

# Pre-trained Generative AI series

## Part 2 – GenAI in Financial Services

July 2023



In the [first article of the series](#)<sup>1</sup> we provided a comprehensive introduction to Generative AI (GenAI) technology, examining its evolution up to the present stage. There, we deliberated over various critical elements to bear in mind when implementing GenAI, along with its potential to revamp corporate operations.

Now, in our second article, we delve deeper into one specific sphere where this technology has a huge potential: the Financial Services sector. We aim to explore current use cases that are delivering real value, taking the existing state of the technology into consideration. Furthermore, we explain potential challenges that these corporations may face with emphasis on ethical issues, and the progression we anticipate for this technology in the years to come.

We are at a turnaround point, new models and companies will release solutions that we can't imagine, for broader use and tailored for specific use cases, while the regulators and the society are digesting the full potential of this technology.



### GenAI hats in FS: From front to back-office

In our first article, we explored some of the Customer Service use cases<sup>1</sup>. Now, we're diving into use cases within Financial Services, focusing on Finance, Regulatory, and IT functions



### Surfing the wave: Anticipating likely challenges

Early-stage technologies often introduce new challenges, from technology and regulatory constraints to uncertain, evolving pricing models



### Navigating the ethical dilemma

Ethical considerations are pivotal, both internally and externally. It is essential not only to deliberate the effects on our company but also to evaluate the impact beyond it



### Fast forward: The GenAI of the future

GenAI is already reshaping the world we live in, so what should we expect next? Predicting its future is uncertain, but it will undoubtedly be central to our daily lives

Footnote 1: Link to the first article in the series, 'The Rise of a New Star', on the Alvarez & Marsal website ([link](#))

# GenAI hats in FS: From front to back-office

In the rapidly evolving landscape of the financial services industry, technological advancements have brought about innovative changes, challenged traditional practices, and revolutionised the way businesses operate. From streamlining processes to enhancing customer experiences, the optimisation of various functions have emerged as a key driver for success.



## Technology

Many financial services companies have built their technology stacks on core platforms based on old programming languages that require specific knowledge and skills that are not only hard to find in the job market but also quite expensive. Furthermore, the spaghetti code that arises from these outdated languages leads to low scalability and difficulty in making changes, updates, or performing maintenance tasks on the code. This is primarily due to a lack of knowledge base or documentation, and understanding of the code itself and its dependencies. As a result, new additional code is written over existing code rather than modifying it to avoid potential issues.

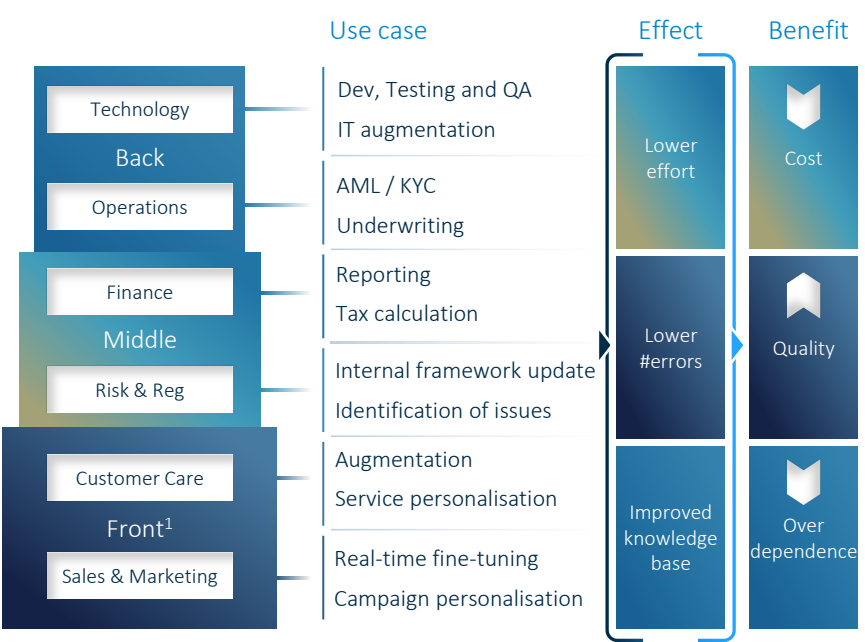
This inefficient and costly approach makes it difficult to migrate to more convenient and modern programming languages and negatively affects the go-to-market of new functionalities, products, and services, in turn directly impacting customer experience and the potential for acquiring new customers.

GenAI tools' functionality includes the comprehension and generation of code, thereby assisting with coding tasks in several ways. For example, they can:

- Identify where changes need to be made based on a prompt describing a new functionality, consider dependencies, generate the required code, and update the functional documentation.
- Answer specific questions about proprietary code, streamlining the onboarding process for new employees and reducing reliance on specialised skills.
- Automatically flag and contextualise code issues from IT support tickets, increasing the efficiency of Level 2 and 3 IT support teams.

By tailoring GenAI models to work with proprietary code of enterprise applications (e.g., core banking platforms), businesses can unlock immense potential for improving the scalability, security, and consistency of their proprietary platforms. This, in turn, positively impacts customers by streamlining time-to-market and enabling the development of products and services that were previously infeasible.

Moreover, this approach goes a step beyond what low-code apps attempted years ago: bringing the business closer to the IT function. With natural language prompts facilitating code modifications and a knowledge base that explains code in layman's terms, businesses can better interact with the technical aspects of FS institutions. This accessibility allows for more direct communication between business ops and the IT department, enhancing efficiency and fostering innovation.



Footnote 1: Use cases covered in the first article of the series [\(link\)](#)



## Operations

There are numerous operational processes in the financial services industry that can benefit from the implementation of GenAI. Some of the most critical and cost-intensive processes in the FS industry include information and documentation verification, financial analysis, and risk estimation—tasks which GenAI has demonstrated to be capable of. GenAI is able to identify inconsistencies and issues in information by comparing it to historical data or similar cases and reasoning based on its pretrained data.

Processes such as underwriting, Know Your Customer (KYC), and Anti-Money Laundering (AML) activities are good examples of areas where GenAI can be of significant benefit.

In addition, new services and business models can be unlocked driven by technology. The underwriting processes represent one example – through performance analysis to enhance estimation models and the integration of other technologies along with GenAI to process and assess vast amounts of data, it could facilitate more inclusive approaches (aka ‘serve-the-unserved’) relying on alternative factors such as payment history



## Finance

In their recent paper, OpenAI, OpenResearch, and the University of Pennsylvania<sup>1</sup> examined the potential impact of GenAI on various occupations. They identified roles such as Tax Preparers, Financial Quantitative Analysts, Accountants, and Auditors as being fully exposed to augmentation or automation by GenAI-based solutions. In this context, exposure refers to a reduction in the time needed to complete a task by at least 50%.

Financial institutions rely heavily on personnel in their finance functions, as maintaining a healthy balance sheet and minimising external and internal risks are critical to their businesses. Financial reporting, capital structure analysis, risk management, and liquidity management are some of the activities that could be augmented by LLM models. Although the technology is still in its early stages, it could be employed effectively under supervision to enhance the performance of finance functions.



## Regulatory

The financial services industry is a highly regulated sector that must adhere to numerous policies, regulations, and controls in order to prevent disruptions and maintain a robust framework that minimises financial, operational, and reputational risks.

Market developments, emerging technologies, and the introduction of new services and products often prompt regulatory changes which FS institutions must incorporate. Non-compliance can result in high risks for their customers, significant fines, and expenses associated with remediation efforts.

GenAI, fed with internal corporate guidelines, policies, and frameworks, as well as informed by current regulations (including proactive updates on new drafts and finalised regulations and guidelines), can support companies in ensuring compliance with their internal processes. GenAI can also identify necessary changes and their impacts on specific internal policies and guidelines when new regulations are introduced.

Moreover, GenAI can recommend supplementary monitoring controls and indicators and facilitate the periodic processing of these indicators. This enables the proactive identification of issues or required corrective actions, which in turn strengthens operations, minimises risks, avoids fines, and reduces expenses from efforts to address issues and red flags. By employing such an approach, financial services institutions can better navigate the complex landscape of industry regulations and maintain a strong compliance framework.

Footnote 1: [2303.10130] GPTs are GPTs: An Early Look at the Labor Market Impact Potential of Large Language Models (arxiv.org)

# Surfing the wave: Anticipating likely challenges

As businesses explore the potential of GenAI, it is crucial to be aware of the various challenges that come with the implementation of these early-stage solutions. There are considerations that should be considered to successfully integrate GenAI, while addressing relevant concerns and limitations.



*The sequence does not reflect any form of prioritisation or potential impact. It's essential to treat all challenges with equal importance.*

- **Evaluate customer-facing applications:** When working with an early-stage technology, it may be wise to rethink introducing it directly to customer-facing applications. Instead, carefully evaluate the balance between augmentation and automation to ensure that customers receive a consistent, seamless experience that aligns with corporate guidelines and brand identity. This is applicable to any other internal use case requiring supervision to ensure correct execution and avoid risks based on inaccurate or inappropriate outputs.
- **Address technological limitations:** Although promising, these technologies are not without constraints. Rather than relying on them as an all-in-one solution, consider the technology as a facilitator to streamline your processes. For example, tokens/words limitations might force companies to break down use cases into smaller (and more feasible) segments.
- **Keep cost projections in mind:** With a rapidly evolving landscape, estimating cost projections can be difficult. Moreover, token-based cost models make it hard to predict costs since the number of tokens used is difficult to estimate. To navigate this, embed monitoring tools to evaluate feasibility, utilise sandbox environments and cost-effective models for testing purposes, and incorporate maintenance, security, hosting, load balancing, recurrence, and other technological costs. See our previous article<sup>1</sup>.
- **Stay current with regulations:** As regulations for emerging technologies are still a work in progress, keep up to date with CMA, FCA, EU AI Act., OECD recommendations, as well as local regulators, and incorporate these into the design process.
- **Evaluate service level agreements (SLAs) and protect your data:** Some GenAI market solutions may not provide adequate SLAs or have issues related to data privacy and security. To mitigate these risks, consider cloud provider models that leverage their existing SLAs and security frameworks.
- **Address ethical implications:** As with any AI solution, ethical considerations should not be overlooked. Identify potential risks and impacts and create a mitigation plan that addresses these concerns responsibly.

By adopting early-stage technologies such as GenAI, businesses can gain substantial value. However, it is crucial to address the various challenges and limitations that come with their implementation. By carefully considering these factors and integrating solutions that align with company goals and values, businesses can better position themselves for long-term success in the evolving world of AI.

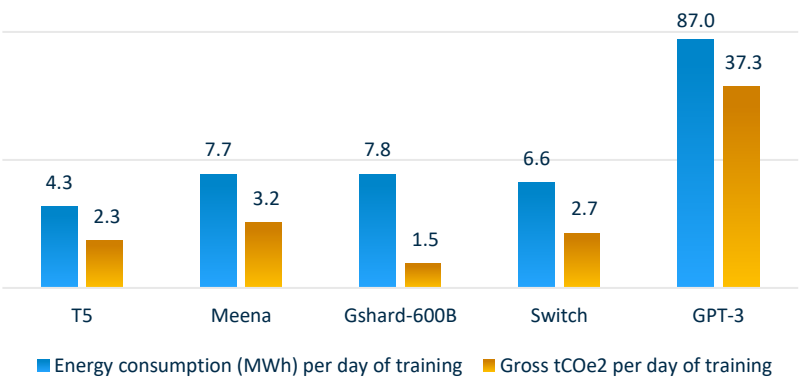
Footnote 1: Link to the first article in the series, 'The Rise of a New Star', on the Alvarez & Marsal website ([link](#))

## Navigating the ethical dilemma

While GenAI holds great potential for improving efficiency, creativity, and innovation, it also raises several ethical considerations that need to be addressed including labour impact, energy consumption, intellectual property concerns, transparency, and the potential risk of "evil AI":

- Energy Consumption:** Generative AI models, particularly large-scale models, require significant amounts of computational power and energy, leading to increased carbon emissions. As we strive to balance the potential benefits of AI with the global need to combat climate change, policymakers and businesses must address the environmental impact of AI deployment. One approach to mitigate energy consumption is to invest in AI-driven solutions that improve energy efficiency and seek renewable energy sources to power data centres.

Energy consumption and gross tCO2e per training day, per model (logarithmic scale)<sup>1</sup>



Considering the average annual CO2 equivalent emissions per person in the EU, which was 7.8 tCO2e in 2021, it's remarkable to note that the emissions per training day from GPT-3 equal that of 5 people's annual emissions. Further, this model functions with 10 to 1000 times fewer parameters than its successor, GPT-4

- Intellectual Property and Pre-Training:** Generative AI models rely on vast datasets for training, which often includes copyrighted material and personal data. This raises questions about data privacy, informed consent, and intellectual property rights. How can artists, authors, and other creators ensure their work is respected and rewarded when AI-generated content is derived from their creations? Policies that protect intellectual property rights while promoting innovation in AI are critical.
- Transparency of AI Use:** The use of Generative AI can lead to instances where it is difficult to distinguish between human-generated and AI-generated content. This may result in the manipulation of information, fake news and deepfakes, for example. Transparency in the use of AI is paramount in ensuring public trust and the integrity of information. Establishing clear guidelines, industry standards and regulations concerning AI-generated content will be key to maintaining transparency in its use.
- Evil AI:** The potential risks associated with the malicious use of Generative AI, such as autonomous weapons or mass surveillance systems, must be confronted. It is crucial to establish regulatory frameworks that prevent the nefarious use of this powerful technology; international cooperation and dialogue are central to addressing these challenges and ensuring the development of AI technologies remains ethically responsible.

Understanding and addressing the various ethical considerations of GenAI is critical for its responsible development and implementation. By acknowledging potential ethical issues, we can ensure that AI progresses in a manner that aligns with our fundamental values and promotes societal well-being.

Stakeholders, including governments, businesses, academia, and society, must collaborate to navigate these ethical conversations and contribute to a fair, sustainable, and innovative future driven by AI technology.

Footnote 1: [2104.10350] Carbon Emissions and Large Neural Network Training (arxiv.org)


## Fast forward: The GenAI of the future


Much like the Industrial Revolution and the birth of the Internet, GenAI promises to fundamentally alter the world as we know it. By analysing the impact of these historical milestones, we can take important insights into how best to navigate the shifts brought forth by GenAI. Jobs will be redefined, industries will emerge, and societies will be forced to adapt to a new technological reality that will demand ethical considerations and responsible actions.


The impact of GenAI in the next five to ten years cannot be accurately predicted, but it will undoubtedly be embedded in our everyday lives, revolutionising how we search for, access, and use data. It will also transform the way we interact with devices and how we carry out our routine activities.


As it continues to permeate our lives, it is important to recognise its potential and aim to support its development in a manner that promotes environmental sustainability, responsible regulation, and bias control. The coming AI revolution will carry considerable implications, and how we navigate those changes will determine our future as individuals and as a society.

There are several factors that might have a direct impact on the evolution of GenAI in coming years:

 **Better prepared**  
Regulating the AI revolution

 **Smartest**  
Unleashing more data sources

 **Mightier**  
Computational power explosion

 **Greener**  
A more sustainable future

- **Regulating the AI revolution:** The rapid development of Generative AI has raised the question about the need for a global regulatory framework. To avoid repeating the mistakes made during the early control of the Internet, it is crucial to establish guidelines that prevent misuse and protect user privacy while still fostering innovation. Governments and industries will work closely to create legislation that responds to the potential challenges presented by expansive AI-driven applications while ensuring that it remains beneficial and accessible to all.
- **Unleashing more data sources:** As GenAI continues to thrive, there will be a significant increase in the variety and quality of data sources being utilised. Beyond text, images, and voice data, researchers will tap into vast resources of new data sources and types (video, voice, sensory, etc.). In the coming years, AI-generated data will become more diverse and realistic, enhancing the overall user experience, and providing a plethora of new AI applications across industries.
- **Computational power explosion:** GenAI has already shown impressive capabilities, yet its potential is not fully realised due to limitations in computational power. However, the next decade will witness exponential development in processing power, allowing for complex, large-scale GenAI models to be trained more efficiently. Quantum computing advancements will also play a pivotal role in this transformation, enabling AI systems to tackle previously insurmountable problems and expand their realm of influence.
- **A more sustainable future:** GenAI requires high amounts of energy to perform, and broader adoption could have CO2 emissions and sustainability implications. We will see a push for greener, sustainable energy sources that will be increasingly vital for the adoption of this technologies by corporates. On the flip side, GenAI has also the potential to contribute significantly to this are – by optimising energy usage, designing more efficient energy systems, and creating new methods for renewable energy production. As smart grids and intelligent energy management systems become more advanced, GenAI will be critical in ensuring an eco-friendlier future in the next five to ten years.

By adopting early-stage technologies such as GenAI, businesses can gain substantial value. However, it is crucial to address the various challenges and limitations that come with their implementation. By carefully considering these factors and integrating solutions that align with company goals and values, businesses can better position themselves for long-term success in the evolving world of AI.



# Our bottom line: Immense potential... with thoughtful approach

The advent of Generative AI represents a new frontier in the evolution of artificial intelligence, unlocking immense potential across industries. As outlined in this article, GenAI applications hold particular promise for the financial services sector by optimising operations, enhancing customer experiences, and enabling new innovative offerings.

However, to fully realise these benefits, financial institutions must thoughtfully navigate GenAI's integration across core functions like technology, regulatory compliance, and finance. A measured, supervised approach is prudent, given the early stage status of these tools. Testing feasibility in lower-risk applications first allows for evaluation before direct customer-facing deployment.

Moreover, GenAI's constraints around data privacy, security, cost and transparency must be weighed, in addition to larger ethical implications on issues like job displacement and carbon footprint. Financial services players, in collaboration with governments, businesses, academia and society, have a key role to play in developing appropriate regulations and policies that foster GenAI's responsible growth.

Looking ahead, GenAI's expansion over the next decade will fundamentally reshape industries and society. We must proactively prepare for its socioeconomic impacts and harness its potential to create a more equitable, sustainable future.

With sound governance and collective vision, GenAI can transform financial services in innovative ways that serve both shareholders and the overall society.

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