FIS

AI ALCHEMY:
STEPPING FORWARD INTO THE FUTURE OF FINANCIAL SERVICES

How financial institutions can leverage generative AI

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Introduction

The financial services industry has navigated constant waves of transformation, from the digital revolution to the move to cloud services, the provisioning of big data and now the ever-evolving field of artificial intelligence (AI).

With the cost to train and deploy AI models reducing dramatically, the AI market is primed for rapid growth. It is estimated that the generative AI market is valued at US$208 billion in 2023 and is expected to reach $1 trillion total market value within the next five years. Investment flows into AI startups in the past six months are estimated at more than $10 billion, up nearly 50% from the start of 2023. One unexpected beneficiary of this growth has been the island nation of Anguilla, who owns the .ai domain. Registrations of the .ai domain have surged in the past 12 months, netting the island a healthy revenue stream. Generative AI is touching the world in unexpected ways and the much anticipated fourth industrial revolution is now upon us.

According to FIS research conducted in May 2023, 52% of executives already using generative AI will increase their investment in generative AI over the next 12 months, with 39% of executives maintaining those investments. We also see client focus shifting to AI, shown by a huge increase in their tendency to invest in it. AI has transformed from being solely a topic discussed by tech employees into a top agenda item for senior executives.

In light of increased focus on generative AI, this paper dives deeper into the evolution of AI, its impact on financial institutions (FIs), ideas on how clients can take advantage of it and how it could shape the future of the financial services industry.
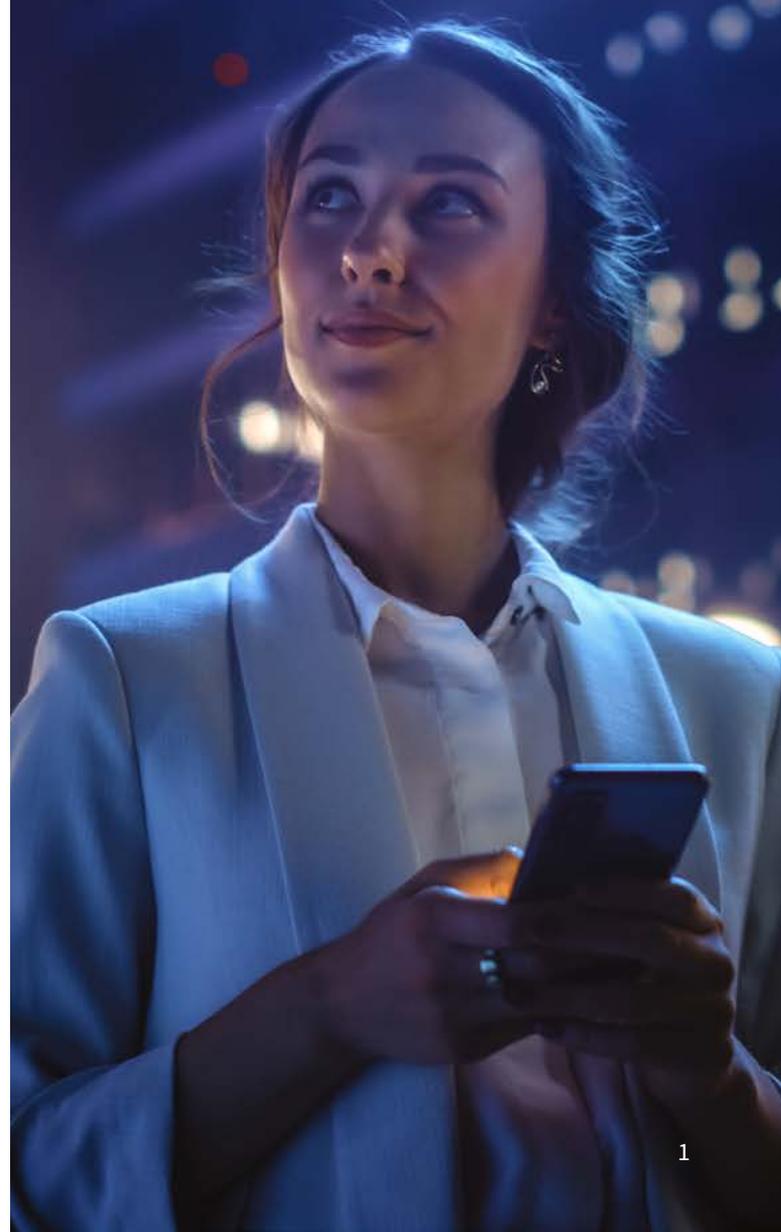
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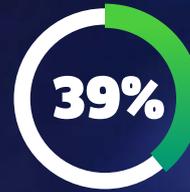
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Demystifying AI: Machine learning, predictive AI, generative AI – how many AIs are there?!

AI has been around for years in various forms, but the latest evolution of AI as generative AI (GenAI) is capturing the imagination of many. When talking about GenAI, there is one name we can't escape and that's ChatGPT. It is touted as the fastest-growing app in internet history, amassing 1 million users in five days. To put it in perspective, it took Twitter (now "X") two years to achieve this milestone.

But what exactly is GenAI, how does it compare to machine learning (ML) and predictive AI and where does it fit in the evolving hype cycle of AI? Let's dig a bit deeper.

Machine learning

is about developing algorithms that enable computers to find patterns or make decisions based on datasets. This makes it possible for computers to learn from experience and improve over time. It is a broader concept that covers both GenAI and predictive AI.

Predictive AI

is a method of data analysis capable of predicting and forecasting future incidents or outcomes. It allows the user to see patterns and approaching trends, or to predict risks and the best solutions to mitigate them. An example of this is Robotic Process Automation (RPA) which uses software robots (bots) and artificial intelligence to automate processes like data extraction/entry and other repetitive tasks.

GenAI

is a form of artificial intelligence designed to create new content in the form of text, images, code and more, based on input or prompts provided. ChatGPT and other similar tools are based on Large Language Models (LLM). They are trained on massive amounts of text, images and other data online, which they can use to model outputs and responses to appear as if they are human-generated.

Risks and ethical implications of AI in financial services

While the use of AI in financial services poses numerous benefits, such as enhanced productivity and innovation, improved risk management, personalized customer experiences and more, it also carries certain risks. Some of these include data privacy, intellectual property and copyright issues, quality and reliability, and inherent bias in data models. It also raises ethical questions for consideration. Below are some core implications that need to be considered when developing GenAI use cases for financial services:

1. Transparency and fairness – There are inherent biases in AI because of its reliance on human modeling. While AI researchers and developers are aware that biases exist, it is nearly impossible to root them out completely, meaning a person will need to vet all outputs from GenAI systems to ensure accuracy and fairness. Examples of this could include AI-based lending decisions being negatively impacted due to the potential biases from data that reflect adverse socio-economic trends. Ensuring transparency in how algorithms work builds trust and can limit inherent biases.

2. Data privacy and security – Major questions remain about intellectual property rights on AI-generated text and images, especially those that have not been vetted by a live person, posing significant risk to creating external or client-facing materials with programs like ChatGPT. Financial institutions will need to protect sensitive data used by the AI model and ensure that customer consent feeds into the trust and secure use of AI via adequate opt-ins and opt-outs.

3. Regulatory compliance – The novelty of AI brings with it an ambiguity to regulatory compliance and legislation and it will be incumbent on AI developers and users to align with those standards. FIs will need to work with regulatory bodies and policy makers to ensure that adequate compliance frameworks are developed, taking into account ethical and legal standards, as well as putting the customers' best interests at the center of what they do.

4. Market manipulation and fraud – As this technology reaches broader audiences, there is more potential for bad actors to do harm in novel ways. One example is the growing trend of spear-phishing attacks, where fraudsters use AI voice-cloning technology to target vulnerable individuals with information that they perceive as credible, such as an individual receiving an AI-generated voice call from a loved one requesting money to be transferred to them in an emergency. New and robust methods of security will be required to detect and prevent these types of attacks.

5. Overreliance on AI and unintended consequences – Without a proper system of checks and balances, AI outputs can introduce unwanted risk because of the imperfect nature of the technology's ability to analyze/synthesize outcomes. Because generative AI systems like ChatGPT are modeled from real text posted across the internet, there is a high probability of inaccurate information being generated and disseminated repeatedly, meaning automated text needs thorough review from a live person before it is ready to be used. Examples include using AI predictions without verification of the input data or the output, which could lead to potential financial and reputational risk.

6. Cost of AI ownership – Owning and operating a GenAI system in-house is expensive and requires significant hardware capabilities and on-staff engineers to maintain. Relying on a third-party provider, however, reduces reliance on internal resources and deepens the specificity of the AI's application to your needs, which introduces the challenges of biases, intellectual property and other risk factors. As a result, third-party risk would need adequate assessment.

While risks need to be considered when developing generative AI, there are also many potential use cases and advantages to be gained from it.

Generative AI use cases for financial institutions

Ideas for leveraging GenAI are increasing rapidly and many use cases already exist. These ideas are limited only by our creative capacity to solve real world problems – we may even find that generative AI suggests solutions to problems which we haven't identified yet!

Below are ideas and examples of use cases that leverage generative AI, split by financial services subindustry:

Retail banks

Enhanced customer service chatbots – Banks can offer a higher level of customer experience through automated first-line customer services powered by generative AI chatbots. These chatbots can be used to quickly solve or escalate issues as needed, requiring less person-power, thus being a cost-effective option for first-line support.

Personalized messaging – The financial services industry is littered with technical terms and prone to strict terminology, which can confuse consumers. Take retail lending for example – when a loan is denied, the rationale is not always well understood by the applicant. GenAI, with its more customer-friendly manner, could generate user-friendly denial explanations that could help the applicant understand why they were denied a loan and potentially provide advice on how to maximize their approval chances next time.

Personalized offerings – AI technologies can be leveraged to assess client and account holder behaviors to automate the generation of tailored products, offerings and solutions. This, coupled with AI-generated communications, can create a low-touch, highly personalized experience between the bank and the customer.

Creative marketing – Banks can maximize the potential of marketing messaging and campaigns by using generative AI to brainstorm and create surprising and novel ideas for marketing content and materials.

Fraud detection – GenAI technologies can be used to evaluate and assess data patterns to more easily identify fraudulent behavior, such as money laundering or other deceptive practices like phishing attacks or social engineering.

Core legacy maintenance – Many banks still run on old legacy mainframes which were implemented over 40 years ago and use older programming languages such as COBOL. With many of the legacy developers retiring, there is a need for skilled resources who can maintain these systems. GenAI could be used to help newer developers understand and work with legacy programming languages, speeding up development and lowering costs of deployment.

Generation of test data – Generative AI could be a fast and efficient way of generating high quality test data for testing new products and services.

Investment banks

Automated workflow – GenAI can be used to automate workflow patterns and repetitive tasks, such as data insights and report making, creating opportunities to improve productivity and glean enhanced insights. For example, analysts could automatically generate a financial risk report using a business's financial reports from the past three years, using natural language as the query method.

Automated live market reports – Using automated data aggregation and GenAI to create easily digestible reports on real-time market data can deliver fresh and nuanced insights that are actionable and unique, e.g. traders can use natural language to automate the creation of financial analysis based on live data and use this to then provide automated prompts to the trader of live market-moving events.

Automated investor letters – Generative AI could be used to create investor letters quickly, which allows for creative nuance and novelty, while reducing the time and effort required to create from scratch.

Wealth managers

Personalized offerings – AI-enabled systems allow for deeper levels of personalization and wealth managers can use these systems to quickly build tailor-made offerings for clients using conversational-style language inputs and prompts.

Automated report generation – GenAI can be used to create meaningful reports about market trends for clients and investors quickly and easily. It could even take these financial reports and convert them into appropriate visualizations and charts, with the report text suitably customized for the intended audience to ensure the data and insights can be understood quickly by the recipient.

Accelerated decision making – With minimal human input, generative AI could analyze the balance sheets, income statements and other financial documents of companies to develop customized financial reports and assessments which wealth managers can use to make better informed decisions for their portfolios.

Insurers

Fraud detection – Generative AI technology can be trained to identify fraudulent insurance claims, thus minimizing losses via early detection of fraudulent behavior.

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Risk awareness – During the claims underwriting process, GenAI can be used to provide risk awareness, giving insurers powerful assessment tools to help decide on matters such as premium amount, term, etc.

Fintechs

Accelerated development – AI can increase developer productivity with text-to-code deployments, which streamline code development and shift focus to testing and improving product functionality, as well as reducing time to market for products.

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Cost-effective customer service chatbots – Smaller fintechs can offer first-line customer support via generative AI chatbots in a cost-effective manner, while still offering an elevated level of customer experience.

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Personal financial management (PFM) 2.0 – With financial data becoming more accessible by third parties securely due to regulations such as open banking and Payment Services Directive (PSD2), fintechs can aggregate financial data from other providers and use it to generate financial concierge-like services. For example, your personal financial management concierge could answer complex questions related to your finances or even securely move money at your request.

Many of these use cases are interchangeable across financial services sub-industries and as the AI market matures, we will undoubtedly find a cross-pollination of ideas from other industries reach the financial services industry. The extent to which the AI tools can solve real-world problems accurately will ultimately depend on the sophistication of the AI models being developed and the richness and robustness of the data being used to train them.

Art of the possible:
The future of GenAI
in financial services

The next five years will see an exponential use of generative AI creeping into our personal and professional lives. It will affect us in many ways, some of which we have yet to imagine.

As part of our personal lives, with financial services becoming ever more embedded and invisible in the tools, products and services around us, many of the GenAI uses of the future will be an amalgamation of various financial products intertwined with our daily living needs.

As GenAI systems get better at understanding and creating human-like language, their ability to perform complex tasks from natural language (such as creating developer code, interacting with customers and developing financial reports with data insights) gets increasingly closer to becoming a reality.

Some of the more futuristic ideas for generative AI are listed below and offer a glimpse of where the industry could progress. Many of these use cases depend on convergence and the maturation of other technologies such as the Internet of Things (IoT), open banking/open data, banking as a service (BaaS), embedded finance and blockchain/distributed ledger technology (DLT):

Sentient house – Managing a house is a bit like managing a business, with incomes (salaries, earnings, etc.), outgoings (bills, maintenance, etc.), stock (food inventory, household cleaning items, etc.) and resources (family members). All this information is rich in contextual data and can be used to optimize a household. Your house could have a central digital wallet and your stock of items, services and upkeep could be paid for from this wallet. GenAI could use all of this data predictively, from ensuring you regularly move to the most cost-effective utility prices, to making payments for services automatically – for example, your house could notify you when your boiler breaks down, contact a service engineer automatically, book a slot with them and pay them with your authority. This is dependent on cutting edge IoT and open data, but GenAI comes into play in a similar fashion to the PFM 2.0 "concierge" service – you could have your own generative AI "digital butler" which is overlaid across all of these services to help manage the household and its finances.

Digital soul – The generations born right now will have data on them from conception to death. The richness of a person's data will exist on various platforms and with the future adoption of open data standards, where data can be aggregated at an individual's request and a digital representation of that individual could be developed. Imagine the entirety of an individual's data being entered into a GenAI Large Language Model using data from their social accounts, financial products, health platforms, etc. You could have the "digital soul" of a loved one providing advice after they have passed away. This concept could extend to financially successful celebrity figures. For example, you could access your very own Warren Buffet "digital soul" AI, fed with all his trading strategies, book content, interviews, etc., which would be able to provide you with expert financial advice and wisdom from a simple voice command.

Ultra personalized health insurance premiums – With GenAI's increasing use in medical diagnosis and detection, insurance companies could, for example, use data from a customer's genetic testing to feed into specialized AI models to review genetics for likelihood of diseases. This insight could then be used to determine health insurance premiums. This theoretical usage ultimately comes with numerous ethical questions, but we already see health insurers using data from wearable devices to provide a similar service today.

Personalized Chief Financial Officer (CFO) for your business – Small and medium enterprises (SMEs) already struggle with the daily overheads of running a business. Imagine a digital CFO trained on a variety of accounting practices, financial strategies, regulations, etc., that is accessible via natural language to the SME. It could have access to the SME's accounts and provide robust financial direction and strategies to help the business with issues related to cash flow, tax management, etc. This concept could be replicated across the various C-suite personas – you could even have your own AI Chief People Officer advising on staffing matters.

Conclusion

Generative AI is here to stay – financial institutions are already seeing the benefits of using AI tools internally to improve processes and accelerate work output and externally to develop new product offerings and provide richer customer experiences for end-consumers.

For FIs to successfully utilize GenAI, they need to make the required investments into the technology, either by developing internal teams and securing expert resources to build AI-based products and services, or by partnering with third parties who can provide the capability as a service. FIs who partner with third parties should question them about the underlying training data, how inputs and outputs are moderated to retrain models, what safeguards are in place to minimize bad actors and what capabilities exist to fine tune models appropriately.

GenAI will have an impact on all parts of an organization. Because of this, FIs will need to take a top-down approach. Eventually, most large organizations will have a Chief AI Officer to set the standards and frameworks to fully leverage AI tools across the organization. Using this top-down approach, FIs will need to educate their employees on the safest, most practical ways to leverage generative AI tools in order to increase efficiency and minimize risks. AI builders who develop new AI tools, as well as the employees who use them, will need to be educated on best practices for the responsible use of AI.

FIS® is actively involved in using these technologies and we are exploring a variety of innovative use cases for our clients. The future of financial services is happening right now and it is an exciting time to be part of this developing technology.

FIS is closely weighing the benefits and risks of Gen AI. Since this is a rapidly evolving area of technology, law, data privacy and regulation, any solution we offer will consider these factors.

About FIS

FIS is a leading provider of technology solutions for financial institutions and businesses of all sizes and across any industry globally. We enable the movement of commerce by unlocking the financial technology that powers the world's economy. Our employees are dedicated to advancing the way the world pays, banks and invests through our trusted innovation, absolute performance and flexible architecture. We help our clients use technology in innovative ways to solve business-critical challenges and deliver superior experiences for their customers. Headquartered in Jacksonville, Florida, FIS ranks #241 on the 2021 Fortune 500 and is a member of Standard & Poor's 500® Index. To learn more, visit www.fisglobal.com. Follow FIS on Facebook, LinkedIn and Twitter (@FISGlobal).

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