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Article

What will ChatGPT revolutionize in the financial industry?

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Abstract: The launch of the open AI chatbot, ChatGPT, in November 2022 has generated widespread excitement around Generative Artificial Intelligence (AI). While researchers have explored ChatGPT's ability to produce content and respond to input, our study takes a different approach and examines its use cases in the financial industry. We aim to understand what ChatGPT offers the financial industry and how it differs from existing banking and financial chatbots. Financial institutions can use ChatGPT for a variety of purposes, including customer engagement, personalization, up-selling and cross-selling, stock forecasting, product development, and financial education. By focusing on the potential of ChatGPT in finance, we hope to spark discussions about its applications in other domains and explore the possibilities of a larger revolution in the future. Finally, this study identifies the challenges associated with the use of Generative Open AI and LLMs-based chatbots in the financial industry and provides recommendations for addressing these challenges.

Keywords: ChatGPT, Finance, Open AI, Marketing

1. Introduction

Due to its high popularity and usage, ChatGPT became a hot topic at the recent World Economic Forum (WEF) in 2023. Attendees debated the pros and cons of ChatGPT for the financial industry. Tech giants from Accenture, IBM, and Qualcomm, who participated in a panel discussion on technology for a resilient world, considered the emergence of ChatGPT and explored its use cases and impact on society and business (World Economic Forum, 2023b). In a session at the Annual Meeting in Davos, Satya Nadella, Chairman and CEO of Microsoft, told Klaus Schwab, Founder and Executive Chairman of the WEF, "A golden age of AI is underway and will redefine work as we know it" (World Economic Forum, 2023a). Technology and venture capital firms are planning for this generative AI technology and ChatGPT. For example, Microsoft is reportedly planning to invest $10 billion in the technology behind ChatGPT (BW Businessworld, 2023).

We aim to understand what ChatGPT offers to the financial industry, its impact, and how it differs from existing banking and financial chatbots in functioning and addressing possible challenges such as cybersecurity and regulations. Our findings show that ChatGPT has a great potential impact on the financial industry in terms of improved decision-making, enhanced efficiency, increased customer experience, and transparency. Financial institutions can use ChatGPT for different purposes such as marketing, customer engagement, personalization, upselling and cross-selling of products, stock predictions, financial data analysis, portfolio management, risk management, product development, and financial education. Moreover, with the development of an in-house ChatGPT version we can mitigate the possible risks of data inaccuracies, cybersecurity, and biases. Some studies have investigated the particular application and use of ChatGPT in the financial industry. Lopez-Lira & Tang (2023) evaluated the ability of ChatGPT to predict stock prices, and Hansen & Kazinnik (2023) used ChatGPT to decipher technical language (Fedspeak) used by the Federal Reserve. These studies do not provide a holistic picture of the potential impact and other use cases of ChatGPT in the financial industry. They do

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not discuss the difference between ChatGPT and existing financial chatbots or highlight the challenges of using ChatGPT in the financial industry.

Thus, the paper contributes to the literature in a way; firstly, it gives an exhaustive picture of the potential functions and uses of ChatGPT in the financial industry and discusses its impact. Secondly, it also outlines how ChatGPT can be used to deal with the issues of cybersecurity and regulations. Thirdly, our paper identifies the challenges associated with utilizing Generative Open AI and LLMs-based chatbots in the financial industry and provides recommendations for addressing these challenges. Overall, our study offers insights into the potential applications of ChatGPT in the financial industry and lays the groundwork for future research in this area.

The subsequent sections of this paper are structured as follows: Section two lays the study's theoretical foundation by providing a brief history of generative AI and a comprehensive overview of studies conducted on ChatGPT from various perspectives, providing a multi-dimensional analysis. Section three covers the discussion on existing chatbots in the financial industry. Section four outlines the methodology employed in this study, which involves utilizing input prompts to elicit responses from ChatGPT. The fifth section discusses the outputs generated by ChatGPT and provides a critical analysis of these outputs. The sixth section outlines the challenges of utilizing Generative Open AI and LLMs-based chatbots in the financial industry. Finally, the last section summarizes the paper's key findings and provides recommendations for future research in this area.

2. Theoretical Foundations

2.1. Advent of New Era of Generative AI

Chatbots, also known as conversational agents, are computer programs that are designed to simulate conversation with human users. The history of chatbots dates back to the 1960s when the concept of artificial intelligence (AI) first emerged. One of the earliest chatbot programs was ELIZA, developed in the 1960s by computer scientist Joseph Weizenbaum at MIT. ELIZA was designed to simulate a therapist and was based on pattern matching and natural language processing (Switzky, 2020). In the 1970s, other early chatbot programs were developed, including PARRY, designed to simulate a paranoid patient, and Racter, one of the first chatbots to be commercialized. In the 1990s, the development of the Internet and the World Wide Web led to a renewed interest in chatbots (Adamopoulou & Moussiades, 2020). This period saw the emergence of web-based chatbots designed to provide customer service and support on websites.

In the 2000s, natural language processing and machine learning advances led to more advanced chatbots, which could understand and respond to more complex human inputs. Today, chatbots are used in various industries, from customer service and e-commerce to healthcare and finance. They are also increasingly being integrated into messaging platforms, such as Facebook Messenger and WhatsApp, and virtual assistants, such as Amazon's Alexa and Google Assistant. The history of chatbots has been long and varied, starting with simple programs that could only respond to a limited set of inputs to advanced Generative AI-powered chatbots that can understand and respond to a wide range of human inputs. ChatGPT is the latest and most powerful open AI chatbot, released in November 2022, and is available to everyone. ChatGPT is based on a Large Language Model (LLM) and has more than 175 billion communication parameters, making this AI chatbot stronger than all existing chatbots. ChatGPT helps respond to queries, predict conversation behavior, and create a unique engagement experience. A study claimed that this chatbot is a multitalented tool as it does not only provide you with the answer to a particular query. It also asks follow-up questions to give more clarified answers. The authors tested ChatGPT by asking complex programming-related puzzle-based questions such as to Spotify the errors in the code. They reveal that it took only 3 minutes for ChatGPT to accurately highlight and spot the mistakes that solved the programming problem immediately (Chatterjee & Dethlefs, 2023).

2.2. A Brief Review of Studies on ChatGPT

After the advent of ChatGPT in November 2022, the number of studies on ChatGPT is increasing. The majority of the research focuses on writing abstracts and literature reviews and comparing the output of ChatGPT from human writing in general (Adriani, 2018; Gao et al., 2023) and in different disciplines such as education (Zhai, 2023), healthcare, medicine & biological sciences (Aydın & Karaarslan, 2022; Cahan & Treutlein, 2023; Mann, 2023), law (ChatGPT & Perlman, 2022; Choi et al., 2023). A comparative study on the knowledge and ability of interpretation between ChatGPT and medical students was done in South Korea. They did a comparison by administrating the exam of Parasitology to both medical students and ChatGPT. They found that medical students perform better in knowledge and interpretation ability in the examination than ChatGPT. One observation was that there was a relationship between correct answers to knowledge questions and acceptable explanations (Huh, 2023). Other studies used the same approach but focused on fields such as law (Bommarito & Katz, 2023). Choi et al. (Choi et al., 2023) examined using an AI model, ChatGPT, to generate answers on actual law school exams at the University of Minnesota Law School. The results indicate that ChatGPT performed on average at the level of a C+ student, achieving a passing grade in all four courses. The study highlighted the potential of AI models to assist with legal writing and provided example prompts and advice for their use. Katz et al. (2023) provide an experimental evaluation of the zero-shot performance of GPT-4, a preliminary version of the GPT language model, on the entire Uniform Bar Examination (UBE), which includes the Multistate Bar Examination (MBE), the Multistate Essay Exam (MEE), and the Multistate Performance Test (MPT). The study reports that GPT-4 significantly outperforms both human test-takers and prior models on the MBE, achieving a 26% increase over ChatGPT and beating humans in five of seven subject areas. Additionally, the study evaluates the MEE and MPT components, which scholars have not previously evaluated, and finds that GPT-4 scores significantly higher than ChatGPT. GPT-4 scores approximately 297 points across all UBE components, exceeding the passing threshold for all UBE jurisdictions. These findings highlight the potential for large language models to support the delivery of legal services in society and demonstrate the remarkable advance of language model performance.

ChatGPT is a gold coin for students, regardless of discipline and field. This open AI chatbot provides exhaustive answers to queries, and the quality of responses has been recorded to a high acceptance rate. One of the great excitement for students using ChatGPT is that any plagiarism checker software such as Turnitin has not captured the provided answers. This is a point of worry for academicians, especially for teachers. A significant impact will be seen on online exams, especially exams from home rather than online exams in a formal setting where there is the possibility to avoid cheating through ChatGPT. A set of studies discusses the exam integrity and challenges for universities in detecting plagiarism from essays produced by ChatGPT (Adriani, 2018; Armstrong, 2023; Hsu, 2023; Ryznar, 2020). There is a study on the ethical dimensions of using ChatGPT in academic writing (Jabotinsky & Sarel, 2022).

There is another set of studies done based on the conversation with ChatGPT on different topics such as biological stem cells (Cahan & Treutlein, 2023), law (Choi et al., 2023), psychology (Uludag, 2023), and computer science (Chatterjee & Dethlefs, 2023).

A study on ChatGPT for finance research uses writing an entire paper rather than focusing on abstract writing and literature review. The study found apparent advantages of using ChatGPT regarding idea generation and data identification. Still, this chatbot is weaker in producing a comprehensive literature review and developing an efficient and suitable testing framework (Dowling & Lucey, 2023). In another study on the potential applications of Natural Language Processing (NLPs) in finance, authors used ChatGPT for writing the whole paper. Later, they only organized and structured the paper (Zaremba & Demir, 2023). According to Geerling et al. (2023), ChatGPT demonstrates high proficiency in macroeconomics, achieving 86.7% on the Test of Understanding in College Economics (TUCE), a standardized exam assessing economics knowledge. One more

study was done to analyze the output of ChatGPT on crowdfunding, alternative finance, and community finance and then compare them with academic writings (Wenzlaff & Spaeth, 2022). Lopez-Lira and Tang (2023) assess the capability of Generative Pre-training Transformer (GPT) models in decoding Fedspeak - the technical jargon used by the Federal Reserve for communicating monetary policy decisions. Our investigation includes evaluating the GPT models' capacity for classifying the policy stance of Federal Open Market Committee (FOMC) announcements compared to a human classification benchmark. Results indicate that GPT models outperform other commonly used classification techniques.

3. Existing Chatbots in the Financial Industry

Chatbots in the finance industry are AI-powered virtual assistants that interact with customers via text or voice and provide financial services. These chatbots can help banks and other financial institutions offer 24/7 customer service, automate repetitive tasks, and improve the customer experience. Some typical applications of chatbots in finance include account management, customer service, and investment advice. Overall, chatbots in finance help companies reduce costs, improve efficiency, and enhance the customer experience. These are just a few examples of how chatbots are used in the financial industry to provide customers with convenient and efficient services.

1. HSBC's Amelia: A virtual assistant who can help customers with account management, money transfers, and investment advice.
2. Chase's COiN: A chatbot that helps customers with account inquiries, card activation, and fraud alerts.
3. Citi's virtual assistant: A chatbot that helps customers with account management, balance inquiries, and bill payments.
4. Bank of America's Erica: A virtual financial assistant that helps customers manage their accounts, pay bills, and plan budgets.
5. Capital One's Eno: A chatbot that helps customers check account balances, view transactions, and receive fraud alerts.
6. Ally Assist: A virtual assistant offered by Ally Bank that helps customers with account management, bill payments, and investment advice.
7. TD Ameritrade's AI-powered chatbot: A virtual assistant that provides real-time market insights and investment recommendations.
8. American Express's virtual assistant: A chatbot that helps cardholders manage their accounts, track rewards, and get customer service.
9. Fidelity's virtual assistant: A chatbot that helps customers with investment advice, account management, and research.

Existing banking and financial chatbots have several limitations that can impact their effectiveness in improving customer service and automating tasks. Firstly, these chatbots often lack sophisticated natural language processing capabilities, resulting in inaccurate or irrelevant responses to customer queries (Rese et al., 2020). Secondly, they often have limited functionality, limiting their ability to perform complex tasks and provide comprehensive financial advice (Mogaji et al., 2021). Additionally, they may not be able to handle sensitive or confidential information securely, which can pose a risk to customers' privacy and security. Finally, they may lack the ability to learn and improve over time, limiting their effectiveness in meeting evolving customer needs and expectations (Kecht et al., 2023).

4. Methodology

The researchers have started investigating the applications of ChatGPT beyond content writing and academic writing in different industries, including finance. The objective of this study is to extend that discussion, explore the potential applications of ChatGPT in the financial industry, and provide the answers to the following 09 questions:

1. What does ChatGPT offer to the financial industry?
2. Why should the financial industry use ChatGPT?
3. How is ChatGPT different than existing banking and finance chatbots?
4. How will ChatGPT deal with cybersecurity risk and data protection?
5. Do regulations allow financial institutions to use ChatGPT?
6. Which tasks ChatGPT can perform in stock market and asset management?
7. How can ChatGPT do stock price prediction?
8. How is ChatGPT different than financial robo-advisors?
9. What will be the impact of ChatGPT in the financial industry?

For this purpose, we employed a conversational approach with ChatGPT 3.5 in January 2023, following the methodology used in previous studies for various objectives. Moreover, we interpret the output of ChatGPT using academic literature on banking and finance chatbots views articles on the use of ChatGPT in the financial industry.

5. Results

This section explains the outputs of ChatGPT related to the nine questions highlighted in the methodology and discusses them critically.

Q1: What does ChatGPT offer to the financial industry?

Banking and financial institutions deploy technologies to provide customers with agile services and financial solutions. Many banks around the globe have chatbots for answering the queries of customers. But those are programmed within the single institution information.

We asked ChatGPT what it offers to financial institutions. ChatGPT response is:

As a language model developed by OpenAI, ChatGPT can offer several benefits to the financial industry, such as:

1. Customer service automation: ChatGPT can handle a large volume of customer inquiries and provide accurate, personalized responses 24/7.
2. Investment advice: ChatGPT can provide financial advice to customers based on market data, investment portfolios, and customer preferences.
3. Fraud detection: ChatGPT can analyze customer transactions and detect suspicious activity in real-time, reducing the risk of fraud.
4. Knowledge management: ChatGPT can store and retrieve a vast amount of financial information and regulations, providing accurate answers to customer inquiries.
5. Personalized marketing: ChatGPT can analyze customer data and provide personalized marketing recommendations, improving the effectiveness of financial institutions' marketing campaigns.

By using ChatGPT, financial institutions can reduce costs, improve efficiency, and enhance the customer experience. ChatGPT can also be integrated with other AI technologies to provide more advanced financial services.

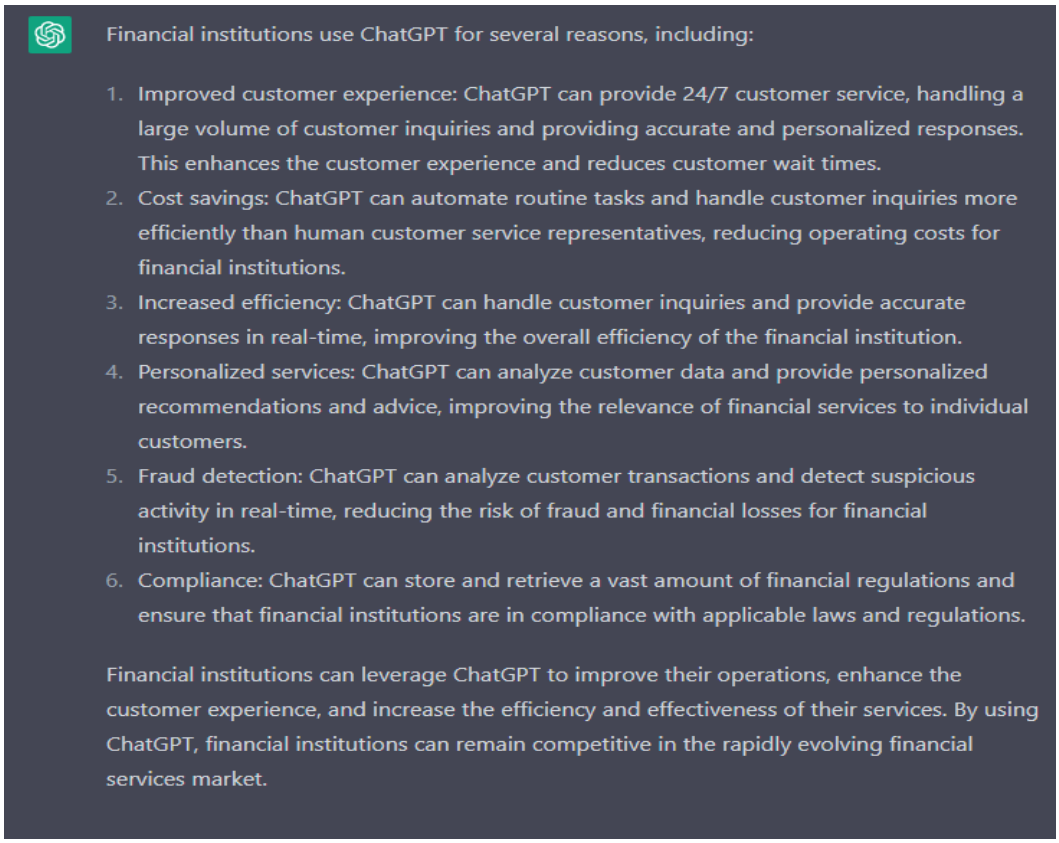
Source: Output from ChatGPT.

This response shows that ChatGPT offers a bundle of services to the financial industry as it listed five core functions that ChatGPT can perform for the financial industry, as it is known that financial institutions such as banks, asset management firms, and insurance are using their in house programmed and third-party chatbots to perform these tasks.

Gaurav Samdaria, chief business officer of Perfios, a financial data analysis company, said: "With time, banks will look forward to using ChatGPT in specific and core sections of their operations. Banks will use the chatbot once the wider tech community starts incorporating ChatGPT in their products"[1].

Q2: Why should the financial industry use ChatGPT?

Different studies have analyzed the users' behavior and perception toward using financial and banking chatbots. One of the major concerns of the users found by those studies is the lack of efficiency of the chatbot as they faced difficulties in communicating through chatbots (see Trivedi 2019; Mogaji et al. 2021). A study unveils that the staff at financial institutions in South Korea are skeptical about the accuracy and technical maturity of their financial chatbots (Jang et al., 2021). The next question we asked is: Why should financial institutions use ChatGPT?



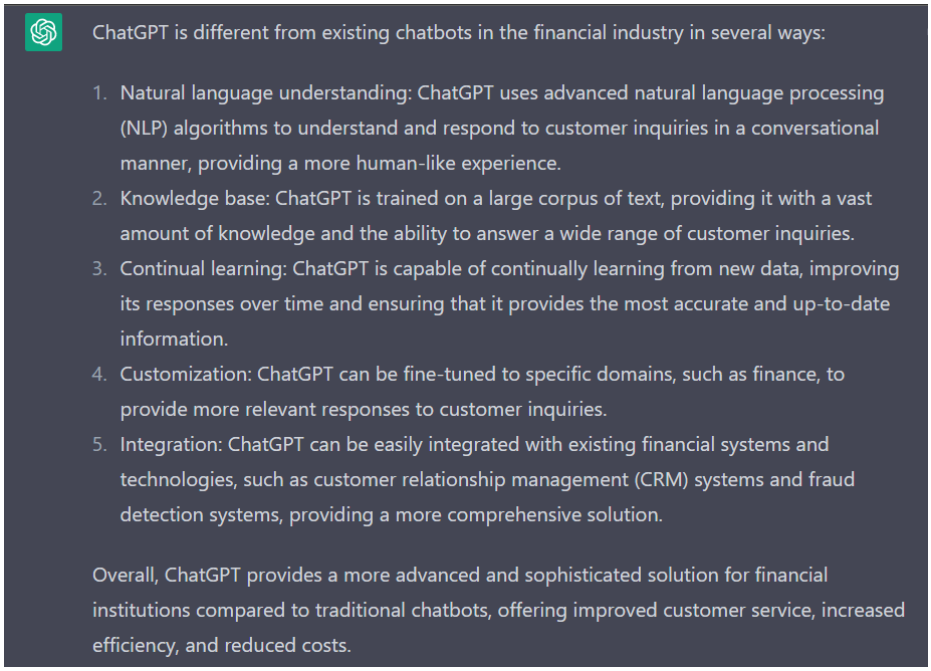
Source: Output from ChatGPT.

The response from ChatGPT is what we can expect from an AI-based tool. The claims from ChatGPT are what the proponents of digital finance and Fintech enumerate, such as cutting costs, better customer experience, and increased efficiency. But the critical point here is that ChatGPT is well aware of compliance with financial regulations and laws; that is a line of difference between ChatGPT and existing chatbots, which are programmed with limited answers to frequently asked questions.

Q3: How is ChatGPT different than existing banking and finance chatbots?

The follow-up question we asked is how ChatGPT differs from the existing chatbots used in the financial industry.

[1] Https://www.moneycontrol.com/news/business/mc-explainer-how-can-banks-use-chatgpt-9901901.html.

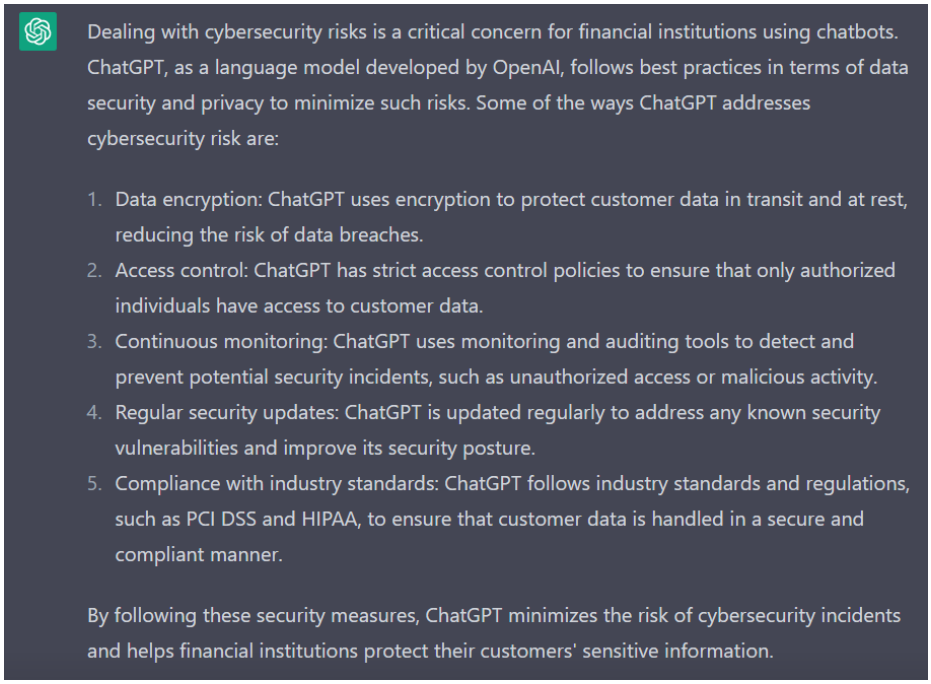


Source: Output from ChatGPT.

This response from ChatGPT is a challenge to the existing finance chatbots, as it offers unique features such as the conversational behavior of ChatGPT, constant learning, and understanding of respondents' queries. On the technical end, ChatGPT claims to be a customized solution for the financial industry, and it has an interoperability feature. The limited studies on ChatGPT found a few valid claims, such as constant learning features, knowledge base features, and customization (Alawi, 2023; Marchi & Sampieri, 2023). A study confirms that AI-based chatbots can overcome the hurdles faced by practitioners if they are trained on a large set of data and advanced NLP algorithms (Kecht et al., 2023).

Q4: How will ChatGPT deal with cybersecurity risk and data protection?

While using chatbots in finance, one of the significant concerns is the maturity of chatbots' cybersecurity vulnerabilities. We asked ChatGPT how it dealt with this issue.

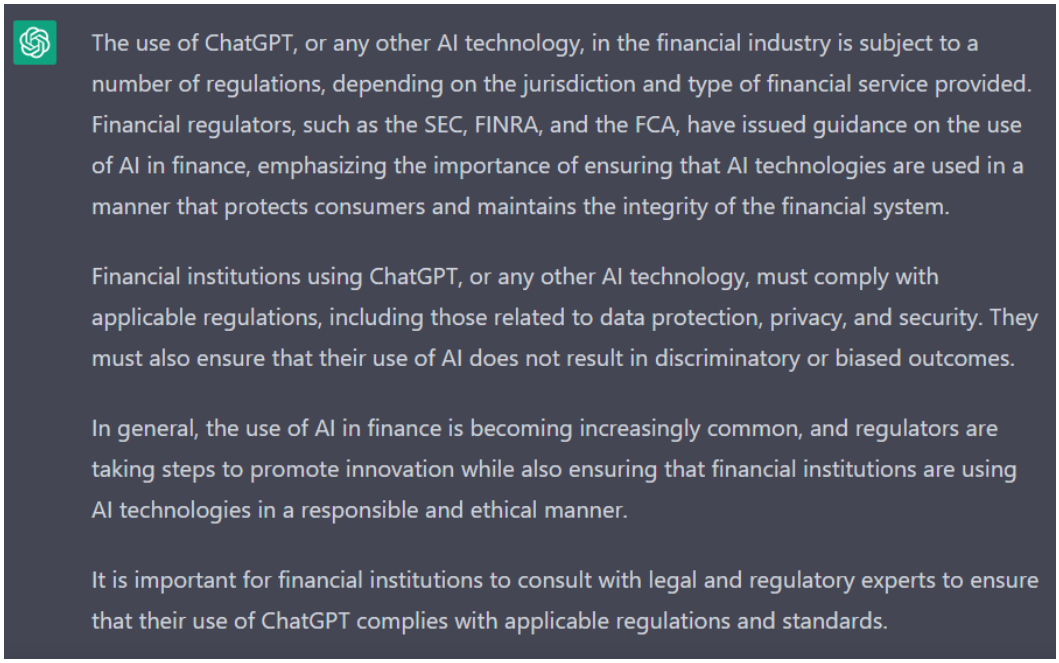


Source: Output from ChatGPT.

This output shows that ChatGPT has a strategy to tackle cybersecurity risks. Moreover, it is concerned about protecting customers' data as the fifth point in its response. It claims to be compliant with industry standards and regulations.

Q5: Do regulations will allow financial institutions to use ChatGPT?

The discussion in the previous question has brought us to an intriguing question: Will financial regulations allow the use of ChatGPT in the financial industry?



Source: Output from ChatGPT.

This response shows that ChatGPT is familiar with different financial regulations. However, it is unsure about permission for its usage in the financial industry. Additionally, it suggests consulting with legal experts in this regard. This may be considered as its limitation or prudential measure.

Q6: Which tasks can ChatGPT perform in stock market and asset management?

To get more insights about the applications of ChatGPT, we asked Which tasks ChatGPT can perform in stock market and asset management.



Source: Output from ChatGPT.

This output shows that ChatGPT can perform those functions existing financial robo-advisors perform. This is possible because robo-advisors are also a kind of chatbot that uses the same technology and is linked with big data.

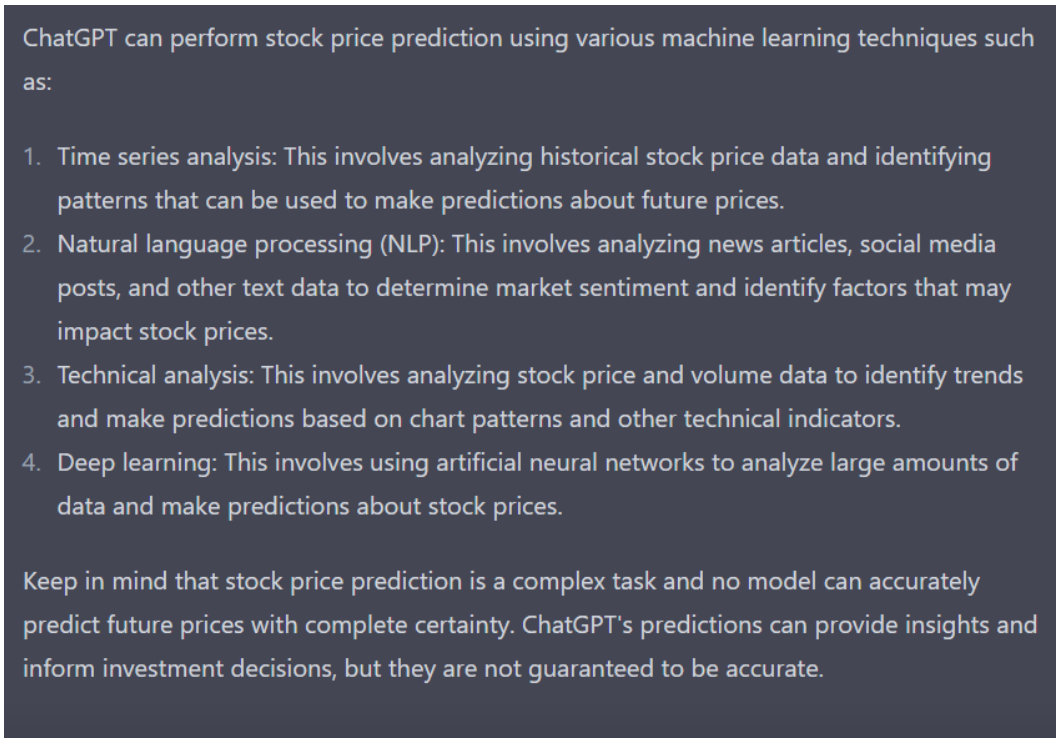
Experts worldwide have started exploring the use cases for different industries, and the financial sector is no exception. ChatGPT has applications for stock market data analysis and investment management. The new update in ChatGPT and its integration with databases is expected to scale up the ability to do accurate data analysis and enhance the computation power of solving complex problems.

Forbes highlights ten use cases of ChatGPT in finance. In addition to the above output, ChatGPT can perform other functions such as KYC, customer services and onboarding, financial planning, and virtual assistant for banking (Marr, 2023).

Q7: How can ChatGPT do stock price prediction?

In our understanding, the tasks claimed to be performed by ChatGPT, such as stock price prediction, are complex.

So, we asked our next question: How can ChatGPT predict stock price?



Source: Output from ChatGPT.

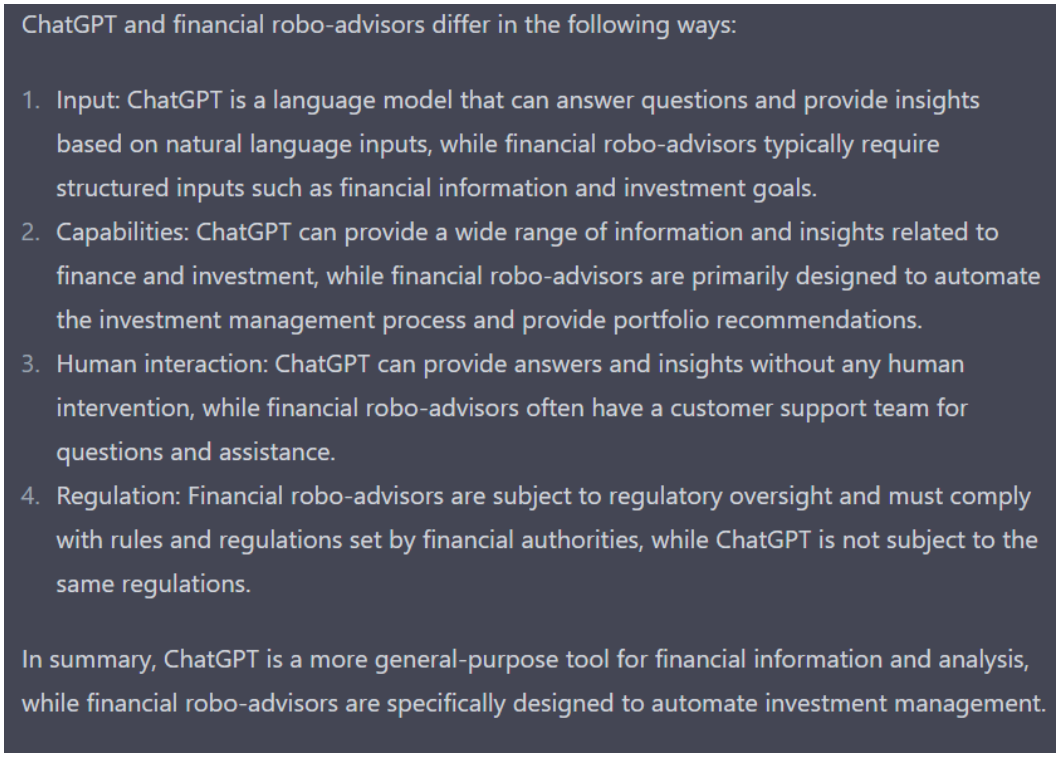
This output shows that ChatGPT can predict Stock prices using time series data and foresee the upcoming crisis. A recent study by (Lopez-Lira & Tang, 2023) indicates that the sentiment scores produced by ChatGPT can accurately predict daily stock market returns. Using news headlines and sentiment scores generated by ChatGPT, the study observed a strong correlation between the evaluation and the subsequent daily returns of stocks in our sample. This suggests that ChatGPT can be a valuable tool for predicting stock market movements based on sentiment analysis. They compared the performance of ChatGPT with traditional sentiment analysis methods provided by vendors like RavenPack and found that ChatGPT outperforms them in forecasting stock market returns. ChatGPT's advanced language understanding capabilities enable it to capture the nuances and subtleties within news headlines, resulting in more reliable sentiment scores and better predictions of daily stock market returns. To confirm the robustness of our findings, they controlled for ChatGPT sentiment scores and examined the predictive power of other

sentiment measures but found that the effect of these additional measures on daily stock market returns was reduced to zero when controlling for ChatGPT sentiment scores.

Q8: How is ChatGPT different than financial robo-advisors?

The resemblance of ChatGPT with robo-advisors leads to our following input: robo-advisors can automate investments, and ChatGPT cannot automate this function with the present capability and training. So, we asked:

How is ChatGPT different than financial robo-advisors?


ChatGPT and financial robo-advisors differ in the following ways:

1. Input: ChatGPT is a language model that can answer questions and provide insights based on natural language inputs, while financial robo-advisors typically require structured inputs such as financial information and investment goals.
2. Capabilities: ChatGPT can provide a wide range of information and insights related to finance and investment, while financial robo-advisors are primarily designed to automate the investment management process and provide portfolio recommendations.
3. Human interaction: ChatGPT can provide answers and insights without any human intervention, while financial robo-advisors often have a customer support team for questions and assistance.
4. Regulation: Financial robo-advisors are subject to regulatory oversight and must comply with rules and regulations set by financial authorities, while ChatGPT is not subject to the same regulations.

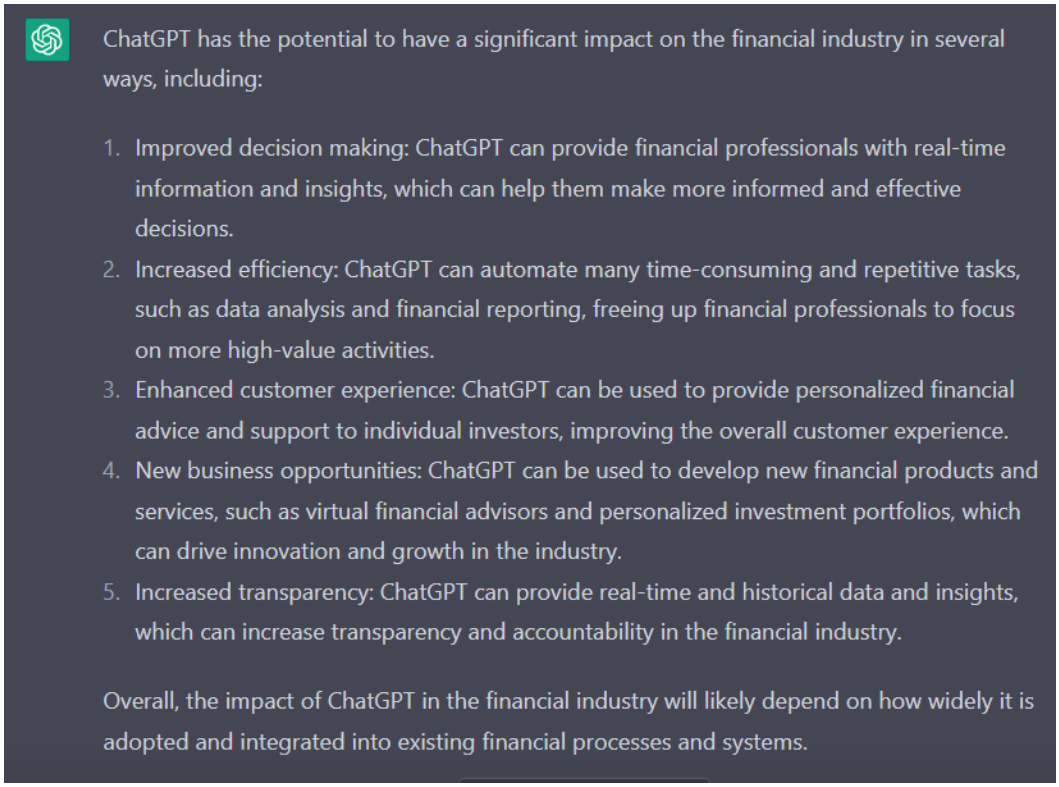
In summary, ChatGPT is a more general-purpose tool for financial information and analysis, while financial robo-advisors are specifically designed to automate investment management.

Source: Output from ChatGPT.

This response shows that ChatGPT has limitations as it cannot automate investment and asset management, which is the core function of financial robo-advisors. However, ChatGPT is more convenient for taking information about prices, trends, and investment advice than robo-advisors. A recent survey conducted by the investment platform eToro reveals that approximately 40% of U.S. retail investors are either open to or are currently utilizing AI tools, particularly ChatGPT, to assist them in making investment decisions (GEORGE, 2023). In our understanding, both ChatGPT and robo-advisors have their strengths.

Q9: What will be the impact of ChatGPT in the financial industry?

To end our discussion, we asked a final question: What will be the impact of ChatGPT in the financial industry?



Source: Output from ChatGPT.

This output shows that ChatGPT has various offerings for the financial industry, including new business opportunities and enhanced customer experience (Mergers & Inquisitions, 2023; Uddalak, 2023).

6. Challenges in Using Generative Open AI in Finance

There are several technical, ethical, and compliance challenges in using Generative AI in the financial industry, some of which are:

1. Data Quality and Quantity: The success of generative AI algorithms depends mainly on the quantity and quality of data available. However, in the financial industry, data may be sparse or of low quality, and collecting and cleaning the data can be a time-consuming and expensive process (Shihab et al., 2023).
2. Regulatory Compliance: The financial industry is heavily regulated, and using generative AI may raise concerns about data privacy and security (Gill & Kaur, 2023), as well as compliance with regulations such as the General Data Protection Regulation (GDPR) and the Financial Industry Regulatory Authority (FINRA).
3. Interpretability and Transparency: Generative AI models are often considered black boxes, and it can be challenging to understand how the model arrived at a particular decision. This lack of transparency can be problematic in the financial industry, where decision-making needs to be explainable and justifiable (Ray, 2023).
4. Bias: Generative AI models may unintentionally amplify existing biases in the data, which can lead to discriminatory outcomes. In the financial industry, this could result in unequal access to financial products and services for certain groups of people (Umer & Khan, 2023).
5. Risk Management: Generative AI can generate synthetic data, which may help train other models or simulate scenarios. However, there is a risk that the synthetic data may not accurately reflect the real-world distribution of data, leading to inaccurate predictions or decisions (Alshurafat, 2023).

6. Cybersecurity: The financial industry is a prime target for cyber-attacks, and using generative AI models may create new vulnerabilities that need to be managed and mitigated (Dash & Sharma, 2023; Sebastian, 2023).
7. Responsibility: There is a debate about who is responsible for the decisions made by Generative AI models. Is it the model developer, the data provider, or the end-user? This lack of clarity about responsibility can lead to concerns about accountability (Dodgson, 2023; Lindebaum & Fleming, 2023).

One proposed solution to address these challenges is building a finance-tailored ChatGPT version. Recently, Bloomberg announced the launch of a new finance chatbot like ChatGPT. A paper released by Bloomberg highlights the technical sophistication of its BloombergGPT machine learning model, which utilizes AI techniques similar to GPT to analyze financial datasets. For more than 40 years, Bloomberg's Terminal has been the primary source for trading and financial data. With the integration of ChatGPT's technology, the company aims to enhance its industry-leading services further (Sheikh, 2023).

7. Conclusion

A new era is coming, as one of the experts said, "ChatGPT is Uber of this decade". The study opens the discussion on ChatGPT from a different perspective from previous studies. It can be said that ChatGPT is only a starting point as integration with more databases and computational power will enhance it to have more applications beyond content creation. There will be more research in the future on ChatGPT and its impact on different industries, including banking and finance.

The arrival of the open AI chatbot ChatGPT caused a sensation in the Generative Artificial Intelligence (AI) field. Although scholars have already explored ChatGPT's content production and response capabilities, our research takes a distinctive angle by examining its potential applications in the financial sector. This paper is one of the first attempts to comprehend ChatGPT's contributions to the financial industry and how it distinguishes itself from existing banking and financial chatbots. By concentrating on ChatGPT's potential in finance, we aim to encourage conversations about its use in other areas and explore the likelihood of a broader revolution in the future. Our results based on each question give valuable clues for the future applications of ChatGPT in the finance industry.

Certainly, ChatGPT is the latest and most powerful open AI chatbot that has been revolutionizing various industries, including the financial industry. Indeed, ChatGPT offers a bundle of services to financial institutions, such as account management, customer service, investment advice, data analysis, and compliance with financial regulations and laws. It has unique features such as conversational behavior, constant learning, customization, and interoperability. Financial institutions can use ChatGPT for marketing purposes such as customer engagement, personalization, upselling and cross-selling products, and financial education. ChatGPT can perform tasks such as stock price prediction, investment management, and asset management, similar to financial robo-advisors. However, ChatGPT needs a large amount of data, deep learning, and machine learning algorithms and networks to perform these tasks.

The impact of ChatGPT on the financial industry is immense. It helps financial institutions reduce costs, improve efficiency, and enhance the customer experience. It also provides a unique customer engagement experience and helps improve the overall financial services sector. The advent of ChatGPT has been a hot topic in various global forums, including the World Economic Forum, which highlights the importance of this technology for the financial industry. However, there are also challenges associated with ChatGPT, such as cybersecurity vulnerabilities, compliance with financial regulations, and data protection. Moreover, the use of ChatGPT in academic writing has also raised concerns about plagiarism detection and exam integrity.

Despite these challenges, ChatGPT has the potential to transform the financial industry by providing advanced services and improving customer satisfaction. With further

development and integration with databases, ChatGPT can become a powerful tool for financial institutions and contribute to the growth of the financial sector.

Declaration of Generative AI and AI-assisted technologies in the writing process: During the preparation of this work, the author(s) used ChatGPT in order to integrate on selected questions. After using this tool/service, the author(s) reviewed and placed the generated content in the form of figures as an output of ChatGPT. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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