

Chapter 5

Exploring the Potential of ChatGPT in Financial Decision Making

Reza Gharoie Ahangar

Lewis University, USA

Agata Fietko

Lewis University, USA

ABSTRACT

This chapter investigates the potential role of OpenAI's ChatGPT in investments to assess its proposed solutions' accuracy, potential benefits and drawbacks, and implications for financial decisions. The study utilizes empirical examples to evaluate ChatGPT's performance in providing financial advice. The results indicate that while ChatGPT can define financial terms and explain them in detail, it cannot provide investment suggestions. Moreover, the analysis suggests that the ChatGPT can provide more accurate information when users break down their questions into more specific topics. The study also highlights the need for more comprehensive training data to allow ChatGPT to provide more accurate advice. In addition, the research advises investors to be aware of ChatGPT's limitations and recommends breaking down financial questions into more specific topics to maximize the benefits of this technology. It is concluded that ChatGPT can be a helpful resource for financial experts but not for those with limited financial expertise and knowledge.

1. INTRODUCTION

1.1. History of ChatGPT

The growing public interest in Artificial Intelligence (AI) reflects the efforts of major technology companies, such as Google, Microsoft, and Baidu, to develop AI-based services and products. For example, Microsoft is a major investor in OpenAI, while Google has released an experimental AI service called

DOI: 10.4018/978-1-6684-8386-2.ch005

Exploring the Potential of ChatGPT in Financial Decision Making

Bard. Generative AI, such as Chinchilla AI and Large Language Models, are also becoming increasingly popular (Zarifhonorvar, 2023).

In 2020, OpenAI, a company founded in 2015, launched third generation of its autoregressive language model, Generative Pre-trained Transformer 3 (GPT-3), which uses deep learning to produce human-like text (Brown et al., 2020). This model was developed on a corpus of almost 500 billion unlabeled tokens, representing the largest natural language processing (NLP) model in the world with 175 billion parameters (Radford et al., 2018). OpenAI was founded with the goal of developing AI systems that can outperform humans in different tasks (OpenAI, 2015).

On November 30, 2022, OpenAI introduced ChatGPT, a chatbot that leverages reinforcement learning to interact with its users (Grant & Metz, 2022). Quickly gaining widespread attention, ChatGPT was referred to as the industry's next big disruptor due to the quality of its response output (Shankland, 2022; Vanian, 2022). Within one week of its release, the artificial intelligence system had attracted over a million users on various social media platforms (Zarifhonorvar, 2023). This was notably faster than Instagram and TikTok, which respectively took nine and thirty months to reach a hundred million active users.

Recent media reports suggest that ChatGPT may be a formidable contender to Google (Brown, 2022), potentially leading to digital transformation (Tyrrell, 2022). However, San Altman, CEO of the company, has noted that the platform is still in its early testing stage (Altman, 2022), limiting its current capabilities. Nevertheless, ChatGPT still presents a promising indication of the potential of AI.

Generative AI has the potential to increase worker productivity by 10% (Megahed et al., 2023). Moreover, this technology is estimated to create trillions of dollars in economic value (Huang et al., 2022). In 2022, OpenAI invested over \$1 billion in generative AI (Griffith & Metz, 2023). Despite these potential advantages, there is a growing concern regarding the potential impact of artificial intelligence on the knowledge economy, education, and skilled workers (Krugman, 2022; Locke, 2022; Marche, 2022).

1.2. How ChatGPT Works

The ChatGPT language model is a powerful tool that can perform various tasks, including machine translation and summarization. It has a transformer architecture that enables it to generate text similar to human writing, while its adaptive capabilities allow it to effectively adjust to new situations and topics. ChatGPT language model is fine-tuned to perform on a massive amount of data. The network utilizes a deep neural framework to process variable-length input sequences and generate human-like text. A variety of sources, including websites, books, and articles, have been collected as training data for the model. To ensure the accuracy of the model, this data has been filtered and pre-processed to remove repetitive and low-quality text (Zaremba & Demir, 2023).

In 2018, the GPT-3 framework was introduced as a state-of-the-art language model for various applications such as text summarization, content generation, and language translation (Devlin et al., 2018). AI-powered virtual assistants and chatbots, such as ChatGPT, have been developed to reduce the complexity of implementing generative AI models (McKee & Noever, 2022). Aside from text-to-text AI tools, other innovations in generative AI include text-to-image (OpenAI, 2022c), text-to-audio (Agostinelli et al., 2023), and text-to-video (Singer et al., 2022).

The use of GPT-3 for natural language processing (NLP) tasks has been investigated in recent years. Megahed et al. (2023) explored the use of GPT-3 for text generation, exploring the model's ability to generate text that resembles the actual content. Brown et al. (2020) assessed the performance of GPT-2 and GPT-3 in various language understanding tasks, such as machine translation and summarization.

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/exploring-the-potential-of-chatgpt-in-financial-decision-making/328299

Related Content

Usage and Analysis of Big Data in E-Health Domain

Sushruta Mishra, Hrudaya Kumar Tripathy, Brojo Kishore Mishra and Soumya Sahoo (2022). *Research Anthology on Big Data Analytics, Architectures, and Applications* (pp. 417-430).

www.irma-international.org/chapter/usage-and-analysis-of-big-data-in-e-health-domain/290994

COVID-19 Deaths Previsions With Deep Learning Sequence Prediction: Bacille Calmette-Guérin (BCG) and Tuberculosis Track

Heni Bouhamed (2020). *International Journal of Big Data and Analytics in Healthcare* (pp. 65-77).

www.irma-international.org/article/covid-19-deaths-previsions-with-deep-learning-sequence-prediction/259989

Comprehensive Analysis of State-of-the-Art CAD Tools and Techniques for Chronic Kidney Disease (CKD)

Mynapati Lakshmi Prasudha, Rakesh Kasumolla and Deepak Sukheja (2021). *International Journal of Big Data and Analytics in Healthcare* (pp. 1-12).

www.irma-international.org/article/comprehensive-analysis-of-state-of-the-art-cad-tools-and-techniques-for-chronic-kidney-disease-ckd/287605

Loan Fraud Detection Using Machine Learning as a Data Mining Approach

Nabila Hamdoun (2022). *International Journal of Data Analytics* (pp. 1-10).

www.irma-international.org/article/loan-fraud-detection-using-machine-learning-as-a-data-mining-approach/309096

Digital Sovereignty and Cross-Border Data Flows: Legal Fragmentation and Governance Challenges

Hemendra Singh (2026). *Digital Sovereignty in the Global Data Economy: Rights, Regulation, and Resistance* (pp. 291-318).

www.irma-international.org/chapter/digital-sovereignty-and-cross-border-data-flows/412421