CAPCO

GENERATIVE AI:

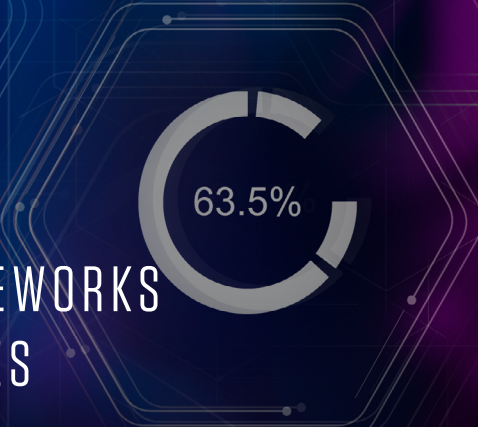### STRENGTHENING RISK FRAMEWORKS
IN FINANCIAL SERVICES

75.5%

63.5%

The sophistication and application of Artificial Intelligence (AI) within the financial services industry has accelerated in the past year or so due to the emergence of generative AI and its large language model (LLM) subset, most notably OpenAI's ChatGPT.

Alongside the more established natural language processing (NLP), the ability of these new tools and models to variously process and produce text and create content is of clear interest to risk management functions within banks as they look to provide unique insights, shape strategies and mitigate risks. Below we assess potential application of these technologies seven risk types that are present within financial services risk frameworks.

NON-FINANCIAL RISKS

1. Operational Risk. Arising from a failure of internal processes, people and systems or from external events, operational risk is optimally managed through early risk identification, assessment, continuous monitoring and mitigation. Traditional operational risk management can fall short, however, when it comes to managing the increasing volume and diversity of data.

GenAI can reduce operator and process errors and hence operational risk. Models such as ChatGPT analyse large volumes of structured and unstructured data and identify important patterns that are potentially missed by traditional methods. Effective operational risk management involves continuous risk analysis with innovative approaches to manage emerging challenges, both internally and for customers, and this is where large models are developed to play a role. The following examples demonstrate operational effectiveness with the safeguards to minimise operational risk:

- BloombergGPT, which can perform semantic analysis, gauge financial sentiment, classify news and answer questions.[1]

- Morgan Stanley piloted GPT-4 for its Wealth Management services, to train its AI on internal materials including all the necessary safeguards and making key connections between complex data points.[2] This has led to a more personalised client service, making the offering more competitive in the market and allowing wealth managers to benefit from a large knowledge base, leading to better customer outcomes.

2. Third-Party Risk. Tackling risks from external parties such as vendors, suppliers or partners is a time-consuming and often disjointed endeavour for a bank's procurement team. Banks increasingly struggle to assess and manage their growing number of vendors, but GenAI can help in the following ways:

- By generating synthetic data that simulates third-party activities and creating realistic scenarios to test their vendor assessment systems. Generative Adversarial Networks (GANs) are transformer models that create such scenarios. Potential use cases include summarising procurement documents, identifying non-standard terms in T&Cs and scanning news alerts for vendor security breaches. GenAI can thus enhance the risk management lifecycle from pre-contract to vendor software analysis and continuous monitoring.

- Picking up early warning signs from third parties by extracting critical information from unstructured data. For example, Deutsche Bank and Nvidia have developed LLMs to identify signs of vendor risk[3] with a view to ensuring more efficient vendor selection, onboarding processes or vetting.

3. Conduct Risk. Avoiding actions by institutions or employees that are detrimental to customers or the wider market is a perennial priority for financial institutions. GenAI can assist in not just ensuring compliance with regulations but also adherence to internal controls, policies and procedures to ensure better outcomes. This includes, for example:

NON-FINANCIAL RISKS

- Stripe, the payments processing platform, using GPT-4 and DALL-E AI technologies[4] to streamline its operations, allowing users to get information more swiftly. Stripe Docs is an example that answers queries by summarising documentation.[5] This can lead to a more personalised interaction with customers, enhancing the overall customer experience. Stripe Docs allows adherence to internal controls and policies (conduct related) in a quicker and efficient manner. This leads to better CX but a point to note is that this is initially a conduct enhancement.

- Analysing large quantities of data to capture and report conduct risk-related patterns or behaviours in real time. For instance, using GAN models to identify anomalies or suspicious transactions on a trading desk, minimising penalties and legal risks while also monitoring network traffic and user behaviour for potential fraudulent activity. As an example, J.P Morgan has used Generative Neural Networks (GNNs) to analyse anti-money laundering behaviours.[6]

4. Operational Resilience. The ability of firms to prevent, adapt, respond, recover and learn from disruptions – to better serve customers and to ensure financial stability more broadly – is key. Potential challenges span man-made threats such as cyber-attacks and IT outages as well as natural hazards. EU-based financial institutions that are invested in the development of their technology will need to consider wider Digital Operational Resilience regulations.[7] GenAI can:

- Replicate different external attack scenarios, including phishing attempts, malware, and network intrusions. These simulations can test existing security systems, help develop resilience strategies and initiate immediate responses, such as alerting the Security Team or isolating affected systems. It can also create simulated photos or voice patterns to strengthen security models in these areas, particularly for IT operations management such as data storage, where access can be granted or revoked based on visual or audio output ensuring greater resilience to potential cyber threats.

- Simulate future disruptions by leveraging historical data, For example, LLMs can create hypothetical stress scenarios by taking a portfolio of equities and testing what would happen if interest rates were to unexpectedly rise. They could also forecast which stocks within a portfolio would have the highest price sensitivity to a data breach, prompting a rapid and resilient response. This would require accurate, consolidated data and would result in various scenarios where stocks may be impacted or reveal trigger points when these scenarios may arise.

5. Behavioural Risk. Combating undesirable financial and non-financial outcomes due to behavioural biases and their impact on human decision-making is another key priority. Identifying risky behaviours requires qualitative and quantitative data, and GenAI can play a role by:

- Identifying behavioural patterns from complex and/or large datasets and creating customer and employee profiles to help understand how and why decisions are made. Such behavioural insights are then used to identify those areas of focus where preventive and corrective controls should be embedded to improve risk management.

- Mitigating unfair biases by analysing customer and employee data as part of an Algorithmic Impact Assessment (AIA). This approach detects unfair biases and categorises them in line with the bank's internal policies[8] to facilitate monitoring resolution progress, prompt escalations where needed and ensure compliance with internal policies and regulations.

FINANCIAL RISKS

1. Credit Risk. To eliminate the risk of loss from a borrower failing to repay a loan or contractual obligations,[9] GenAI can be used to assess potential risks associated with lending decisions, which has traditionally been done using historical data and predefined rules which may not capture the complex and evolving nature of credit risk. GenAI can:

- Evaluate the design and effectiveness of internal controls, such as communication systems, ongoing monitoring, risk assessments and help creditors or auditors identify deficiencies and assess the risk of material mis-statement within financial statements or credit reports. An example is Du Xiaoman's intelligent credit scoring platform, where a LLM was used to interpret credit reports, translating them into 400,000 risk variables, thus improving credit risk identification for small business owners in China.[10]

- Improve accuracy by using GANs to create synthetic data for intricate risk modelling scenarios for institutional and retail borrowers. Algorithms can then be applied to determine creditworthiness through analysing customer data, repayment history, behavioural traits to help banks minimise losses and enhance decision-making speed. Additionally, GenAI could conduct perpetual credit limit reviews based on a borrower's changing financial situation.

2. Market and Liquidity Risk. GenAI can be used to mitigate the risk of financial loss from market fluctuations or liquidity events as follows:

- Deploying fresh trading and investment approaches by analysing the market, identifying key opportunities, and supporting decisions to buy, sell or hold assets as a trading assistant. Autoregressive models can be used for forecasting and capturing patterns in sequential data, such as stocks and interest rates. Based on past performance, these models can predict volatility, cater for market dynamics and identify correlations of asset returns while managing market risk, all with human oversight in its application. AI-powered chat bots can further provide live trade support, delivering investment recommendations regarding positions and exposure limits.[11]
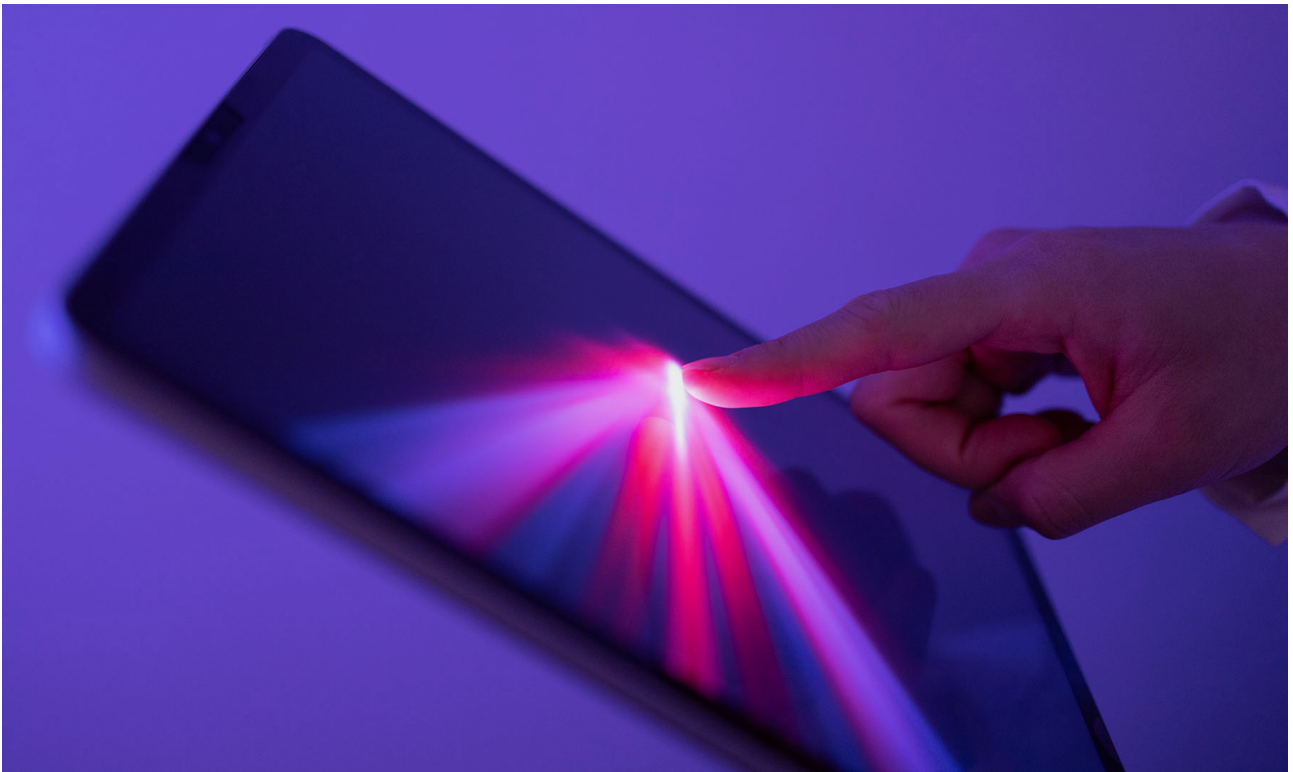
- Potential liquidity risk impacts can be stress-tested through simulations to help identify real-time negative patterns. Variational Autoencoders (VAEs) are an example of GenAI models where samples of data can be generated to test a bank's risk-weighted asset (RWA) ratios for regulatory reporting. VAEs can also test liquidity coverage ratios by simulating the impact of management measures and transactions. These models can interpret regulations and identify potential compliance issues as well as provide real time cash flow KPIs, improving liquidity accuracy.

SUMMARY

There is always a degree of operational risk attached to using new technology, particularly in the risk management space. Therefore, the potential opportunities for deploying GenAI must be balanced with the implementation risks. These include hallucinations, where models create incorrect or biased outputs, as well as ingestion attacks, copyright issues and data leakage. Banks that make use of GenAI must ensure the internal data upon which feeds these models is accurate and thoroughly vetted by legal, risk and compliance teams. An updated AI policy and governance framework is also critical, and banks should also consider the ongoing operational costs of AI as well as ensuring robust security and privacy measures for users.

GenAI has the potential to offer dynamic risk monitoring with risk-mitigation strategies, but it is still early days for some of this technology. Capco strongly recommends a scrupulous assessment of each potential application and its impact to better understand the extent of both the benefits and challenges. Our expertise and design-led innovation framework provide organisations with the necessary guidance and support to embark on their GenAI transformation journeys with confidence.

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GENERATIVE AI

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Capco, a Wipro company, is a global technology and management consultancy focused in the financial services industry. Capco operates at the intersection of business and technology by combining innovative thinking with unrivalled industry knowledge to fast-track digital initiatives for banking and payments, capital markets, wealth and asset management, insurance, and the energy sector. Capco's cutting-edge ingenuity is brought to life through its award-winning Be Yourself At Work culture and diverse talent.

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