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UK financial services leadership in AI age – opportunities and challenges

Dr Nader is Associate professor in finance at Manchester Metropolitan University Business School. His investigations into asset pricing, volatility and systemic risk modelling and governance issues are pivoted towards big data analytics and application of AI and LLM models. He leads AI@Biz event series that bring academic and industry experts for a specific sector of economy to enhance AI stakeholdership for communities and citizens as well as dissemination of where industry is moving forward and how cutting-edge research is leading making new possibilities possible and socially acceptable. In this evidence report, he presents his view that aggregates common issues surrounding AI application in the financial services sectors as well as where the larger trade-off rests to exploit excellence of AI approaches and where UK stands with respect to availability and gaps in required resources for global financial leadership in AI age.

Summary

This report explores the integration of Artificial Intelligence (AI) into the financial services sector, acknowledging initial job displacement fears which historically accompany technological advancements. While AI is not entirely new to finance (algorithmic trading), its application is widening to areas like credit scoring, fraud prevention, and investment analysis, driven by digitalisation and fintech, and is improving accuracy and accessibility for the benefit of clients. Nonetheless are risks being many and several of them yet unrealised – having the potential to create new systemic thunderbolts. This is a paramount consideration for AI integration in the financial services especially when emerging regulatory landscape is undercooked and where available do not meet the full scope – lagging will be a misstatement. These issues are further plagued with too tight data regulations that are pivotal to AI innovation. The challenges of data bias, the "black box" problem of AI interpretability, need for explainable AI and the need for robust regulatory frameworks are ubiquitous to sub-sector of retail banking, investment banking, insurance, and asset management. Other significant risks and opportunities for a secure AI world require even more research and investment to assess and be prepared for cybersecurity risks, and to protect consumer data together with ethical considerations. For the UK to maintain its leadership in fintech and financial services, it needs to address funding limitations, regulatory constraints, and the slow adoption of AI in traditional institutions. Balancing innovation with ethical governance, transparency, and robust cybersecurity should be the pathway for the UK to leverage its AI expertise and shape a secure and globally influential financial future.

Introduction

Notwithstanding, the job displacement fears – which have been a persistent hallmark of the arrival of each disruptive technology since the first industrial revolution (IR) around 1760 to date and even in the upcoming human-centric IR 5.0. Despite 64% of Americans expressing AI-related job loss concerns over the coming two decades (Pew Research, 2025), history shows new industries consistently emerge while galvanising society and living standards and fuelling economic growth. Therefore, strategic adaptation through retraining and policy, rather than fear, is key to maximising the benefits of technological advancements and in this

case the adoption of Artificial Intelligence (AI) in the financial services sector for operational, productivity, efficiency as well as regulatory compliance gains.

AI has become a household name – the enormous speed of societal integration of a scientific concept/development is unprecedented – because of its ubiquity, accessibility, and impact in almost every human and economic way of life. However, AI is not new to finance per se; its use has been segmented [limited to trading and investments only] – algorithmic trading.[1] By some estimates, 60-73 per cent of equity trading volume in the US is triggered by algorithmic-machine stipulations, and the role of institutional and retail investors is prominent in driving automated trading (Lewis, 2014). These numbers for other markets such as forex, cryptocurrencies, ETFs, debt securities and commodity futures are varied and fragmented towards certain instrument types and origin.

However, the implementation of AI approaches in the financial sector is becoming ever wider and is contributing to financial institutions and markets alike, enabling fast and accurate research for investment bankers and equity analysts, improved and inclusive credit scores for lenders, asset allocation and risk management for portfolio managers, analysts, and fraud prevention – identity theft, account takeover, false or illegal transactions, and cheque scams. With the significant digitalisation of the financial service sector's institutions and markets, the prevalence of big data and incorporating AI is enabling intelligent systems that can solve problems, make decisions, and recognise patterns much faster than seen only a decade before (Dixon, Halperin & Bilokon, 2020). The pace of change for the financial services sector is further buoyed by fintech start-ups and blockchain technology. Fintech together with AI is creating new opportunities and is disrupting the financial services sector far more drastically than other sectors of the economy.

AI Impact on Different Financial Services Industries

AI is significantly changing retail banking, from loan pricing to loan provision, especially when conventional models have been built on restricted financial histories and have been exclusionary. For example, when it comes to retail banking, the disruptive potential of AI and GenAI has a significant impact on loan pricing, including mortgages, automobile loans, and credit cards by virtue of accurate and inclusive credit ratings of lenders and risk assessment of loan portfolios. In this vein, AI models capitalise on large swathes of historical and real-time data on consumer preferences and behaviour through social media, transaction data, and geolocation (Perry et al., 2023). Nonetheless, a more important issue to handle here is how AI models will be trained while correcting for pre-existing biases in the historical data as well as data linked to consumer cultural tendencies and socio-economic geographical presence.

There is a clear opportunity for regulatory frameworks and lending institutions to train their AI models with bias-free or bias-corrected input data – as training AI models closely on historical data with limited learning from new datasets could create exclusionary and ethical issues. Otherwise, the issues linked to socio-economic inequalities – social mobility and financial inclusion – will persist. On this end, Aziz and Andriansyah (2023) show that if training data reflect prior prejudices, AI models may perpetuate prejudice in credit profiling and provision. Another critical issue of the implementation of AI models in retail banking [and other financial institutions] is the skeleton regulation or emerging regulatory space on the AI use in pricing and risk models.

In consideration of AI's black box problem – model interpretability – and financial institutions' services being highly regulated, a lack of transparency on AI models or the absence of a relevant regulatory framework will hamper AI integration in financial institutions' decision-making processes. This problem could be dealt with by explainable AI (xAI) models that provide audits on data training as well as clarity on what and how the decision rule is

[1] Algo trading has been leveraging algorithms implemented by computers since the early 1990s, followed by high-frequency trading – big data and more recently AI/ML approaches allow the availability of more sophisticated trading algorithms.

implemented, i.e., a system that promotes transparency without compromising AI's analytical capacity (O'Leary, 2022).

AI's capabilities—efficiency, speed, and automation—are driving significant competitive gains and creating new possibilities within the financial sector (Maple et al., 2023). To this extent, digitalisation has democratised investing through electronic communications networks, and now through mobile apps, AI capabilities are taking it further in democratising financial planning and investment analysis - improving forecasting and optimising trading decisions – for all investors from retail to institutional investors. In this way, AI capabilities are making asset management – from the use of robo-advisers to GenAI tools (Hakala, 2019; Li, Chang and Wang, 2023; Photon and Koh 2018) – more affordable and efficient, especially for retail investors. However, concerns exist regarding whether AI-trained models truly maintain the best interest of the investors (Chakravorti, 2025); they lack qualitative judgement in identifying signals that might lead to misaligned investment strategies. In addition, issues surrounding accountability and transparency in automating financial planning bring new risks and questions about its reliability and thus, legal and ethical implications.

Other significant avenues of impact are investment banking – enabling comprehensive market analysis, accelerating research, due diligence, and optimising trading and decision-rule efficiency (Khmyz, 2022), the insurance sector – through sophisticated risk assessment and fraud detection resulting in dynamic pricing and speedier and more efficient claims processing (Mishra et al., 2024), and pension and asset liability management (ALM) – assessing the financial sustainability of pension providers, more precise allocation strategies resulting in improved liquidity provision across uncertain periods and adjusting investment strategies to balance ALM based on various market, demographic and lifespan datasets (Suchonwanich et al., 2024; Coşkun, 2022; Khmyz, 2022).

In addition, AI analytics – anomaly detection models – can play a substantial role for regulatory compliance in financial reporting and auditing work for corporations by enabling the automation of transaction monitoring and reducing human error. This will enable proactively identifying non-compliance and safeguarding firms and investors. However, AI integration presents ethical dilemmas, particularly regarding data privacy. How these gains of AI capabilities should be weighed relative to privacy, cyber and data security – defining the trilateral limits of AI and data Governance. Balancing AI's benefits with ethical considerations is crucial for its responsible implementation in finance. That is, addressing these concerns requires robust regulatory frameworks and transparent xAI models. These models would provide insights into AI decision-making, fostering trust and accountability.

Challenges and Risks of AI – UK Financial Services Sector

AI integration into the UK's financial services sector may introduce a complex web of risks and challenges that demand rigorous scrutiny – cyber security risk is the most significant one among all – equivalent to a catastrophe or pandemic in terms of scale. Others are increased financial market volatility caused by new systemic risks that risk models do not account for, and privacy issues from identity theft to data protection. AI-induced herding can create and inflate asset bubbles – triggering market crashes – that will pose a significant challenge to traditional risk management frameworks. When it comes to training AI models, data manipulation as well as poisoned data could alter market trends and credit decisions, resulting in unfair competitive advantage (Chui et al., 2018) and financial cybercrime.

The use of AI in finance, inadvertently, augments the cyberattack surface area. For example, financial institutions' use of AI for fraud detection, risk assessment, and regulatory compliance can create internal cyber shocks (Uddin et al., 2020), such as CrowdStrike, which may result in operational failures and widespread service outages. Similarly, the increased exposure to external cyberattacks for financial institutions remains the most potent one. AI can be exploited by malicious actors – they can generate deceptive financial insights, manipulate automated decision-making systems, and create realistic deepfakes for fraud.

Consumer protection and data privacy are also critical areas of concern. AI-driven financial scams, including trading bots, phishing, and deepfake fraud, pose significant threats to consumers. The ability of AI to mimic human interactions makes these scams increasingly difficult to detect. Ethical concerns arise in AI-based lending, where biased training data can perpetuate discriminatory lending practices and exacerbate financial inequality. The risk of AI hallucination in automated financial advisory services, leading to erroneous or misleading recommendations, underscores the need for greater transparency and accountability in AI-generated financial advice.

Finally, the impact of AI on the workforce is a significant consideration. The automation of tasks in areas such as risk analysis, portfolio management, and customer service are likely to lead to job displacement for financial analysts, loan officers, and investment advisers. To mitigate this, the financial sector must invest in reskilling initiatives to equip employees with the necessary AI and data analytics skills. While AI poses a threat to certain job roles, it also presents opportunities for human augmentation, enhancing decision-making efficiency and risk assessment. The key lies in striking a balance between automation-driven efficiency and human oversight to minimise ethical risks and ensure responsible AI implementation.

Regulations on the Use of AI in the Financial Services Sector

The UK's AI leadership is hampered by a tighter regulatory landscape and public and private funding and investment ecosystems from venture capital to government-backed AI accelerators – displayed by struggles to scale AI advances compared to the US and China (Gigante and Zago, 2023). This curtails the UK's competitive advantage relative to other countries that are adopting less restrictive regulations (Irfan et al., 2024). The Department for Science, Innovation & Technology's (2025) AI Opportunities Action Plan promotes responsible AI innovation while resolving regulatory issues. Continuous policy revisions will be needed to keep AI ethical, fair, and compatible with financial stability goals when the speed of evolution and change in the AI landscape is too fast.

However, the bigger issues for the UK financial services sector on the back of AI integration are addressing ethical concerns related to bias, transparency, and accountability. That is, AI advancement raises concerns about potential bias and a lack of transparency in AI algorithms, necessitating robust regulatory frameworks to ensure fair and equitable treatment of deposit holders, retail investors and insurance policyholders. Furthermore, AI-backed hyper-personalisation of products could trigger financial exclusion, e.g., it might leave certain client types "uninsurable" – exacerbating discrimination. The pro-innovation and pro-safety mantra from the UK regulators are great, but they do not provide any clarity – thus, as the learning from the Fintech space goes, there needs to be more work on AI and financial services in the UK through regulatory sandboxes to develop future guidelines and frameworks.

It is not just the aspects of transparency, accountability, and consumer protection; regulatory frameworks also have to develop accountability and liability considerations: with deep learning models, xAI is a bigger and more crucial consideration than, for example, transparency around AI integration and should be settled in the coming five years for the wider confidence and deployment of AI in the UK financial services sector. Other crucial work has to be around other AI risks such as feedback loops – leading to financial discrimination to market crashes, AI hallucination, cyberattacks resulting in system failures for over-reliance on AI. This requires more government-backed and supported research to independently evaluate AI integration in the financial services sector so that the sector can remain internationally competitive while loosening data privacy in ways data regulations are understandable to users on consent, portability and opt-out, as are mainstream regulations, e.g., for traffic control. Academic research on AI in finance has revealed systemic issues, highlighting the need for proactive risk mitigation (Fagleman et al., 2023).

At a systemic level, the rapid evolution of AI-powered cyberattacks necessitates a proactive regulatory approach, with digital system protections that incorporate real-time threat detection, anomaly monitoring, and AI auditing to bolster cybersecurity resilience. Therefore, robust regulatory frameworks are crucial to ensure ethical and transparent AI-driven financial

analysis and prevent misuse, e.g., in algorithmic trading. The complexity of AI-generated financial instruments also presents a regulatory "black box" dilemma, making it difficult for financial authorities to effectively monitor and control these systems.

Future of the UK Financial Service Sector

UK financial services are a global leader in the fintech space, and their use of data-driven and AI approaches is also a hallmark of this leadership. More importantly, the UK financial services sector has the openness, world-leading research, world-leading research centres, both at the intersection of AI and fintech, and the talent pool required to maintain developing cutting-edge financial services and fintech solutions. To this extent, the developments through Open Banking regulations as well as AI-driven financial planning and credit evaluation for account holders are clear indicators (Fatima et al., 2020). The bigger issue for the UK financial services sector is to grow at scale, and that speaks to the biggest capital availability and expansion constraints as they are exposed to takeover or migration in their scalability goals (Gigante and Zago, 2023). In this vein, the greater opportunity is to support public and private investment initiatives enhancing the flow of funds and capital growth pursued by capital providers. Another option is replicating government-backed accelerator programmes (Irfan et al., 2024). In sum, low investment levels and regulatory constraints limit AI adoption in traditional financial institutions and legacy banks.

Therefore, for the UK financial services sector to compete internationally, it has to adopt AI more broadly than the limited yet excellent adoption in the fintech space: uneven AI adoption will limit the potential of AI research and the talent pool available for the financial services sector to thrive internationally (Maple et al., 2023). The issues of old IT systems, risk-averse corporate cultures, and strict compliance standards are slowing down AI adoption (Roberts et al., 2022). Firstly, this impedes their capacity to compete with FinTech challengers; secondly, this exposes them to remaining internationally competitive when they do not face scalability challenges, but a sustainability challenge remains. To this extent, conventional financial institutions have to comply with AML, financial risk, and consumer profiling – data privacy – laws; until these aspects are not relaxed, AI adoption will remain a dilemma between the gains of AI and compliance risk. The struggles for insurance sectors are also the same.

Fintech companies are the poster child for AI integration; legacy financial institutions will reduce operational costs and increase productivity by automating routine tasks and decision-making. AI-based automation will simplify decision-making at multiple levels, including pricing and risk models, lending, investing and trading, as well as fraud detection (Alt et al., 2024; Cooper and Brem, 2024; Mahmud et al., 2023; Saleem et al., 2024). With an AI talent pool and world-leading research in the AI and fintech space, UK financial services should maintain their global leadership by addressing issues of funding and investing for business scalability, and regulations that are AI-enabling – innovation and data privacy have to achieve a new balance to maintain a foothold at the pedestal. This will enable conventional financial institutions and regulators to leverage AI to analyse transaction trends, product personalisation, pivoting and efficiency, and stem financial crime – from money laundering to corporate fraud. Financial services will be transformed by AI's automation, personalisation, and efficiency. London's largest banks may use AI to detect fraud and personalise customer service by 2025. In this vein, corporate investments in AI and GenAI are on the rise among UK financial institutions – capturing almost 15% of the technology budget (Connecting the dots in FinTech..., 2025).

In conclusion, the UK's financial services and FinTech future hinges on ethically governed AI. To lead the global financial revolution, institutions must collaborate with regulators and developers, establishing transparent frameworks and sandboxes to mitigate bias and instability. Robust cybersecurity is paramount against AI-driven threats. By balancing innovation with rigorous oversight, the UK can leverage its AI expertise to forge a secure, equitable, and globally influential financial landscape.

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