Finance, Financial Crime and Regulation: Can Generative AI (Artificial Intelligence) Help Face the Challenges?

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Abstract: Generative artificial intelligence (Gen AI) has helped change the trajectory of Banking (FinTech) and Law (Reg Tech/Law Tech). Technology innovates at an astounding rate. AI and Gen AI can not only simulate human intelligence (human thinking) but also perform tasks independently. It can develop intelligence based on its experiences, process detailed and complex information whilst continually learning and re-learning to be able to undertake complex, technical, and time-consuming tasks in real time. It can identify objects, patterns, people and voices(etc.) and look for problems far earlier – this also means it can come up with solutions quickly which in critical situations is of salient importance. The economic, political, and social benefits cannot be underestimated, but must be balanced against its disruptive and destructive potential. This article explores whether Gen AI can help further revolutionise the finance industry and how it can help with risks, and the various regulatory and operational challenges faced by those firms in the United Kingdom (UK). Data is analysed alongside domestic and international published literature. The article starts by summarising current risks and challenges and then discusses how Gen AI can be embedded as part of an arsenal of tools that financial institutions can use to develop and provide solutions to regulatory and operational challenges as at January 2025.

Keywords: Artificial Intelligence, FinTech, Financial Crime, English Law and Generative AI.

1. INTRODUCTION

For many years artificial intelligence (AI), machine learning (ML) and deep learning (DL) have helped industries such as finance innovate. The technology has helped these industries change the way in which customers consume services and products, and generally change the way in which they respond to regulation and how they do business. The rate at which the technology has innovated and developed has been inspiring and astounding. AI and Gen AI can not only simulate human intelligence (human thinking) but also perform tasks independently. It can develop intelligence based on its experiences, process detailed and complex information whilst continually learning and re-learning to be able to undertake complex, technical, and time-consuming tasks in real time. It can identify objects, patterns, people and voices(etc.) and look for problems far earlier – this also means it can come up with solutions quickly which in critical situations is of salient importance. The economic, political, and social benefits cannot be underestimated, but must be balanced against its disruptive and destructive potential. The financial services industry has been tapping into the power of generative artificial intelligence (Gen AI) as a tool for many years. And like its predecessors AI and ML, Gen AI has become a colloquialism in that industry. In contrast, Gen AI can create content through processing and analysing data patterns and it can, independently, generate content in the form of code, images, text, video, and music. This list is not exhaustive. The technology can be used for purposes of improving accuracy and that makes it a popular and valuable tool for organisations across the various industries. This article explores how Gen AI, as an operational tool, is helping financial institutions in the United Kingdom face the challenges of financial crime, the increased regulatory burden on the need to compete, innovate and improve.

2. DEVELOPMENT OF GENERATIVE ARTIFICIAL INTELLIGENCE (GEN AI)

The development of Gen AI has already been written about extensively and therefore what follows is a short summary. Gen AI is underpinned by artificial neural networks. The entire concept is based on the human brain[1]. Those models form part of DL, in other words the intimate layers within the neural network itself. It would be fair to state that Gen AI is a quantum leap in the development of DL. One of the issues with the advancement of such technology is the computational power that is needed to train it. The training requires infinite parameters which may impede the rate at which the technology develops[2]. In addition,

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[1]Singh, C. (2023). Artificial Intelligence and Deep Learning: Considerations for Financial Institutions for Compliance with the Regulatory Burden in the United Kingdom. Journal of Financial Crime, Emerald, Vol.31(2), pp. 259 – 266. https://doi.org/10.1108/JFC-01-2023-0011
[2]Morrison, R. Compute power is becoming a bottleneck for developing AI. Here's how you clear it. Tech Monitor. March 17, 2023. https://techmonitor.ai/technology/ai-and-automation/chatgpt-ai-compute-power

initiatives for responsible AI are becoming far more common and that can lead to an increase in development costs. Even so, Gen AI has developed at an exponential rate. An example of this is ChatGPT which was first launched in 2022, its developer, Open AI, has already released GPT-4 using a new large language model (LLM)[3]. Its rival, Google, introduced Search Generative Experience and PaLM2in the form of 'Bard', a chatbot, May 2023. Anthropic's Gen AI, Claude, went from processing 12,000 words per minute to almost 75,000 words per minute[4]. At the present time the AI investment market is dominated by North America. In 2023 investment in Gen AI exceeded $25.2 billion. Since 2016, regulation focused on AI in the United States of America has also seen significant increase. In 2023 alone there were circa 25 new regulations focusing on AI, an increase of 56.3%[5].

3. USE OF GEN AI

Financial institutions are using Gen AI full, amongst other things, the assessment of risk, investment prediction, the detection of fraud and to improve customer experience[6]. The demand for financial services that are tailored to the needs of customers i.e., accurate, accessible and efficient, is one of the key drivers[7]. The ability and speed with which Gen AI can analyse complex datasets and identify patterns within that is exceptional, something that would take its human counterparts significantly more time to do. One of the benefits of this is better informed decision making and quicker or more responsive mitigation of potential risk. Whilst AI can outperform its human counterparts in several tasks Is still in the early development stages of more complex tasks such as mathematics (competition level), visual reasoning based on common sense and planning [see ibid note 5].

The growth of Gen AI has partly been promoted by innovation in financial applications and the need for reliable and accurate financial services for consumption by consumers. For instance, to prevent consumers

becoming victims of fraud or misdirected payments many banks [see ibid note 6] now use online transactors to check the correctness of payee names in real time so that the customer can confirm that they are transferring money to the right person. The same advents are happening in cryptocurrency, crypto transactions and critical risk infrastructure for Web3 [see ibid note 6].The availability of data coupled with improvements in the algorithms has meant that Gen AI is a formidable tool. Mobile banking and its exponential growth has promoted the generation of data through custom applications that use LLMs. The LLMs are trained using specific customer data The benefit of this is to refine decision-making. It also acts to deepen analytical insights an enhanced productivity (cost reduction) whilst making sure that data privacy standards are complied wit[8]. Furthermore, consumers are demanding better customer service, and many firms have opted to use Gen AI powered chatbots or virtual assistants in that endeavour.IBM, Microsoft and Amazon Web Services are the main players within the Gen AI market, with heavy levels of investment to enhance their market share. McKinsey Global Institute suggests that Gen AI will be worth circa $2.6 to $4.4Tand $200 - $340B just in financial services[9].

On the downside, the growth in Gen AI has been limited by the lack of trust in its decision-making capability and in its assessment of risk. There are also issues in relation to how successful it is in detecting fraud or deciding about who may or may not be eligible for a service. This coupled with the fact that the algorithms are complex and therefore difficult to understand makes it impossible to test whether the Gen AI algorithm is trained to prevent decisions that might be biassed, discriminatory or unfair. This issue undermines the trust in the ability of Gen AI[10].

Within financial institutions Gen AI is being used for solutions and services. The former has allowed

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[3]Open AI. Introducing Chat GPT. Open AI, November 30, 2022 and OpenAI. GPT-4 is Open AI's most advanced system, producing safer and more useful responses. Open AI.

[4]Anthropic PBC. Introducing Claude. March 14, 2023, and Introducing 100K Context Windows. Anthropic PBC. May 11, 2023.

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[6]*Supra* note [4].

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financial organisations to grow their retail banking, improve the detection and prevention of financial crime and create several channels through which customers can engage with them. The latter has helped improve credit scoring, the detection of fraud, regulatory compliance and reporting, forecasting and the management of risk. Most financial organisations take a hybrid approach using a mix of on premises and cloud-based deployment of AI[11].

4. GEN AI – OPERATIONAL SIGNIFICANCE

This relatively new technology has the potential to change fundamentally the way in which institutions, including financial institutions, work.ML models can be trained using synthetic data that resembles real-world data using Generative Adversarial Networks (GANs). This can help improve their ability to make accurate predictions and easily detect patterns. This method is already being used for credit card fraud detection[12], and it can be more successful because the flaws that exist in real world data such as bias or incomplete information can be designed out. Additionally, the use of Gen AI can result in operational efficiencies such as the mitigation of human error and cost savings[13]. Furthermore, it can analyse large complex datasets that can inform (data-driven) risk management and decisions relating to investment[14].

5. CUSTOMER BEHAVIOURAL ANALYTICS

Predictive analytics is used by Gen AI to forecast customer preferences. The technology uses historical data for instance previous viewed content, to make recommendations relating to things that customers may want to watch or may want to purchase. In addition, Gen AI has enhanced natural language understanding (natural conversations) which mitigates human-and-machine interactions[15].

6. REGULATORY COMPLIANCE AND REPORTING

The complex regulatory landscape poses several challenges for financial institutions and[16]. The costs attached to navigating the extensive and new regulations are significant, Gen AI can generate solutions through testing in a controlled environment the solutions using the synthetically generated data discussed earlier. It can also automate analysis and compliance, monitor transactions in real time and raise the necessary alerts when needed. Furthermore, it can help mitigate legal risks and reduce errors in accuracy when organisations are seeking to meet the regulatory challenge[17]. Some of the UK[18] sources of financial crime[19] related law that financial institutions must be comply with include:

–   Proceeds of Crime Act 2002

–   Terrorism Act 2000

–   Anti-Terrorism, Crime and Security Act 2001

–   Criminal Finances Act 2017

–   Economic Crime (Transparency and Enforcement) Act 2022

–   Money Laundering, Terrorist Financing and Transfer of Funds (Information on the Payer) Regulations 2017

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– Sanctions and Anti-Money Laundering Act 2018

– Serious Crime Act 2015.

7. CYBERSECURITY AND COST OF FINANCIAL CRIME

Financial institutions are at particular risk to cyber attacks, cybercriminal scan go to extreme lengths to seize sensitive data or manipulate transactions holding an organisation to ransom. Although, there have been new regulations that relate to critical infrastructure[20]. Gen AI can enhance an organisation security system by identifying what the weaknesses are via a simulation of cyber-attacks that seek to test how robust the system is. It can also detect and mitigate against attacks in real time and respond to potential breaches [see ibid note 20].

The cost of financial crime is unknown. The figure for the United Kingdom from fraud, money laundering and other such criminal activities is billions of pounds each year. At a global level such criminality is stated to be equivalent to 3.6% of global GDP[21]. The European union's[22] European Commission estimated that the cost of global[23] cybercrime in 2020 was around €5.5 trillion[24]. The cost of non-compliance comes in the form of penalties and reputational damage (see FICO, 2022)[25].The average fine for breaching anti-money laundering regulations was €31.79 million (see Fraugster, 2022)[26].

8. ETHICAL CONCERNS

Concerns in relation to the use of AI are extensively discussed and therefore are outlined only in summary. To ensure that the technology is being used ethically

safeguards are required for instance to prevent discrimination or bias in training data and decision making[27]. There is potential for regulatory oversight in model testing. Protecting data privacy and security is also of utmost important so that sensitive data is not unintentionally disclosed. Outcomes can be vetted by experts so that final determinations or verifications can take place prior to decisions being made but of course that would erode some of the savings that the technology can make[28].

CONCLUSION

Financial institutions in the financial services industry and their regulators are actively engaging with Gen AI. Therefore, there is likely to be exponential growth in this market. The technology can help reduce compliance breaches and can help organisations protect themselves against cyber security breaches or cybercrime. The use of synthetic data to train the models has had a profound effect on how sophisticated the models have become and has mitigated the floors that are often found in real world data. This has resulted in better customer experience, improved risk assessment and enhanced detection of financial crime.There is potential for Gen AI to help institutions to cut operational costs and improve on regulatory compliance and build stronger relationships with stakeholders, therefore this technology is certainly a boon for the industry.

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