

Generative AI for Business Decision-Making: A Case of ChatGPT

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Abstract: ChatGPT (Generative Pretrained Transformer) is a chatbot using artificial intelligence (AI) launched by OpenAI, which is an AI research and deployment company. The ChatGPT has taken the technology world by storm. The ChatGPT is a trained AI model that can chat almost like a human. The dialog format allows the ChatGPT to answer follow-up questions, admit mistakes, challenge incorrect premises, and reject inappropriate requests. The ChatGPT can be utilized for compiling research, drafting marketing content, brainstorming ideas, delivering aftercare services, increasing customer engagement, and many others. The ChatGPT can provide enormous opportunities for companies leveraging this breakthrough technology strategically. Thus, we evaluate ChatGPT as a tool in common business decision-making cases in the current study. For example, the ChatGPT was asked about the impacts of a hypothetical merging of two supermarket chains in Sweden. In another example, the ChatGPT was asked about recommendations for investment in a Brazilian oil company. Finally, it was asked about the factors that influence online shopping behavior. The results are significant and demonstrate the tremendous potential of the ChatGPT in revolutionizing the corporate world.

Keywords: Artificial intelligence; generative AI; ChatGPT; decision making; business

1. Introduction

The ChatGPT (OpenAI, 2022) was launched as a prototype in November 2022 by the OpenAI company. It quickly garnered attention due to its detailed answers across many knowledge domains and human-like texts. ChatGPT was optimized for dialog with humans by using reinforcement learning with human feedback, which is a method that uses human demonstrations (like or unlike) to guide the model toward desired behavior. The ChatGPT is fine-tuned from GPT-3.5, a language model trained to produce text.

Generative AI (Gen-AI) (Antoniou *et al.*, 2018; Goodfellow *et al.*, 2020) used by the ChatGPT is a type of AI focused on generating new content, such as text, images, etc. Generative AI is not a new concept, and machine-learning techniques behind Gen-AI have evolved over the past decade. However, the ChatGPT innovates using Gen-AI with supervised learning (Lindholm *et al.*, 2022), reinforcement learning (Källström *et al.*, 2019), and human trainers to improve the model's performance.

The ChatGPT is one of the most significant and potent language-processing AI models, with 175 billion parameters. The ChatGPT model was trained using text databases from the internet. This included 570 GB of data obtained from books, web texts, Wikipedia, articles, and other written content on the internet. 300 billion words were fed into the system (Tamkin *et al.*, 2022).

According to the ChatGPT, it can be used in applications such as generating text, writing articles and stories, or even coding. It can also be fine-tuned to work as a translator and to convert text from one language to another. Dialog systems build conversational agents, such as chatbots, which can have natural and human-like conversations. A summarization tool summarizes large texts and provides a brief overview. Q&A systems build question–answering systems which can answer questions based on a given context or document; thus, the sentiment analysis tool can predict the tone of a text. It has a text completion tool to complete a given text or sentence, making it useful for predictive typing and text completion on mobile keyboards. It also contains a language understanding tool that can be fine-tuned to understand the meaning of a text, making it useful for natural language understanding in various AI applications.

However, due to the innovative nature of the ChatGPT, the implications of this type of tool are being discussed in the education of children and the youth (Susnjak, 2022) by implementing it in journalism and media education (Pavlik, 2022), generation of medical reports (Jeblick *et al.* 2022), and in the generation of academic articles based on the type of literature reviews (Aydın & Karaarslan, 2022).

In this study, we asked the ChatGPT three questions and analyzed the result. Thus, we present an analysis of the use of the ChatGPT as a tool for business decision-making.

2. Methodology

Using the ChatGPT is quite simple; you only need to register and log into the platform (<https://chat.openai.com/chat>). After registering, you are automatically redirected to a chat screen, as shown in Figure 1. The tests were conducted in the ChatGPT Jan. 9 version on January 19, 20, and 27, 2023, using a laptop computer located at Linköping University, Sweden.

To evaluate the performance of the ChatGPT concerning the analysis process for making business decisions, three questions were chosen to ask the ChatGPT through its text field.

In recent times, the rapid growth of mergers and acquisitions has raised the interest of academics and professionals. While mergers and acquisitions continue to be the subject of careful

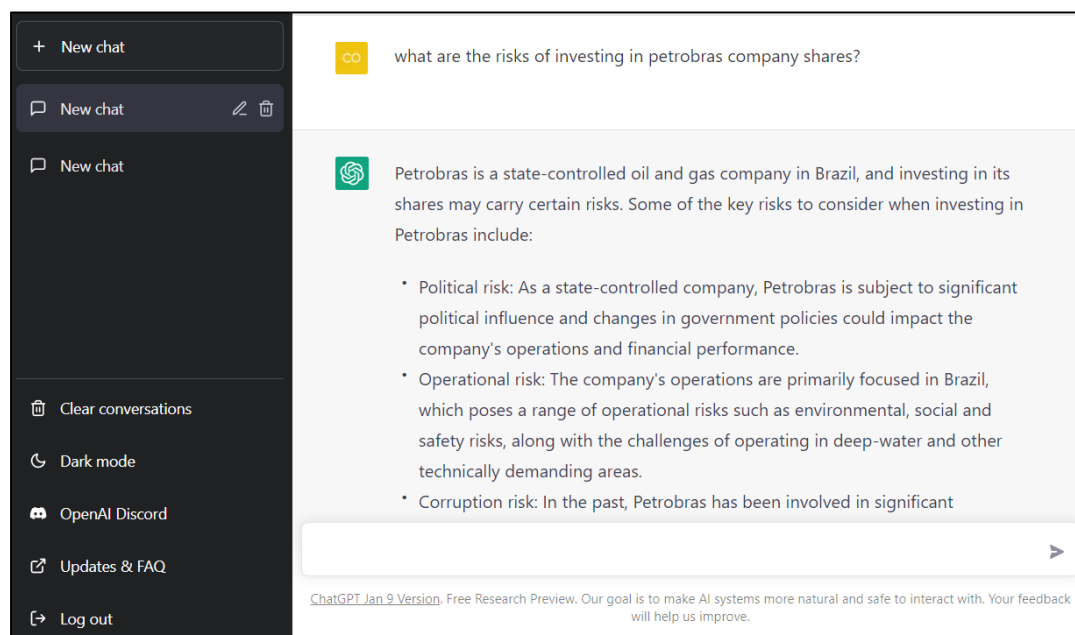


Fig 1. Screenshot of ChatGPT (<https://chat.openai.com/chat>) accessed on January 20, 2023.

examination, many questions still surround the merger process (Cho & Chung, 2022). Therefore, Question 1 was about the merger of large companies in Europe, which always raises many doubts for society about the monopoly and the maintenance of jobs (Chiriac, 2021).

Question 2 was about investing in the stock market. People invest in the stock market for several reasons (Nadeem *et al.*, 2020). For example, they invest in the stock market to save their income for retirement (Clark-Murphy & Soutar, 2004) or to help with asset accumulation, well-being, and consumption smoothing (Cole & Shastry, 2009). Question 2 refers to the risk of investing in a large oil company in a country with an emerging economy.

Finally, Question 3 dealt with the factors that influence online shopping behavior, which has already been discussed in other studies and, more recently, by Mesatania (2022) on the Shopee company case.

3. Results

Question 1, asked to ChatGPT on January 19, 2023, was about a complex situation in the business world, the merger of two large companies. In our example, we asked about the merger of two supermarket chains in Sweden, ICA and COOP.

Question 1:

What is the impact of a merger between ICA and COOP Swedish supermarkets?

ChatGPT Reply (text is exactly as presented, without changes):

A merger between ICA and Coop, two of the largest supermarket chains in Sweden, would likely have a significant impact on the Swedish retail market. The combined company would likely become one of the largest retailers in Sweden, with a significant market share in the grocery and consumer goods market.

This would likely lead to increased competition for other retailers and suppliers, as the combined company would have more negotiating power when it comes to pricing and product offerings. Customers could also potentially see changes in product availability and prices.

Additionally, the merger could also lead to job losses as the company may look to cut costs by reducing redundancies in the company.

However, It should be noted that the merger would also have to go through regulatory scrutiny and be approved by the competition authorities, to ensure that the merger would not harm competition in the market.

In the first sentence of the response, the ChatGPT identified the companies' sizes, the companies' localities, their segment of activity, and the possible impact of this merger on the public. This may be important information for a student but not for experts.

In the second sentence, the ChatGPT reports the significant impact on competitors and suppliers, and the increase in the bargaining power of these companies. It is also a significant conclusion for an ordinary person but an obvious one for an expert.

In the third sentence, the ChatGPT reports about layoffs to reduce costs due to redundancies, which may happen in administrative positions but not operational ones. Thus, the ChatGPT could have been more specific.

Moreover, in its conclusion, the ChatGPT raised questions about possible legal issues in this merger, which is known to everyone.

Question 2, which was asked to the ChatGPT on January 20, 2023, was related to the risks of investing in the shares of Petrobras. Petrobras is a large Brazilian company in the oil sector. Petrobras has large fluctuations in the price of its shares due to the Brazilian political and economic scenario.

Question 2:

What are the risks of investing in Petrobras company shares?

ChatGPT Reply (text is exactly as presented, without changes):

Petrobras is a state-controlled oil and gas company in Brazil, and investing in its shares may carry certain risks. Some of the key risks to consider when investing in Petrobras include:

Political risk: As a state-controlled company, Petrobras is subject to significant political influence and changes in government policies could impact the company's operations and financial performance.

Operational risk: The company's operations are primarily focused in Brazil, which poses a range of operational risks such as environmental, social and safety risks, along with the challenges of operating in deep-water and other technically demanding areas.

Corruption risk: In the past, Petrobras has been involved in significant corruption scandals. These have led to significant fines, legal proceedings and reputational risks, which may negatively impact the company's financial performance and share price.

Financial risk: Petrobras is heavily leveraged, and its credit rating is lower than investment grade, so the company's high debt levels and cash flow volatility could make it more vulnerable to economic downturns or unexpected changes in commodity prices.

Currency risk: A significant portion of Petrobras' revenue is generated in U.S. dollars, while its debt is primarily denominated in Brazilian reals. Changes in the exchange rate between these two currencies could impact the company's financial performance and share price.

It's important to note that past performance of the company or sector is not a guarantee of future performance and that the risks mentioned above are not exhaustive and should be considered along with other factors such as the overall market conditions and your personal investment profile.

On the same date that the question was asked to the ChatGPT, the value of Petrobras shares on the New York Stock Exchange was approximately 11.35 USD. On the CNN Business website (CNN Business, 2023), accessed on January 20, 2023 (see Figure 2), the "Stock Price Forecast" was as follows: "The 14 analysts offering 12-month price forecasts for Petroleo Brasileiro SA Petrobras have a median target of 13.75, with a high estimate of 16.50 and a low estimate of 8.45. The median estimate represents a +21.09% increase from the last price of 11.36." Moreover, the "Analyst Recommendations" were as follows: "The current consensus among 13 polled investment analysts is to hold stock in Petroleo Brasileiro SA Petrobras. This rating had held steady since December when it was unchanged from a hold rating."

If one looks at the response provided by the ChatGPT to the second question, one can see that in the first sentence, the ChatGPT once again provided general information about the company, such as location and type of company. This differs from the type of information that Google would bring up in a simple search. However, even in the first sentence, the ChatGPT reported risks when investing in Petrobras. This is interesting information. However, any investor knows that every investment in the stock market has risks.

In five paragraphs, the ChatGPT detailed the risks that should be considered when investing in Petrobras. Despite being public information, the ChatGPT summarized the risks, saving time for people who need to learn about the company.

Finally, in the last paragraph, the ChatGPT cautioned investors that a company's past performance does not determine its future and that other aspects should be considered.

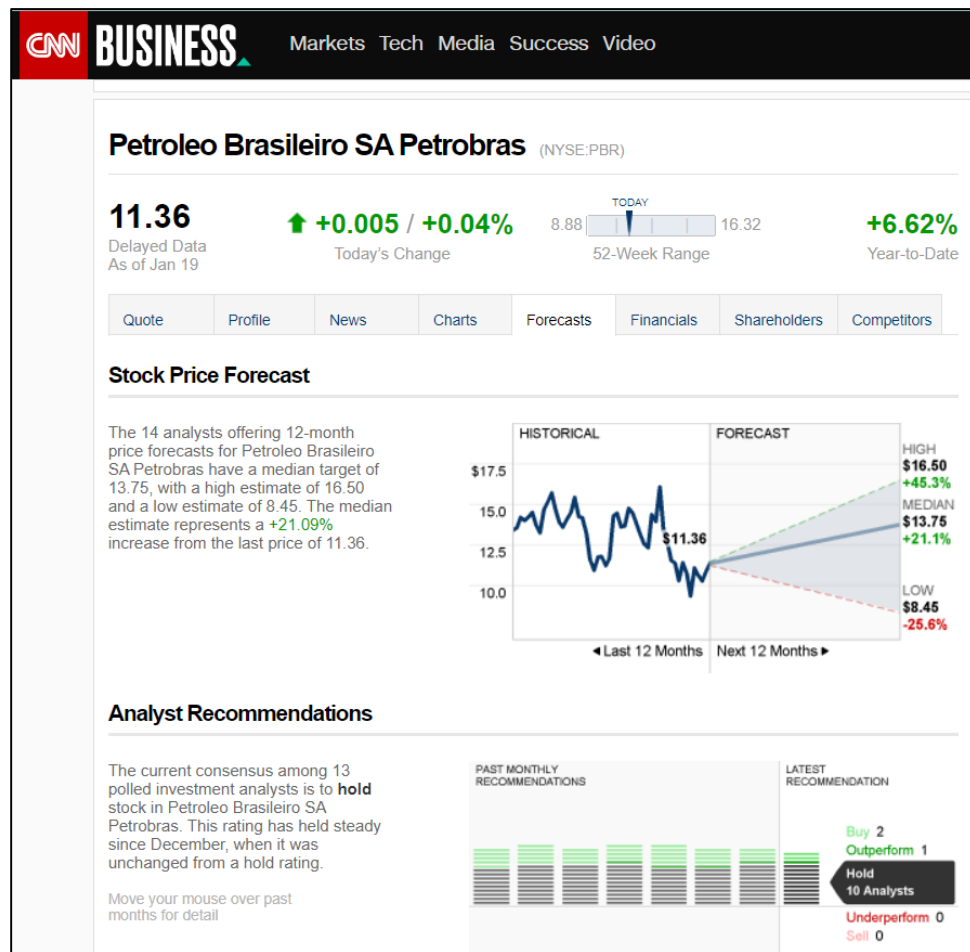


Fig 2. Petrobras' stock price forecast by CNN Business (2023).

Comparing the information provided by CNN Business and ChatGPT, it is evident that CNN Business offers much more data for decision-making than ChatGPT.

Finally, the ChatGPT was asked Question 3 on January 27, 2023 about the factors influencing online buying behavior.

Question 3:

What are the factors influencing online buying behavior?

ChatGPT Reply (text is exactly as presented, without changes):

There are several factors that can influence online buying behavior, including:

1. Convenience: The ease and convenience of shopping online can be a major factor in influencing buying behavior.
2. Price: Online shoppers can easily compare prices and find deals, which can influence their buying behavior.
3. Product reviews and ratings: The ability to read reviews and ratings from other shoppers can influence a person's decision to buy a product.
4. Product selection: Online retailers often have a wider selection of products than brick-and-mortar stores, which can influence buying behavior.

5. Social influence: Social media and online communities can influence buying behavior by highlighting popular products and trends.
6. Personalization: Many e-commerce sites now offer personalized recommendations based on a shopper's browsing and buying history, which can influence buying behavior.
7. Trust and security: Trust in the online retailer and security of the website can also play a role in influencing online buying behavior.
8. Marketing and advertising: Online marketing and advertising can also influence buying behavior by showcasing products, offering discounts and promotions.

The answer presented by the ChatGPT was listed as eight factors that experts are aware of but superficial again. Compared with other studies, such as the article by Mesatania (2022), where 23 factors were identified, we can conclude that the ChatGPT's response was generic, and thus its responses should be carefully used for business decision-making at this moment.

4. Conclusion

This study presented an analysis of the use of the ChatGPT as a tool for decision-making in business, posing three questions to the ChatGPT and analyzing its result. The ChatGPT shows simple text in all cases analyzed but can be useful in the decision-making process to present an overview of the topic. The ChatGPT, in its current version, does not substitute for a business decision-making expert. But the ChatGPT can be a useful tool for the business decision-making expert to increase productivity to have time for other activities.

Even though there were only three questions about business in both cases, the ChatGPT was superficial in its answers. However, it is a promising powerful tool that is constantly evolving. Therefore, it may be an excellent supportive business decision-making tool in the future.

The ChatGPT has raised serious concerns about the future of search engines like Google. ChatGPT is a valuable learning tool for ordinary people in diverse subjects. It organizes information in a much easier way for humans to understand than the current Google search engine. This is a positive development for all users.

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