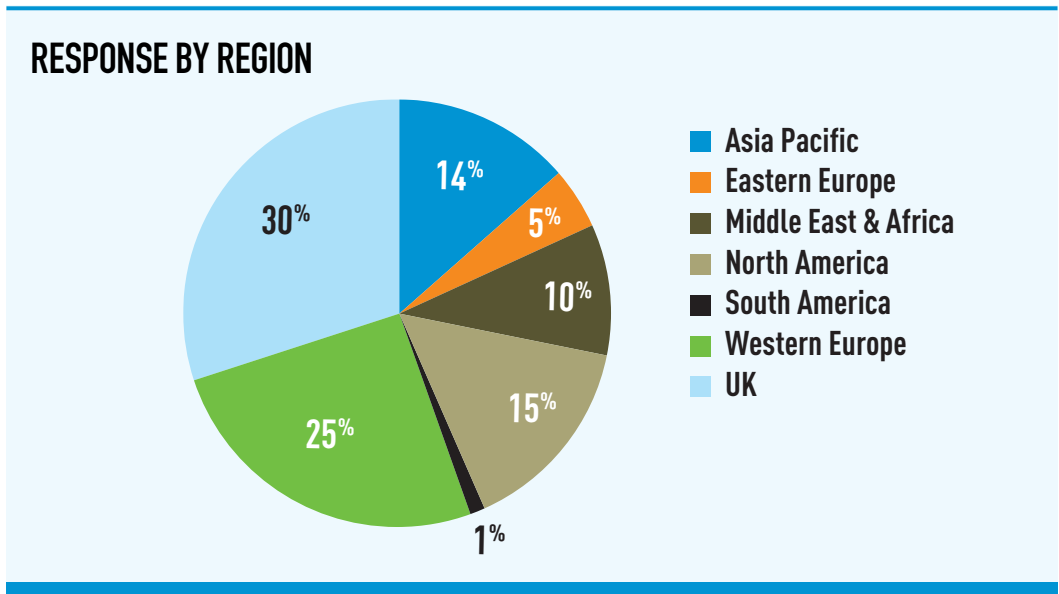




CHART 1



# 05

## AWARENESS AND TIME TO MAINSTREAM

Among respondents, awareness of the potential benefits to the business from using AI is high, with 80% ranking their awareness as 4 or 5 out of 5, with a median score across the sample group of 4.86.

This is a group that has self-selected to participate in a survey about AI in financial services, and clearly have an interest in finding out what their peers think and are doing in this area. So the high awareness level is not a surprise. But while survey participants consider their own knowledge about the latest AI technologies to be strong, they are not as confident that this knowledge extends to all relevant parts of their business. In chart 9, we see that 40% of respondents consider lack of understanding about applying AI to be the first or second biggest challenge when trying to implement it in the organisation.

**“40% of respondents consider lack of understanding about applying AI to be the first or second biggest challenge when trying to implement it in the organisation.”**

IT and industry analyst groups and trade press have been closely following the development of AI technologies and their application in financial services as the technology and terminology has moved from data mining, through predictive analytics to deep machine learning and natural language processing.

This public discourse on the subject can influence a person’s opinion on whether a technology could be considered mainstream. But personal experience in planning and delivering projects and industry networking with peers, hearing about projects and case studies, would influence this more strongly.



18% of respondents say that they believe AI to be mainstream in financial services already. There are some notable regional differences - 31% of North American respondents believe it's mainstream already, compared to 25% for UK, and only 11% of other Western European countries.

Respondents who work in an IT, digital product or operations role are more likely to consider it mainstream now, compared to line of business and senior executives (26% to 14%), and less likely to say it will take a full five years (7% to 14%).

Overall, more than half (61%) of respondents say that AI is already mainstream in financial services, or will be within two years.

CHART 2

### ARE YOU AWARE OF AI AND THE BENEFITS IT CAN BRING TO YOUR FIRM? (SCALE OF 1-5 WHERE 1 IS LEAST)

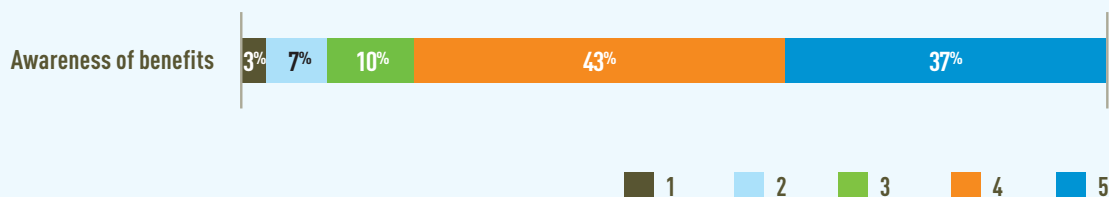
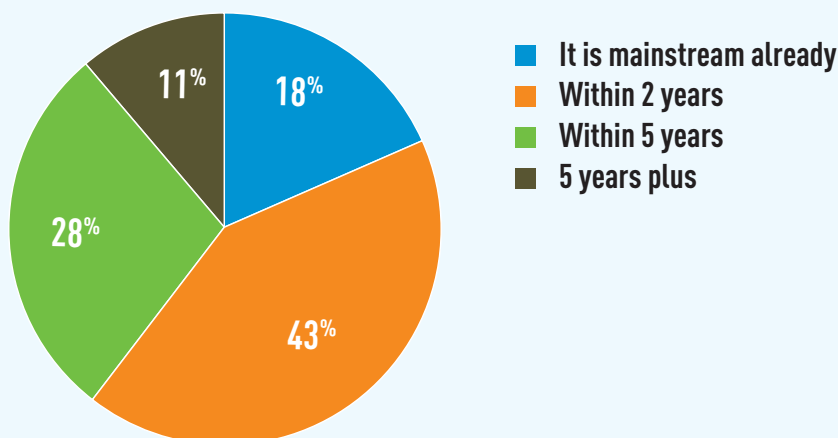


CHART 3

### WHEN DO YOU EXPECT AI WILL BECOME MAINSTREAM?



# DISRUPTION, PLANNING AND POTENTIAL

Across our respondents 45% have implemented at least one of the listed AI technologies, including machine learning, natural language processing, chatbots and natural language generation, and robotic process automation. This was often in tandem, such as retail focused organisations implementing natural language generation with chatbots.

But only 3% of respondents, not surprisingly each representing a large global tier-one financial group, say their organisation has implemented all of the listed technologies.

Of those who believe AI is already mainstream in financial services, only 30% have already implemented a project that used AI technologies.

The rest of those who consider AI mainstream but have yet to implement any projects, may feel their organisation is behind the curve. Those who have implemented something but do not consider AI to be mainstream likely perceive their organisation as being at the leading edge.

Machine learning solutions were the most common technology to be already deployed (26%) and this also has the smallest number of respondents that have no plans for implementation. Text analytics and natural language processing, which are commonly used as part of machine learning strategies where source data moves beyond pure numerical data and towards unstructured data, is the next most commonly deployed and planned-for category.

Robotic process automation (RPA) is not strictly speaking an AI technology. But this category of software that replicates the actions of people operating computer systems in order to run business processes, often goes hand-in-hand with other AI approaches and can enhance their effectiveness. With RPA focusing on high volume, repetitive, rules-based processing, AI can be used for interpreting unstructured data into a structured format that can be fed into the process. Going the other way, RPA can be used to feed compiled

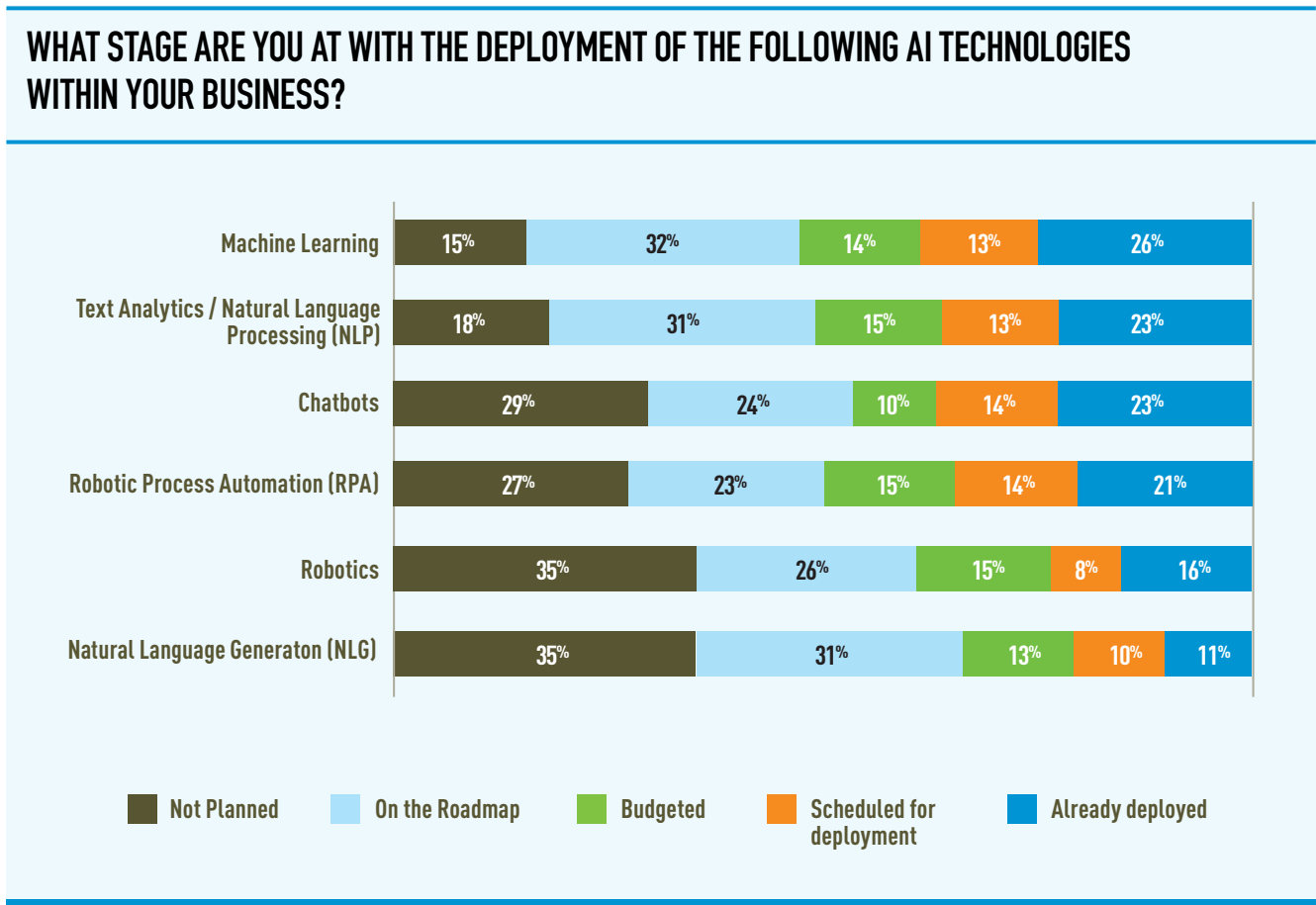


data sets and rules into cognitive reasoning AI that can be used to support complex decision making processes.

Natural language generation is one of the newer AI disciplines, and has yet to reach maturity in the market. More commonly deployed by businesses with high frequency customer service volumes, only 11% of respondents have it implemented already, and more than a third (35%) currently have no plans for it at all.

In terms of geographic differences, we found that non-UK Western European countries have a higher rate of deployments of machine learning solutions (40%) and that North American respondents have a higher rate of deployment for both natural language processing and generation (35% and 25%).

CHART 4



## WIDE-REACHING DISRUPTION

There's no doubt that AI has the potential to be a very disruptive technology. And the areas it can have an impact on are as varied as the industries, markets and business models themselves. We suggested a series of commercial banking practice areas that are commonly held to be ripe for disruption and transformation, and asked respondents to rank the impact that AI would have on them over the next five years.

Within that timeframe compliance, anti-money laundering (AML) and fraud prevention is seen as the part of the business that will be most unrecognisable in five years' time due to artificial intelligence. 52% say it would be transformed, while a further 32% think it will at least be seriously disrupted. The responses about payments processing, relationship management and advisory, and derivatives are all very close, with 25% to 35% expecting complete transformation, and 95% to 98% expecting at least some level of disruption.

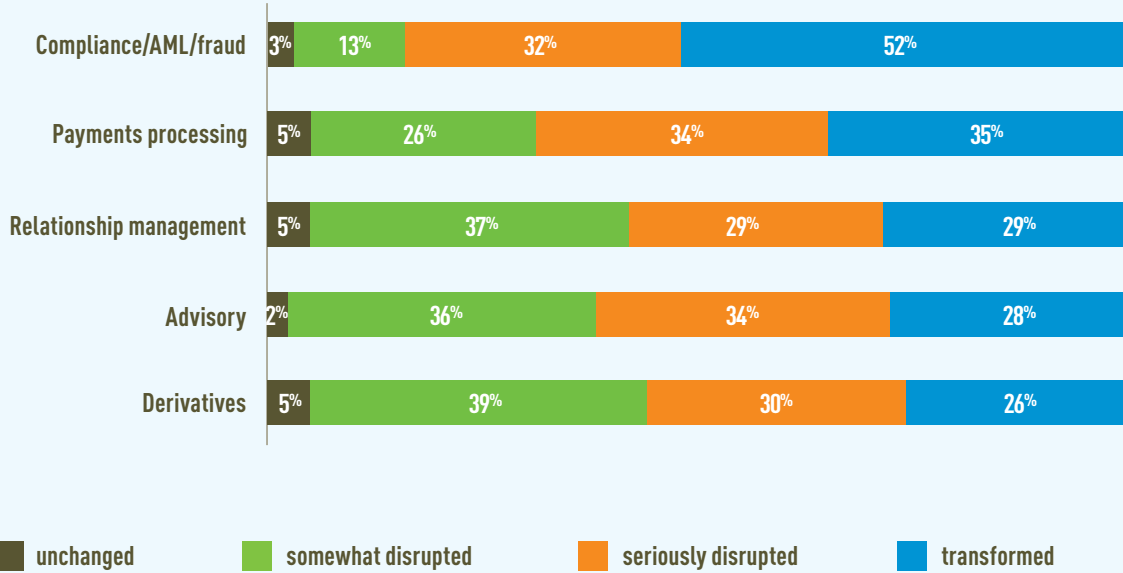
But we also offered respondents the opportunity to provide more specifics about these or other areas that could expect to be shaken up by the introduction of AI. We had 17 different free text responses, which says something about the range of ideas people come up with when they start to understand AI capabilities and look to address business challenges that might have previously been seen as impossible or too resource intensive to solve. Some of the more interesting include:

- AI-driven smart contracts that will transform derivatives and all security processing
- Quantitative trading and risk management will go from static quant to machine learning-based quant
- Client on boarding will be accelerated
- Personalisation of customer experience, tailored website content and user experiences
- Back office operations, from processing through to marketing



CHART 5

### HOW SIGNIFICANTLY WILL THE FOLLOWING COMMERCIAL BANKING PRACTICES BE DISRUPTED BY AI DURING THE NEXT 5 YEARS?



“Anti-money laundering (AML) and fraud prevention is seen as the part of the business that will be most unrecognisable in five years’ time due to artificial intelligence. 52% say it would be transformed, while a further 32% think it will at least be seriously disrupted.”



## CATCHING THE FRAUDSTERS

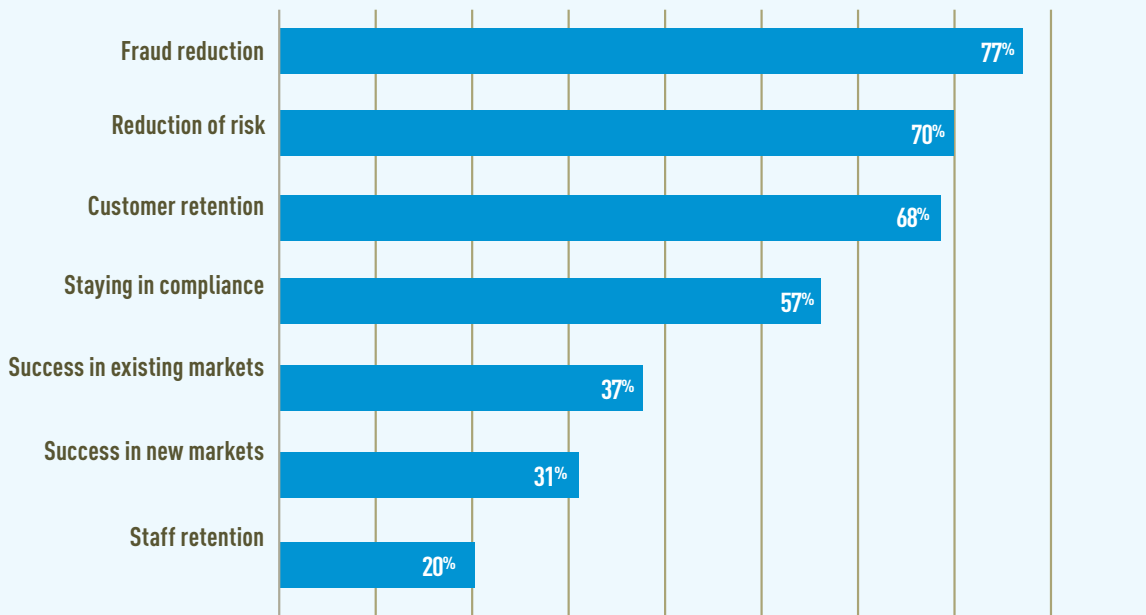
Drilling down into specific business outcomes that could hope to be achieved through the use of AI, fraud reduction is seen as the area most likely to see success, with 77% of respondents selecting this outcome. With AI's superior pattern recognition capabilities, and the ability to draw on and make inferences from multiple internal and external data sets, it is seen as an ideal way to catch out criminals, and nip criminal activity in the bud.

Risk reduction (70%) and customer retention (68%) follow behind, with compliance further down the list.

IT, product and operations staff are slightly more bullish than line of business executives about the potential outcomes in risk reduction and customer retention.

CHART 6

### WHICH OF THE FOLLOWING BUSINESS OUTCOMES HAVE THE GREATEST POTENTIAL TO BE ACHIEVED THROUGH THE USE OF AI?





# FROM USE CASES TO IMPLEMENTATION – CHALLENGES AND OPPORTUNITIES

Most use cases that financial organisations are working on are about extracting value from unstructured data, and finding patterns, opportunities and risks that they're not already aware of. Because of this, nailing down concrete use cases, and developing the business case to drive implementation, can be tricky.

Executive sponsorship is seen as the most important requirement for developing use cases for AI within a business. 39% of respondents rank this as the first or second biggest factor for success (22% rank it number 1). This is likely because backing from the top can help overcome a wider lack of understanding about the application of AI. If the executive team is prioritising AI and including it in high-level strategic roadmaps, this can quickly encourage greater understanding of the technology and its application across all relevant areas of the business.

Executive sponsorship is likely already there to a certain degree, in that there's a general view that AI could be useful and should be part of the technology roadmap. But drilling down to exactly what the organisation is going to do is the challenge.

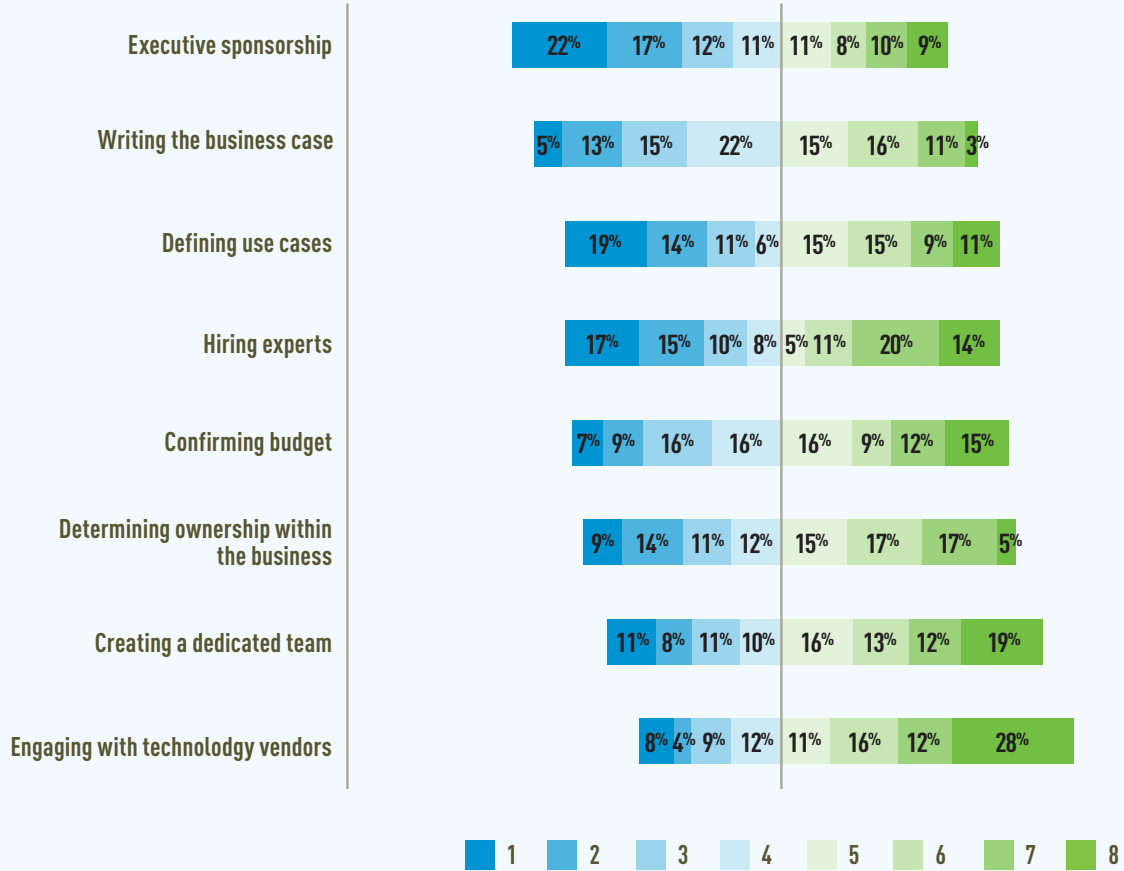
Between 23% and 32% of respondents have some kind of AI-driven project on their roadmap, but have not yet budgeted or scheduled for deployment. These are the organisations currently looking to define both business and use cases. And with many different teams interested in the subject, all vying for budget to conduct proofs of concept, this stage can involve a lot of negotiation.

Hiring experts is as ranked first or second most important for 32% of respondents. Finding the right people internally to skill up, or hire externally in a market where skills are in high demand, could be considered a more critical consideration once a project moves to deployment stage. But getting the right people in early, while use cases are still being defined, can help get a better alignment between current AI capabilities and the problems the organisation is looking to solve. Having a fresh influx of expertise into the business can also help drive awareness.



CHART 7

PLEASE RANK THE IMPORTANCE OF THE FOLLOWING WHEN IT COMES TO DEVELOPING USE CASES FOR AI WITHIN YOUR BUSINESS (1 MOST IMPORTANT)



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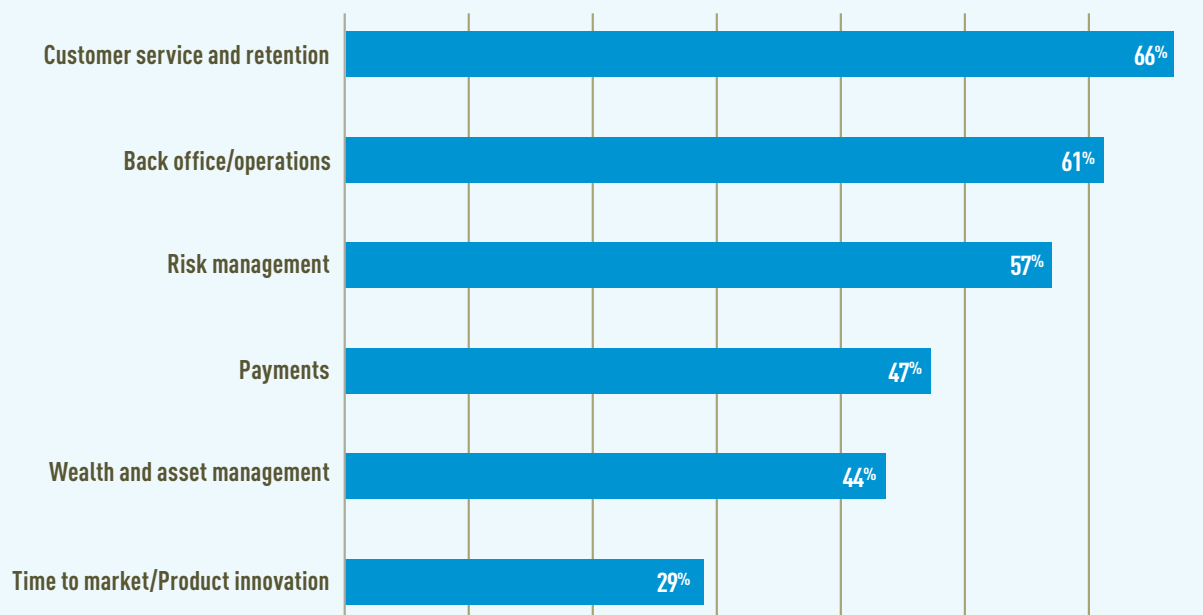
AI has the ability to seriously disrupt and transform areas of business. But this is not a requirement for delivering value. In fact, many benefits can be had from just making improvements in existing value chains and business processes. We asked survey respondents which parts of the value chain they see AI delivering the most impact, and find that customer service and retention is seen as the number one area (according to 66% of respondents) followed closely by back-office operations (61%).

Both these areas talk to key priorities for any business – customer acquisition and retention, as well as cost reduction and efficiency. Aligning a new technology project with organisational key performance indicators (KPIs) in these areas will make it easier to get across the line, and businesses know there are always improvements they can make.

AI's ability to improve time to market and drive new product innovation is less clear. These benefits will likely come when AI deployments mature and start delivering insights and answering questions that weren't already being asked.

CHART 8

### IN WHICH PARTS OF THE VALUE CHAIN DO YOU SEE AI USE CASES DEVELOPED APPLYING WITH THE BIGGEST IMPACT?



## UNDERSTANDING AI AND THE DATA THAT DRIVES IT

Outside the self-selected survey group, wider business understanding of AI technology is deemed the major hurdle to successful implementations. Forty per cent say this is the top or second challenge.

Both IT and line of business respondents are concerned about the need for more detailed organisational understanding.

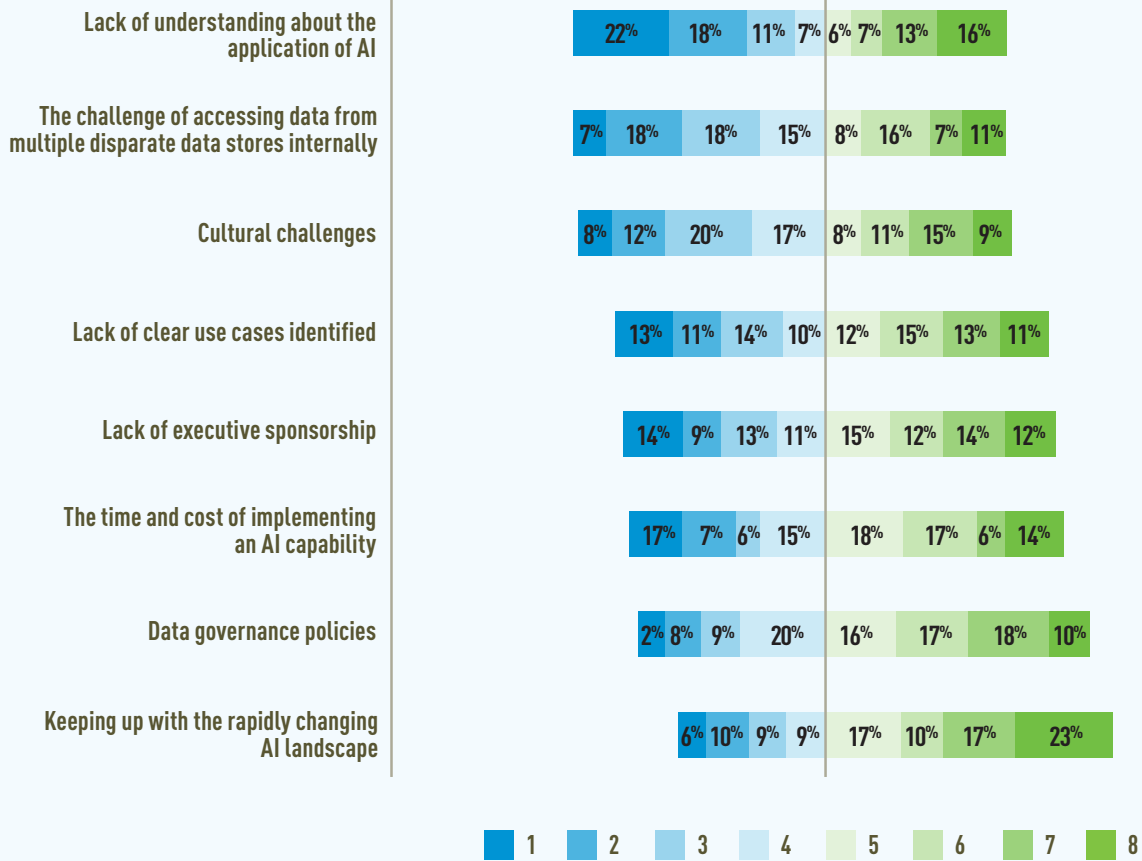
But looking just at responses from IT, digital product and operations staff, the challenge of accessing data from multiple disparate data stores internally was considered an equal challenge. If a business is to successfully implement AI, the sourcing, automating and formatting of data into machine readable formats is the key, and this is something that will be well known to those who work closer to the firehose of data that flows into and within financial organisations each day. Those who work more closely with technology are concerned with issues such as data governance – ensuring that high quality data exists throughout the organisation, covering availability, usability, integrity and security. For many of these people, the pace of change of AI technology is no different to that of other leading edge technology areas they have been exposed to in their careers – rapid change is a constant.

The third challenge that got an overall positive ranking for agreement was the culture of the organisation. This is something that will be familiar to all respondents regardless of their job responsibilities. But as the internal competition for budget and proofs of concept subsides, and awareness of solution capabilities and best practice for implementation improves as AI becomes more mature inside the organisation, this is likely to subside.

**“If a business is to successfully implement AI, the sourcing, automating and formatting of data into machine readable formats is the key, and this is something that will be well known to those who work closer to the firehose of data that flows into and within financial organisations each day.”**

CHART 9

PLEASE RANK THE CHALLENGES ASSOCIATED WITH IMPLEMENTING AI WITHIN YOUR ORGANISATION (1 BIGGEST CHALLENGE)



### Finextra

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