

THE TRANSFORMATIVE IMPACT OF AI IN FINANCIAL MARKETS



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This Impact Brief distills a wide range of reports and analysis on the impact of AI in financial markets - exploring its benefits, challenges and risks. **Brought to you through the objective lens of InsightBrief, with the support of 7wData, the go-to destination for all things data.**

INTRODUCTION

- AI's transformation of the financial markets reaches into all areas including operations, human resources, cybersecurity, regulation and analytics. Benefits are manifest, as are the challenges and risks.
- The financial markets include stock markets, bond markets, money markets, derivative markets, future markets, insurance markets and foreign exchange markets, both primary and aftermarkets.
- The banking and securities industries have been early adopters in the application of AI. Banking is estimated to be responsible for one-sixth of all spending worldwide on AI and cognitive solutions in 2019 (\$5.6bn), placing it only behind retail and ahead of all other sectors.¹

OVERVIEW

- Applications of AI and machine learning in the financial markets include:
 - Trading and portfolio management
 - Capital optimization
 - Risk management
 - Market analysis & forecasting
 - Big Data analysis of indicators such as index prices, market sentiment & news
 - Regulatory compliance
 - Client-facing chatbots
 - Robo-advisors for internal & client use
- The implementation of AI and machine learning can reduce expenses in the financial markets and can also deliver the following benefits to consumers:
 - Lower fees and costs
 - Wider access to financial markets
 - Customized and personalized investment services

DEFINITIONS

Artificial intelligence (AI) applies advanced analysis and logic-based techniques, including machine learning (ML), to interpret events, support and automate decisions, and take actions.

Machine Learning: Advanced machine learning algorithms are composed of many technologies (such as deep learning, neural networks and natural language processing), used in unsupervised and supervised learning, that operate guided by lessons from existing information.



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OVERVIEW (cont.)

- Automation (for example via Robot Process Automation, RPA) can remove repetitive, replicable and routine tasks for firms trading in the financial markets. This increases efficiency, reduces operational risks and improves customer experience.

RESEARCH FINDINGS

- Leading applications of AI for firms dealing in the financial markets include:
 - Implementation in the risk assessment process
 - Know-your-customer and anti-money laundering monitoring
 - Assisting with regulation, risk and compliance
- 84% of frontrunning banking and financial services executives say adopting AI is very important or critical to their company's overall business success. As well as prioritizing cost reduction (47%), frontrunners focus on revenue enhancement (60%) and customer engagement opportunities (47%).²
- The financial services sector is expected to spend \$19bn on AI and cognitive technologies by 2025 (with a CAGR of 29.6%). This is compared to an estimated \$5.6bn in 2019.^{1,3}
- 400,000 to 1.7m jobs are to be cut from capital markets institutions by 2030 as a result of AI adoption and digital transformation, according to management consultants, Opimas. Asset management will be among the hardest hit areas and is expected to shed a third of its workforce.⁴
- Robo-advisors, assisting private investors interacting with the financial markets, had \$540bn assets under management in 2018. This is predicted to grow to \$2.5tr by 2023, with a compound annual growth rate of 26.9% – rising from just \$100bn in 2015.^{5,6}

BENEFITS

- AI technologies deployed in financial markets can:
 - Rapidly and efficiently collect and analyze far more information than was previously possible
 - Connect market prices to a wide variety of indicators, thereby diminishing information asymmetries and potentially boosting market stability
 - Provide dynamic, automated modeling
 - Potentially lower trading costs
- AI is helping to transform how firms interact with the financial markets. Bank of New York Mellon (BNY Mellon) utilizes programmed bots, reducing the need for manual intervention by performing research on orders, resolving discrepancies and clearing trades in a fraction of a second.⁷



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BENEFITS (cont.)

- ▶ Robo-advisors, using AI and machine learning, can enhance delivery and optimize transactional activities for investors accessing the financial markets. They can ⁷:
 - Provide instant investment recommendations and market forecasts
 - Automatically complete transactions and reallocate portfolios
 - Offer significant savings on services
 - Streamline management
- ▶ AI and machine learning can help financial services firms to efficiently tackle the current cybersecurity talent shortage. By quickly and automatically processing data and flagging patterns of suspicious behavior, AI can considerably augment the abilities of human experts.
- ▶ AI & machine learning are assisting market regulators in identifying fraud, insider trading & money laundering by:
 - Rapidly processing very large volumes of data
 - Identifying errors and filling gaps in datasets
 - Flagging issues & assessing complex patterns of behavior
 - Automatically resolving false positives, that do not warrant intervention

CHALLENGES

- ☑ Implementing AI is not easy. Only 33% of those in the capital markets reported having run a successful proof-of-concept test, while 18.7% had run a trial but failed to prove the business value of the technology. ⁸
- ☑ The most common challenges for deploying AI in financial markets today cited in a survey by SAS and the Global Association of Risk Professionals were: ⁹
 - Data availability and quality (59%)
 - Stakeholders' lack of understanding (54%)
 - Lack of necessary skills (52%)
 - Time to realize benefits (50%)
- ☑ Unsupervised, self-taught AI presents the challenge that its decision-making and financial trading processes take place in a 'black box' and they may be incomprehensible to both users and regulators. Because of this, organizations are likely to require access to a human-readable audit trail.
- ☑ Although some of the commercial benefits of AI are constrained by the current regulatory framework governing financial markets, there is the potential threat of a compliance arms race as individuals and organizations try to game the system.



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RISKS

- » Where AI programs used in trading and investing rely on third-party data sources, they are susceptible to manipulation. This was seen when trading algorithms automatically responded to false reports of explosions in the White House on Twitter, causing widespread market movements.¹⁰
- » AI models used in financial markets stress testing may provide misleading results if they are given insufficient training. This could lead to risk being significantly underestimated on a market-wide level.
- » If many traders use similar AI strategies, they may pose a risk to market stability as different actors unwittingly act in concert. This volatility may be increased if AI is used in combination with high-frequency trading where large numbers of transactions can be carried out at great speed.

TAKEAWAYS

- » AI is having a transformative impact on the financial markets. The technology – able to automatically execute thousands of trades per second, based on complex computational models – is now a key differentiator for the most competitive firms.
- » A key feature of AI is that it can process vast amounts of information and find connections that may be invisible to human eyes. These systems can call on an unprecedented range of real-world datapoints to inform market activity, potentially capturing a far more accurate reflection of reality.
- » Financial trading powered by machine learning effectively runs at light speed. When algorithmically-determined conditions are met, trades can be run near-instantaneously – and with no limit to the range of triggers that can be set. Given this, forecasting capabilities will become ever more critical for market players.
- » In the short term, AI will likely lower barriers to entry in the financial markets, as well as driving increased fluidity across the system. However, there will be a widening gap between consumer investors, assisted by machines, and institutions that are guided by cutting-edge ML algorithms.
- » AI and machine learning are dramatically reshaping how the financial markets function. While widespread automation of tasks and roles is probable in the coming years – thereby displacing a significant percentage of the workforce – it remains to be seen whether the technology will drive overall market stability or volatility.













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