

**OPENAI:
UNDERSTANDING THE
ADVANTAGES
AND
DISADVANTAGES OF
THIS TECH
REVOLUTION FOR
THE FINANCIAL
SECTOR**



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OpenAI
NEW REPORT

Investment Banking Division

OpenAI: Understanding the Advantages and Disadvantages of this Tech Revolution for the Financial Sector

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1. Introduction

This study gives a general overview of OpenAI, the cutting-edge firm that unveiled ChatGPT, an AI chatbot designed for a variety of applications. We examine the company and the industry it competes in extensively in our report. Then, using our research on the financial sector, we highlight potential benefits and drawbacks stemming from this technology. Finally, we talk about the several ways that chatbots like ChatGPT might be applied to the banking industry and try to understand what the future may hold.

1.1 The 5th industrial revolution and the rise of OpenAI

The so-called 'fifth industrial revolution' is the latest approach to the development and integration of new technologies in modern industries, that broadens the preceding (fourth industrial revolution) approach regarding modern AI tools, advanced automatization processes, and their industrial applications, conferring to those a more ethical and human-oriented direction.

The European Commission implemented in 2021 some guidelines for the evolution of Industry 5.0, hinting towards attempting to "build a more human-centric, sustainable and resilient European industry", shifting the perspective from solely productivity-driven goals to more comprehensive contributions to society's development. Japan has also set its attention to this, as far back as 2016.

The field of artificial intelligence has been heavily invested in, by various players of the financial markets, mainly venture capital companies and innovation-focused funds such as Ark Invest, as well as startups (DeepMind) and established players of the tech sector, such as Google and Microsoft. Various industries, with the banking and financial sector in the lead, have also developed various tools specifically tailored to their needs, integrating them into the day-to-day operations or researching possible applications.

Above all, the outstanding company of this industrial phase has been, so far, the American-based OpenAI, which has recently initiated a long-term partnership with tech giant Microsoft.

Let's dig in a little deeper: OpenAI was founded in 2015 by a team of tech entrepreneurs, featuring, among others, billionaires Elon Musk and Peter Thiel, initially starting as a non-profit company. Its mission vows to "ensure that artificial general intelligence works for, and not against, humanity".

It launched the first public program, Universe, at the end of 2016, as a software base to train its artificial intelligence; in 2019 it transitioned to a for-profit company, announcing the beginning of its partnership with Microsoft, with an initial investment of a billion dollars.

Its prominent product is the online chatbot ChatGPT, now available in its latest version of ChatGPT4. It consists of highly advanced artificial intelligence that has gained immense popularity in a record time (it has reached 100 million users in just 2 months, far less than other groundbreaking platforms such as Facebook, Youtube, Instagram, Google, etc.), thanks to its ability to perform complex tasks and highly personalized requests, and it was even capable of scoring excellent results in the SATs, high enough to be admitted into Harvard, one of the most prestigious universities in the world.

Recently, OpenAI has launched a premium service for ChatGPT (ChatGPT Plus, initially available only for the US market), that for \$20 per month guarantees optimal performances even during peak hours and preferential access to new features and improvements. It plans to incorporate another, lower-cost package soon, alongside specific offers for businesses and several other plans, in order to broaden its paying customer



base. Nevertheless, the American company specifies that the free version of its popular chatbot is not going anywhere and that fees from paying users will be used to fund the free service.

1.2 OpenAI Financials

Company Valuation. OpenAI has reportedly raised \$13 billion so far just from Microsoft, with an estimated valuation of around \$29 billion. This investment is expected to exploit synergies between those two companies, especially between their generative AI chatbots, as well as their application to Microsoft Office.

Moreover, it has gone through 7 funding rounds, raising money from prominent funds such as:

- Tiger Global Management
- Thrive Capital
- Sequoia Capital
- K2 Global
- Founders Fund
- Andreessen Horowitz

Revenues. The company generated revenues in the range of tens of millions of dollars in 2022, a number low given its costs. However, according to recent pitches to investors, OpenAI is expecting its revenue to grow to \$200 million in 2023, and \$1 billion in 2024.

Cost base. Even though information on the company's cost base is limited, it appears that just the use of ChatGPT costs OpenAI around \$700,000 per day, not considering other expenses such as salaries, rent, and many more. It was estimated that the company made a loss of \$540 million in 2022, a number considerably high, taking into account that the expected revenues in 2023 are less than half that amount, sitting at \$200 million.

2. The AI industry

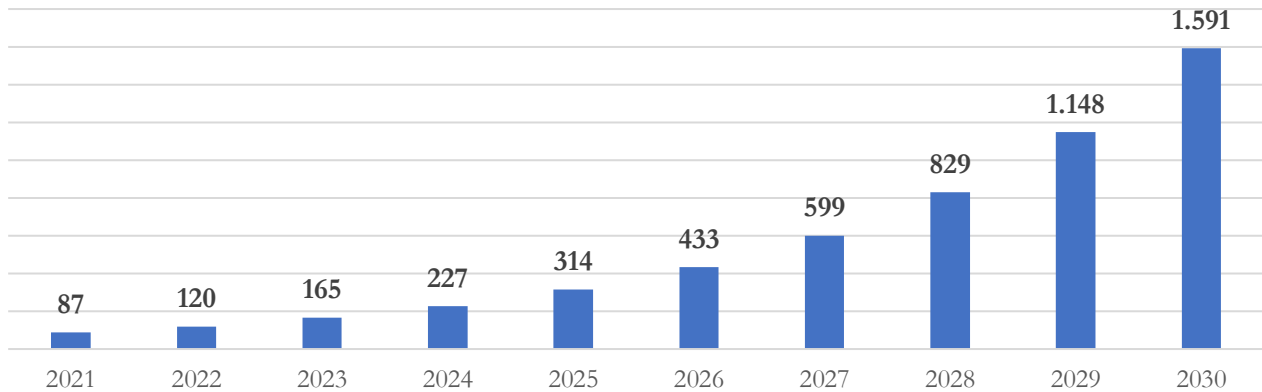
Artificial intelligence -in its developed form- is a relatively new field, that has gone through many ups and downs in the past decades. However, the launch of ChatGPT by OpenAI in 2022 revolutionized the sector as we know it, drew a lot of public attention, and raised significant questions regarding its future.

2.1 Growth rate and market size

The AI industry is among the fastest growing in the world, with an expected compound annual growth rate (CAGR) of 38.1% annually up until 2030. Specifically, it is expected to grow from \$119.78 billion in 2022 to \$1,591.03 billion in 2030.



AI Industry Market Size, 2021 to 2030 (USD Billion)



Source: Precedence Research

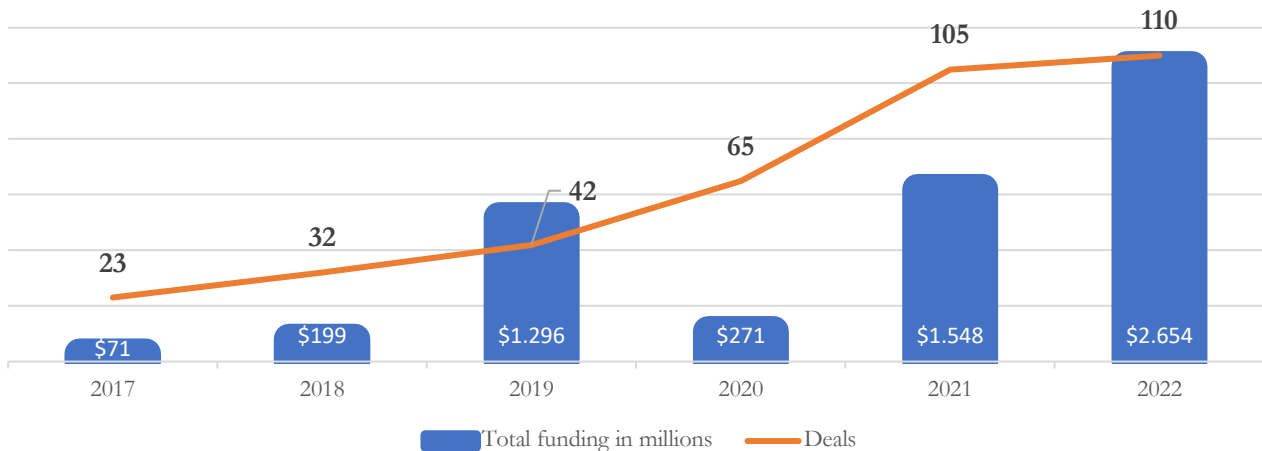
2.2 Competition

Given the broad nature of the Artificial Intelligence industry, it is wise to consider only direct competitors, companies with similar products to OpenAI. The launch of ChatGPT brought on a series of investments that created many different generative chatbots. The most prominent ones:

- Microsoft Bing AI
- Google Bard
- Chatsonic

AI is an industry that -as broad as it is- can impose high costs that might deter new entrants. As a result, many big businesses—including OpenAI's immediate rivals Microsoft and Google—are dominating the market. However, a significant amount of capital has been invested in AI startups due to the high predicted growth rate and benefits of the technology, with venture capital firms expressing a strong interest.

Investor interest in generative AI soared in 2022



Source: CB Insights



3. How can OpenAI improve the financial sector?

In November 2022, ChatGPT officially launched in the United States and quickly gained attention for its potential use in modern society. The finance industry, in particular, has displayed significant interest in this new technology. It is worth considering why banks have shown such immense interest in AI and what benefits this technology can offer the industry. AI has the potential to enhance efficiency, decision-making, customer experience, and fraud detection in the finance industry. Therefore, it can provide new tools for banks to remain competitive and thrive in an ever-changing market, who have often been at the forefront of adopting cutting-edge technology to provide better customer service and meet compliance requirements.

3.1 Finance applications of ChatGPT

Although ChatGPT isn't perfect yet, its technology can be used to assist the finance industry in many ways:

- **Customer service**, implementing a fast and self-learning robot to assist customers with basic needs will lead to a more pleasant and efficient customer experience, leaving human operators to act only where the AI cannot help with.
- **Automation**, faster and better due diligence and communication within the firm. AI can be used to draft deals, send personalized emails to customers, and run due diligence.
- **Informed decision-making**, although ChatGPT technology is not ready to process much financial data in a short period of time, in the future it could assist decision-makers within companies to make decisions faster based on real-life data.
- **Marketing**, ChatGPT can be trained to recognize and analyze customers' behavioral data and preferences, allowing marketing managers to better individuate the right campaign.
- **KYC and AML**, Know Your Customer (KYC) and Anti-Money Laundering (AML) are essential for banks and financial institutions to avoid financial crimes and to comply with regulations. ChatGPT can automatize this process by analyzing individual purchasing history and transactions while also being able to be used to verify customer identity.
- **Personalized Financial Planning**, important financial institutions also provide wealth management services for their clients, which however have different goals and needs. ChatGPT can be used to evaluate personalized planning for each client, based on the goals and risks that it received as an input.
- **Loan Origination**, the process of loan origination requires time, as a lot of customer data must be analyzed. ChatGPT can be used to automate this process, collecting data and running it on its own, providing for each customer's credit score and associated risks.

3.2 OpenAI x Citadel

The potential benefits mentioned above already attracted firms operating in the financial and consulting sectors, with the finance industry being shocked to learn that Citadel, one of the biggest hedge funds and financial institutions around the world, reached an agreement with OpenAI to license



ChatGPT to adopt its use in its everyday working operations. As the technology is far from perfect, Citadel is now trying to "teach" ChatGPT to analyze many articles and social media posts almost instantaneously, to receive insightful information before its competitors and thus anticipate the market.

3.3 OpenAI x Bain & Company

In the same spirit, Bain & Company, a world-leading consulting company, has announced its partnership with OpenAI as well. Bain & Company's top management has announced this partnership with great enthusiasm, as they believe that ChatGPT could help them, and therefore their client, to reach their goal through the use of such technology. Over the past year, Bain has embedded OpenAI technologies within its internal knowledge management systems, research, and processes – helping to both improve its efficiency and help it understand how to do the same for its clients. This partnership has already attracted public attention, as the implementation from a consulting company of such technology enables many other companies to test ChatGPT through a consulting project. For instance, Coca-Cola was the first company to engage in the services provided by Bain in collaboration with OpenAI.

4. What is holding companies back from implementing ChatGPT into their operations?

The emergence of generative AI has the potential to negatively impact the market. As machines become capable of replacing human workers in specific tasks, it could lead to job displacement for workers in relevant processes, as well as render some companies and business models obsolete. For example, AI's ability to analyze numbers and write code could impact programmers in the tech industry, which is already downsizing to optimize costs. Likewise, the ability to generate text might put jobs such as customer service at risk. Microsoft's Dynamics 365 Copilot is said to be able to draft contextual responses to customer queries, write product listings, and more.

4.1 Potential risks of AI within the finance industry

Nevertheless, generative AI is not 100% accurate. It is prone to "hallucinating" - being confidently incorrect due to a lack of data or a mistake in the generation process. Because of this, AI will not yet replace jobs entirely. Instead, it will be used to augment existing jobs and automate menial tasks, freeing time for workers to do more advanced assignments. But even then, it is very expensive to deploy, which further limits its uptake. The high costs of cloud computing and hardware mean that it may not be easily commercialized. There is also the problem of running into the risk of plagiarism and copyright infringement, as AI tools often repeat or rephrase data sourced on the internet, which might not be of free use.

Additionally, when new data is inputted into a generative AI system, it becomes part of its repository and makes it public to other users. This is a major data security risk. AI tool providers will understandably have to ensure that all information is self-contained in each organization and isn't shared with the rest of the world. Otherwise, it could lead to data leaks and violate the EU's GDPR (General Data Protection



Regulation). Without that, this technology could have broad-based implications for cybersecurity, particularly for email security, identity security, and threat detection.

The financial sector faces even more problems when using AI generative technology. One of them is bias, such as Zip code bias. Even though lenders are already subject to rules that aim to minimize adverse impacts based on bias, historical data is full of inequalities. Hence, machine-learned AI could codify and magnify them in automated lending decisions like unfair credit, loans, and insurance. When judgments are made by algorithms, these transgressions can occur even without intent or knowledge. Furthermore, laws like GDPR require explanations of certain decisions, which means that financial institutions must strive to understand how the AI models reach their results. They must also be understandable for auditors and financial officers inside the company. Yet the field of explainable AI is still developing, and we cannot be always sure how the models reach their conclusions.

4.2 OpenAI x Banks

Because of all the risks and obstacles connected to generative AI, various banks and financial institutions are still hesitant when it comes to incorporating the technology. Bank of America, Citigroup, Goldman Sachs, JPMorgan, Deutsche Bank, and Wells Fargo banned or restricted the use of ChatGPT as a part of their controls around third-party software. The limitations came amid concerns that sensitive data could be shared with the chatbot, such as regulatory documents and earning reports that the staff was summarizing with ChatGPT. In a highly regulated, systemically important sector like finance, companies must proceed carefully with the powerful capabilities of generative AI, so it is not surprising that the banks come crashing down on OpenAI's projects in order to ensure compliance with regulations and keep stakeholders' trust.

5. What does the future of banking look like?

Banking is at a pivotal moment. Artificial intelligence technology disruption is laying the basis for a new S-curve for banking business models, and the COVID-19 pandemic has accelerated these trends. OpenAI, in particular, has emerged as a key player in this transformation.

As the financial world becomes increasingly complex, the need for advanced tools that manage and analyze vast data sets to support strategic decision-making has become paramount. OpenAI's cutting-edge machine learning models and algorithms, which are becoming increasingly sophisticated, could provide a solution to this challenge.

Historically, customer relationship management (CRM) platforms have been unable to process unstructured data, meaning that a vast volume of insightful information remained unused, to the detriment of the firms that held it. AI in investment banking can help derive value from it.

Natural language processing (NLP) and machine learning (ML) have the potential to process unstructured data and extract information that was previously inaccessible. This, in turn, could facilitate the personalization of marketing campaigns, enhance customer service, and lead to the development of new products and services that cater to the evolving needs of customers.



In addition, the implementation of OpenAI would enable banks to offer propositions and experiences that are intelligent (that is, recommending actions, anticipating and automating key decisions or tasks), personalized (that is, based on a detailed understanding of customers' past behavior and context), and omnichannel (seamlessly spanning the physical and online contexts across multiple devices).

Moreover, OpenAI technology has the potential to radically transform the landscape of risk management strategies and fraud detection, two critical components of investment banking. In particular, the continuous development of state-of-the-art OpenAI models could enable banks to analyze extensive data sets in real-time, identifying patterns and trends that may signal potential risk with unprecedented speed and accuracy.

To cite an example, such technology could be used to monitor credit default swaps, analyzing historical data and market trends to predict the likelihood of a borrower's default.

Consequently, investment banks would significantly reduce the probability of financial losses, thus enhancing market stability.

Another domain where OpenAI's technology can make a massive impact is in the optimization of trading strategies and portfolio management. By analyzing market data using AI-powered algorithms, it would be possible to identify trends and patterns that may be arduous and time-consuming for human traders to detect. This is due to the advanced machine learning models developed by OpenAI, which possess an increased ability to analyze historical data and market trends, thus enabling the identification of optimal trading strategies and their real-time adjustment.

For instance, a practical illustration of the aforementioned lies in the possibility to implement OpenAI's technology to develop dynamic trading algorithms. Such algorithms can adjust their strategy in response to real-time market data, including but not limited to stock price fluctuations and changes in market sentiment.

6. Conclusion

The prospects of OpenAI in the investment banking industry are significantly promising. However, the successful integration of OpenAI's technology will also require a careful balance of innovation and responsible use. Hence, regulatory and ethical considerations will also play a crucial role in shaping the future of OpenAI's involvement in investment banking. Ensuring the responsible and transparent use of AI technologies will be paramount to maintaining trust and fostering a new area of growth, innovation, and opportunity within the sector.



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