Rise of the machines:
Artificial intelligence & machine learning in financial services

FINTECH FUTURES | REPORTS

Introduction

There aren't many technologies that have captured the imagination of futurists in the financial services quite like Artificial Intelligence (AI). While images of autonomous cars, robot servants, and Skynet-like uprisings are easy to conjure up, many firms are turning to AI to transform businesses, drive efficiency and support their customers.

Automated processes and the computerisation of trading and order flow have been around for decades, and banks have had long-established frameworks and governance guidelines in place for the management of this data. One could argue that the quantitative methods and algorithms used on trading floors in the 1990s were a foundation for the implementation and development of modern AI systems.

The explosion of big data has also had a profound impact on the development of AI technologies. Cloud software company Domo estimates that by 2020 a person will generate 1.7 megabytes of data every second. An oft-quoted IBM statistic from 2016 remarks that 90% of all data created in history was generated between 2014 and the end of 2015.

The curation, analysis and quantification of this data leaves a huge market opportunity for banks and financial services firms, and its one that can only be grasped through the implementation of automated systems. Things are never as simple as letting AI loose. First it must be trained to know what it is looking for.

This is where the application of machine learning (ML) has the potential to improve data analysis outcomes. ML promises increased data efficiency, accessibility, and usability. On the retail side, banks are aiming to use ML techniques to tailor products and services to their customers, tapping into the data generated by customers' daily interactions and spending habits.

Challenges remain in the implementation of data-scrying technology, not least in how trustworthy and fair the conclusion drawn by automated systems can be. This has become the focus of regulators across the world. In the UK the Office for AI and the AI Council were established in 2018, while in Europe the European Commission (EC) appointed the High-Level Expert Group on Artificial Intelligence and published a set of ethics procedures in April 2019, seeking to guide firms experimenting with the nascent technology.

AI will be a key feature in how banks and financial services firms operate and deliver their services for years to come. In this report, FinTech Futures has gone to the market to investigate the usage of both.
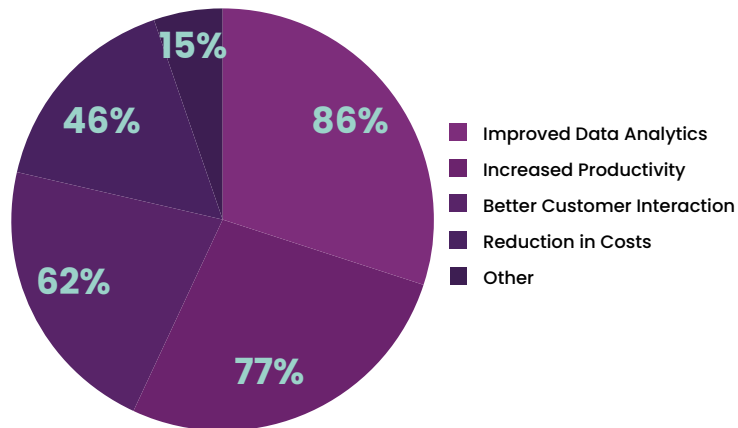
Views from the Market

Potential

AI and ML systems, to gauge at what stage of development the buy-side and sell-side sit at, and to understand where challenges and opportunities lie.

AI and ML have certainly been at the helm of conference discussions and talks across the industry for quite some time. We asked survey respondents what they believe are the main benefits to this technology, and whether it would really shake up the industry in the short to medium term.

What do you believe are the main benefits of deploying an AI or ML system?

- Improved Data Analytics
- Increased Productivity
- Better Customer Interaction
- Reduction in Costs
- Other

The potential to improve data analytics (**86%**) and increased productivity (**77%**) were seen by respondents as the greatest benefits to the deployment of an AI or ML solution.

62% of those asked said that the ability to use data insights to better understand their customers was a key factor going forward, while less than half (**46%**) cited an ability to reduce overall costs was a main benefit for them.

When asked whether AI and ML would become a differentiator for financial services firms by 2024, more two-thirds (**69%**) of those asked agreed or strongly agreed that it would, with **23%** stating that they were unsure of the technology's potential to impact the industry in that timeframe.

Machine learning and AI will become a market differentiator in the next 5 years
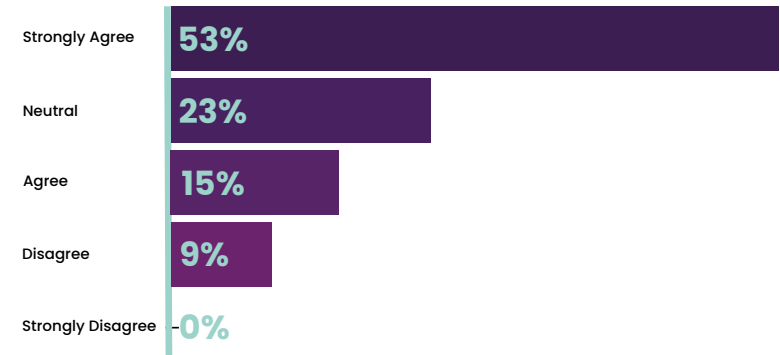
Just **4%** of respondents believed that the technology would not have a differentiating impact on the market within that timeframe, showing that for a minority AI and ML remains low on a priority list.

A little over **60%** of those asked stated that they would be increasing their spend on AI or ML, with half of that number statiWng that the investment would be increasing significantly. Only **38%** of respondents indicated that their spend would remain roughly level. None of those asked said that their spend would be decreasing in the near future.

How do you predict your spend on AI or ML will change in the next 12 months?
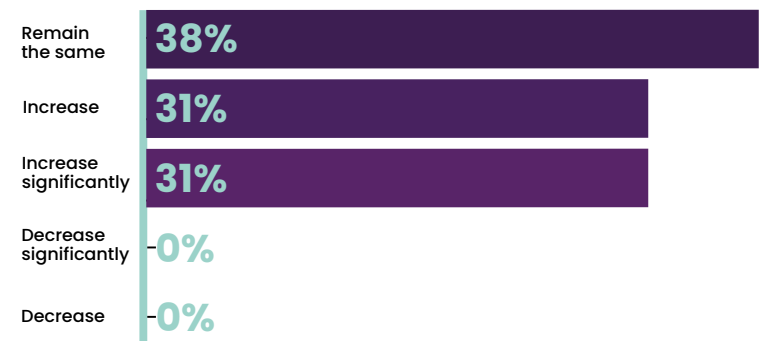
Maturity

While statements about the potential of AI and ML are useful to understand future plans, we wanted to know how far along the roadmap our respondents were with their systems, and whether they believed that the technology would be a major part of their long-term strategy.
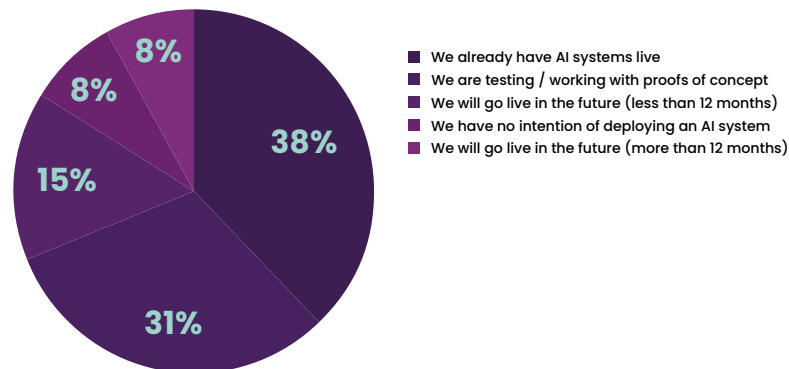
More than three-quarters (**83%**) of respondents said that the deployment and development of AI and ML systems would become a core part of their business strategy going forward. Exactly **15%** of those asked answered that AI would not become a core part of their strategy for the foreseeable future.

Machine learning and AI will become a core part of our business strategy

53%	30%	7%	7%	3%

- Strongly Agree
- Agree
- Strongly Disagree
- Disagree
- Neutral
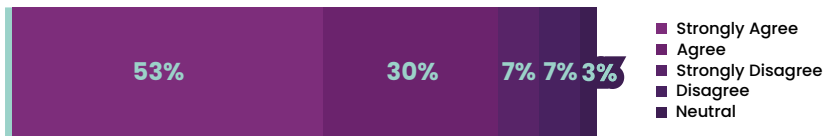
When asked by FinTech Futures at what stage firms were at with their development and deployment of AI or ML systems, **53%** said that they were already live with a system or were preparing to go live within 12 months, while **31%** indicated that they are at the proof-of-concept stage. Despite interest in technology, **8%** of those asked said that they had no intention of deploying at AI system at this time.

What phase of AI or ML deployment is your firm at?

- We already have AI systems live
- We are testing / working with proofs of concept
- We will go live in the future (less than 12 months)
- We have no intention of deploying an AI system
- We will go live in the future (more than 12 months)

8% 8% 15% 38% 31%

Practicalities

To get a look under the hood of these AI developments, we asked firms to indicate in which section of their business they aimed to deploy their AI systems, and whether they planned to create in-house teams or look towards third party partners and technology vendors to augment their existing infrastructure.

Where have you / do you plan to deploy an AI or ML system?

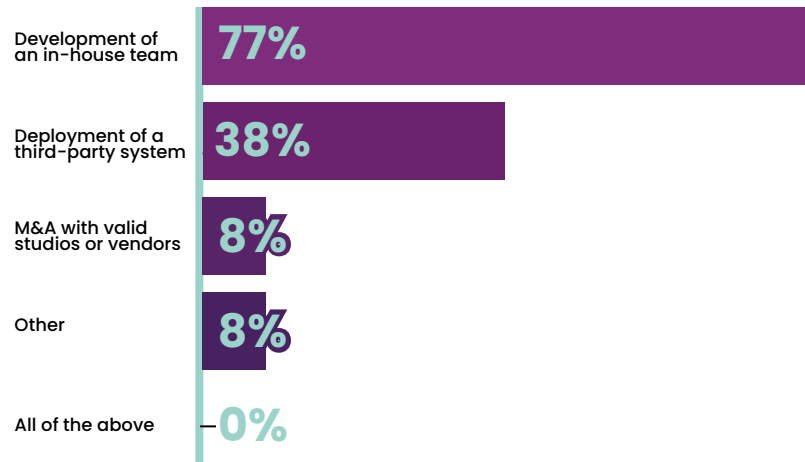| 38%	38%	23%

- Front Office
- Middle Office
- Back Office
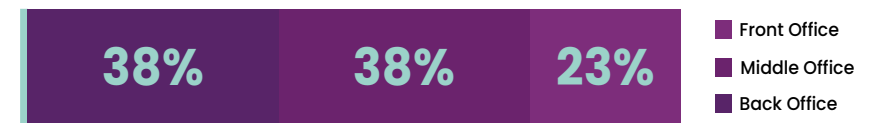
Distribution of these new technologies appeared evenly split across the organisation, with **38%** of respondents planning to deploy an AI system to client-facing front office operations and the middle office respectively. The back office is less of a priority for respondents, with only **23%** of those asked stating that they planned to utilise an AI system there.

Most firms in the industry are planning to build their own internal teams for the implementation of AI, according to our survey results, as **77%** of those asked indicated that they would be looking inside their own organisations to get things done.

Approximately **38%** of those asked reported that they would be looking to sign on a third-party company, either deploying their systems outright or for the development of an internal solution. While **8%** stated that they would be looking to mergers and acquisitions (M&A) to snap up a promising AI company.

By what method do you plan to deploy or develop AI and ML systems within your organisation?

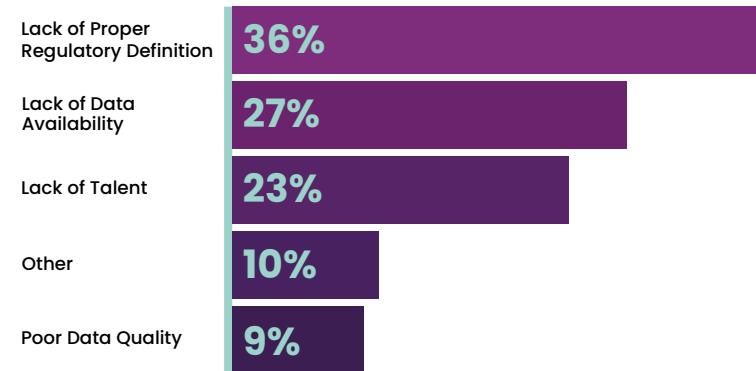|	
Development of an in-house team	**77%**
Deployment of a third-party system	**38%**
M&A with valid studios or vendors	**8%**
Other	**8%**
All of the above	**0%**

Challenges and regulation

With the accelerated nature of AI and ML development in the market, regulators have begun implementing workshops, councils and guidelines for the adoption and creation of new systems and solutions. We asked our respondents to outline what they believed to be the biggest challenge facing wider adoption of AI and ML solutions, and whether they believed that their local regulator was supportive enough for these new innovations.

A majority of the respondents (**36%**) thought that regulatory uncertainty would be the biggest barrier to the adoption of AI and ML in the future, and that better definitions would help to alleviate this problem going forward. Just over a quarter (**27%**) believed that a lack of data availability would hinder things, while **23%** believed that a lack of talent in the job market would stifle innovation and development.

What you believe to be the biggest challenge facing adoption of AI and ML?

Lack of Proper Regulatory Definition	**36%**
Lack of Data Availability	**27%**
Lack of Talent	**23%**
Other	**10%**
Poor Data Quality	**9%**

A sense of ambivalence to the work of regulators was highlighted in the answers to this question, as **62%** of respondents thought their local regulator to be neither supportive nor discouraging. However, **16%** of those agreed with the statement, while **23%** disagreed with the statement, obviously feeling that there is still much work to be done by regulators to underpin the growth of new AI and ML systems.

My jurisdiction's financial regulators understand and support the development of AI and ML in my sector

62%	15%	8%	8%	8%

- Neutral
- Strongly Disagree
- Disagree
- Agree
- Strongly Agree
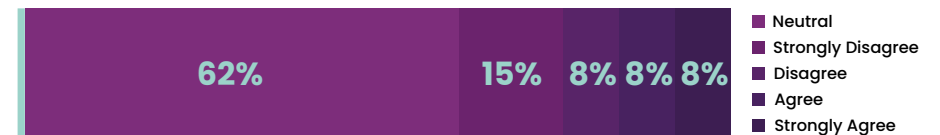
Conclusion

Industry hype can have a habit of raising a new technology to impossible heights, setting the conference circuit abuzz. The respondents to our survey certainly highlighted their belief in the potential of artificial intelligence and machine learning to shake up the financial services industry, with plans to deploy these new technologies across their technology infrastructure to improve efficiencies and analytics and better serve their customers.

Firms are working feverishly in-house to develop teams to capture the potential of new AI and ML systems, though some are worried about the lack of potential in the jobs market.

Perhaps the highest priority in the industry revolves around assurances from regulators and policymakers. Proper regulatory support was highlighted as a concern, while most respondents indicated that their local watchdogs were neither supportive nor discouraging when it came to the development of AI systems. As with any technology that is new, it may not be obvious how existing legislation applies. As ever, the spotlight shifts to regulators to provide guidelines and frameworks for best practice and ensure that a budding technology isn't stifled going forward.

Written by:
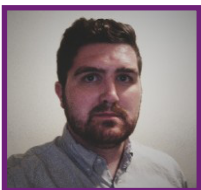
Alex Hamilton is deputy editor at FinTech Futures. He has been reporting on the financial technology sector for more than five years across a variety of industry publications and has written extensively on digital transformation, cybersecurity, and enterprise technology. He holds a masters degree in ancient history from the University of Nottingham.

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