Blog

Artificial intelligence and massive data are transforming financial markets

Financial stability | 19 November 2019 | Lauri Jantunen

AUTHOR



Lauri Jantunen
Information Specialist-Economist

AI and massive data technologies are being deployed in all different stages of business ranging from risk management to portfolio optimization.

Artificial intelligence (AI) and massive data[1] are quickly becoming an integral part of finance. These advanced technologies are being deployed in all different stages of business ranging from risk management to portfolio optimization. While these technologies have the potential to improve existing processes and create totally new products, services and distribution channels, these innovation may also contain features that can form new type of vulnerabilities in financial markets.

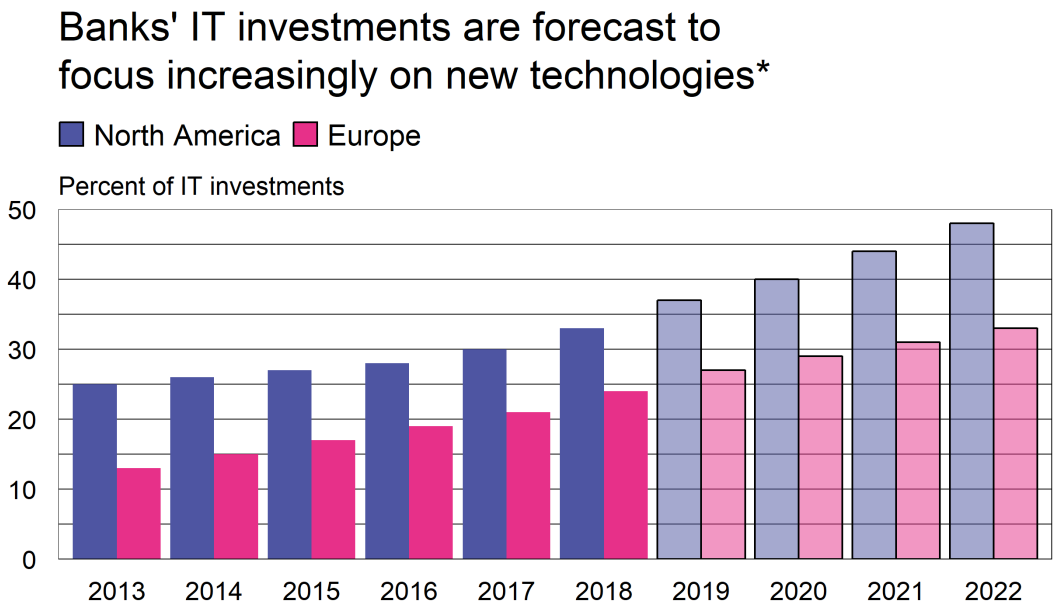
The amount of data being created, captured and replicated is expanding rapidly. IDC estimates that the sum of the world's data will grow from 33 zettabytes in 2018 to 175 zettabytes[2] by 2025. This process of digitalization is creating unique opportunities to integrate intelligence via data and artificial intelligence to products and services.

The Financial Stability Board (FSB) recently[3] studied the use of AI in financial services, and concluded that these technologies are being deployed across a range of application including credit quality assessments, insurance contract pricing and back-testing models.

As more and more AI and data are being used throughout the workflow to create value in products and services, businesses will gradually become increasingly data driven. These new data centric business models will progressively change how firms compete, and the business advantage will become more dependent on data and the organization's ability to derive value from it.

While these new innovation bring a promise of more efficient allocations of capital, these digital products and services contain characteristics that can lead to market distortions, monopoly power and may create new systemic vulnerabilities.

Chart 1.



*) New technology consists of solutions that build new capabilities, as opposed to solutions that seek to maintain existing legacy systems.

Source: Celent.
29.10.2019
bofbulletin.fi

AI solutions need governance and risk management

AI technologies have the potential to deliver vast amounts of insights via new data sources, new data types and advanced modeling methods (i.e. machine learning and deep learning), but they are very sensitive to data quality and can lack interpretability. Even seemingly insignificant deficiencies in the data can create distortions in the results because the scale of these data sets is so much larger. Furthermore, the level of complexity of machine learning models used in AI may also make their reasoning very hard to interpret. This so called black box effect gets stronger the less we understand the impact of a single parameter in the model's results.

Failures in ensuring the quality of the data or the lack of implementing interpretability and auditability can result in a situation, where AI solutions can systemically produce biased or flawed

results. If undetected, this type of errors can lead entities to mismanage risks, subject them to legal proceedings, but may also create new pockets of vulnerabilities.

New entrants may be vulnerable to market shocks

New companies often employ a high level of technology and automation in their operations. Such fintech and big tech companies generally have designed their data architecture based on the principles of sharing and connectivity, making them more agile and giving them a clear edge in data processing capabilities.

While new entrants might have superior IT capabilities, it is not evident that their operating model is strong enough to withstand market shocks. For example, they may not have their business model tested under exceptional market events, and do not necessarily have the same level of expertise in managing a business through different stages of credit cycles, volatile markets, or tighter monetary policy.

The Bank of International Settlements (BIS) has recently also devoted special attention[4] to big tech firms entering finance. The question is how these large technology companies with established user networks affect competition, financial inclusion, data protection and financial stability? Will their entry pave way to more resilient and diverse financial markets, or will big tech companies ultimately exert their efficiency on data collection and processing to build closed ecosystems that may develop to monopolies?

As the impact of data and technology on finance is becoming more pronounced, the Bank of Finland is hosting a conference entitled Data Driven Financial Stability: Opportunities and Challenges in Big Data on 2–3 December. More information is available on the event website and you can follow the conference live stream via https://www.youtube.com/watch?v=uihJFBS1G9Q.

Keywords

AI, artifical intelligence, Big Data , big tech, financial markets, financial stability, FinTech