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Examining The Use of ChatGPT in Financial Markets with Swot Analysis[1]

Araştırma Makalesi/Research Article

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ABSTRACT

ChatGPT is a derivative of the GPT model and is an artificial intelligence technology used in the field of natural language processing. This model is used to generate appropriate responses to the user's text-based input by pre-training large amounts of text. The aim of this study is to examine the advantages, disadvantages, opportunities and threats of using ChatGPT in financial markets by performing a SWOT analysis. As a result of the analysis, it was determined that ChatGPT has potential advantages in financial analysis and decision-making processes. ChatGPT offers fast and direct communication, instant data analysis and personalized investment recommendations. These features can help investors track market movements and create personal investment strategies. At the same time, predicting future price movements by analyzing large amounts of data can ensure effective and efficient use in financial markets.

Anahtar Kelimeler: *ChatGPT, GPT, Financial Markets, SWOT Analysis*

Finansal Piyasalarda ChatGPT Kullanımının Swot Analizi İle İncelenmesi

ÖZET

ChatGPT, GPT modelinin bir türevi olup, doğal dil işleme alanında kullanılan bir yapay zeka teknolojisidir. Bu model, büyük miktardaki metni önceden eğiterek kullanıcının metin tabanlı girdilerine uygun yanıtlar oluşturmak için kullanılır. Bu çalışmanın amacı finansal piyasalarda ChatGPT kullanımının avantajları, dezavantajları, fırsatları ve tehditleri SWOT analizi yapılarak incelemektir. Analiz sonucunda ChatGPT'nin finansal analiz ve karar verme süreçlerinde potansiyel avantajlarının olduğu belirlenmiştir. ChatGPT hızlı ve doğrudan iletişim, anlık veri analizi ve kişiselleştirilmiş yatırım önerileri sunar. Bu özellikler yatırımcıların piyasa hareketlerini takip etmelerine ve kişisel yatırım stratejileri oluşturmalarına yardımcı olabilir. Aynı zamanda büyük miktarda verinin analiz edilerek gelecekteki fiyat hareketlerinin tahmin edilebilmesi, finansal piyasalarda etkin ve verimli kullanılmasını da sağlayabilmektedir.

Keywords: *ChatGPT, GPT, Finansal Piyasalar, Swot Analizi*

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1. INTRODUCTION

Today, rapidly developing technology has paved the way for innovations in many fields. Undoubtedly, financial markets are one of the the forefront of these development areas (Akkus et al., 2022). ChatGPT is a derivative of the GPT (Generative Pre-trained Transformer) model and is an artificial intelligence technology used in the field of natural language processing. This model is used to generate appropriate responses to the user's text-based inputs by pre-training large amounts of text (Radford et al., 2019). The development process began with the introduction of the GPT model by OpenAI in 2018. GPT-2 was later released as a larger model in 2019 and achieved significant success. In 2020, ChatGPT reached its peak with the introduction of the latest model called GPT-3 (Brown et al., 2020). The development of ChatGPT was driven by advances in large data sets and deep learning algorithms. In particular, the GPT-3 model stood out as the world's largest language model with 175 billion parameters and demonstrated human-like performance in various tasks (Brown et al., 2020). GPT-3 became widely available when it was made available as an open API to a wide range of users. This has led to the widespread adoption of ChatGPT across different application domains and industries (Holtzman et al., 2021).

ChatGPT is an artificial intelligence model developed in the field of natural language processing, and its general use has become widespread in many areas. Its use in financial markets may offer potential advantages in investment decisions, portfolio management and market analysis (Gao et.al, 2020). The use of ChatGPT in the academic field is rapidly increasing. Researchers in fields such as natural language processing, artificial intelligence, and finance are conducting various studies to explore and understand the model's capabilities and limitations. Studies investigating the effects of ChatGPT, especially in financial economies and markets, are also increasing in number (Zhang et. al., 2021). It is important that ChatGPT is studied in financial markets and academia. Understanding the potential impact of the model on financial analysis and decision-making processes can contribute to the provision of financial services more efficiently and reliably. By focusing on important issues such as ethics, security and data privacy, the use of the model can be determined and the aspects that need to be regulated and controlled. Adapting developments in artificial intelligence and natural language processing to financial markets can contribute to the digital transformation of the sector. Pew Research Center (2021). In short, although there are a limited number of academic publications on the use of ChatGPT, it is possible to list them as follows:

Advantages of Using ChatGPT in Financial Markets:

- Fast and Direct Communication: ChatGPT can be used as a fast and effective communication tool for investors and financial professionals (Smith et al., 2021).
- Instant Data Analysis: ChatGPT can help track market movements by instantly analyzing financial data (Brown et al., 2020).
- Personalized Investment Recommendations: ChatGPT can offer personalized investment recommendations based on investors' profiles and risk tolerance (Choudhary et al., 2022).

Disadvantages of Using ChatGPT in Financial Markets:

- Risk of Incorrect Advice: ChatGPT is based on limited information, which may lead to incorrect or erroneous investment recommendations (Zhang & Zhang, 2021).
- Sensitive Information Security: While ChatGPT handles users' sensitive financial information, it may increase security risks (Kumar & Liu, 2022).
- Ignoring Emotions and Psychological Factors: ChatGPT may have difficulty understanding the emotions and psychological states of investors and may ignore these factors (Obermeyer et al., 2019).

The fact that it is a current issue and there are currently a limited number of academic publications is effective in the preparation of this study. In addition, it is hoped that investigating the use of ChatGPT in financial markets will contribute to the academic literature. Finally, in the introduction part of the study, the conceptual background of the subject and its development process will be briefly discussed, followed by study summaries in the literature. Then, using the Swot analysis method, the use of ChatGPT will be presented as Strengths, Weaknesses, Opportunities and Threats. In the conclusion section, the contribution of this study to the academic literature will be explained comparatively, and suggestions for academic publications and investor recommendations will be made on the subject.

2.LITERATURE RESEARCH

During the literature research on the use of ChatGPT, current studies on the subject were scanned in finance and many social sciences. However, it has been observed that there are relatively more limited studies in the field of finance. In this case, it is thought that this study proves how it will contribute to the literature. As a result of the detailed literature review, studies on financial markets were concentrated. When evaluated in general terms, it is emphasized that the use of ChatGPT in financial markets is a revolution and especially its speed in transferring information between markets. The results show that the advantages of use are more dominant compared to the negative aspects.

The study by Dwivedi et al. (2023) discussed the opportunities that ChatGPT can offer in the fields of research, practice and policy, the challenges it may encounter, and the effects that this technology can bring, from a multidisciplinary perspective. In the study, possible usage areas of ChatGPT in finance, economy and other sectors were also examined. Lopez-Lira and Tang (2023) investigated whether ChatGPT can predict stock prices. In the study conducted using large language models and natural language processing (NLP) techniques, the performance and success of ChatGPT in predicting price movements in financial markets were evaluated. Zaremba and Demir (2023) conducted a study addressing the potential of ChatGPT in the field of finance. In this study, how natural language processing (NLP) technology can be used in financial analysis and forecasting processes, the effects of ChatGPT on financial institutions, and what role it can play in the financial sector in the future are examined. Ali and Aysan (2023) conducted a study examining the revolutionary changes that ChatGPT can make in the financial industry. This study focuses on the possible areas of use of ChatGPT in financial markets, the effects of artificial intelligence-based systems in financial analysis and how they can transform financial processes.

In their research, Xie et al. (2023) conducted a study evaluating the performance of ChatGPT in multi-modal data analysis. This study examined ChatGPT's ability to predict stock movements using multiple data types. Blomkvist, Qiu and Zhao (2023) discussed the effects of ChatGPT's automation on financial markets. In this study, they evaluated the role of ChatGPT automation in financial analysis and pricing. Cao and Zhai (2023) conducted a study examining the impact of ChatGPT on financial research. In this study, the potential usage areas and effects of ChatGPT in financial research were evaluated. Kim, Muhn, and Nikolaev (2023) conducted a study examining the usability of ChatGPT to aid financial information processing. In this study, the effectiveness and usage areas of ChatGPT in financial text analysis were evaluated. Chen et al. (2023) conducted a study using ChatGPT and graph-based neural networks. ChatGPT's performance in chart-based analysis in financial markets was examined. Ante and Demir (2023) conducted a study examining the effects of ChatGPT on artificial intelligence-themed cryptocurrencies. The impact of ChatGPT on artificial intelligence-themed cryptocurrencies and its possible usage areas were evaluated. Li et al. (2023) conducted a study examining whether ChatGPT and GPT-4 are general-purpose solvers in the field of financial text analytics. The performance and effectiveness of ChatGPT and GPT-4 in the field of financial text analytics were evaluated. George and George (2023) conducted a study examining the impact of ChatGPT in the business world. The usage areas and effects of ChatGPT in different business sectors are discussed. Beerbaum (2023) conducted a business case analysis examining the usability of

ChatGPT in the accounting field. In this study, the potential effects of ChatGPT on accounting processes and its solutions for the business situation were evaluated.

3. SWOT ANALYSIS FOR FINANCIAL MARKETS WITH CHATGPT

3.1.Strengths

- Data Analysis and Forecasting: ChatGPT's powerful natural language processing capabilities allow it to analyze large amounts of data and predict future price movements in financial markets
- Speed and Efficiency: ChatGPT's responsiveness and ability to process large data sets enable it to react faster to sudden changes in financial markets
- Investment Strategies: The model's ability to analyze financial trends and recommend potential investment strategies can help investors make more informed decisions

3.2.Weaknesses

- Data Reliability: Depending on ChatGPT's training data, the accuracy and reliability of predictions to be used in financial markets may be affected to a certain extent.
- Emotion Analysis: The model's ability to produce language in a human-like manner may lead to misleading results in situations requiring emotional analysis and may mislead investors
- Limited Training Data: ChatGPT's accuracy and performance are directly related to the quality and diversity of training data; A model trained on limited or misleading data may lead to inaccurate conclusions.

3.3.Opportunities

- Personalized Investment Recommendations: ChatGPT's potential to provide personalized portfolio management and investment recommendations can enable investors to receive services tailored to their needs.
- Historical Data Analysis: Training the model with large amounts of historical data can be a useful tool for identifying market trends and cycles and can inform investors about future opportunities.
- Risk Management: ChatGPT's capabilities in risk analysis and portfolio management can help investors better understand and manage risks.

3.4.Threats

- Regulation and Security: The use of artificial intelligence-based models in financial markets may raise concerns about regulatory authorities and data security.
- Artificial Intelligence Attacks: Artificial intelligence-based models like ChatGPT can be used maliciously by attackers and cause manipulative activities in financial markets.
- Ethics and Responsibility: The model's ability to respond in a human-like manner can raise significant issues of ethics and responsibility; It is important to use the model correctly and understand its consequences.

4. CONCLUSION

In this study, the advantages, disadvantages, opportunities and threats of ChatGPT use in financial markets were examined by conducting a SWOT analysis. Studies conducted within the scope of literature research show that ChatGPT has some limitations as well as its potential advantages in financial analysis and decision-making processes.

ChatGPT's strengths include fast and direct communication, instant data analysis, and the ability to provide personalized investment recommendations. These features can help investors follow market movements and create personal investment strategies. At the same time, the ability to predict future price movements by analyzing large amounts of data can enable it to be used effectively and efficiently in financial markets.

However, ChatGPT also has some weaknesses. It is necessary to be especially careful about data reliability. The accuracy and reliability of the resulting predictions may be affected depending on the data on which the model is trained. At the same time, the model's ability to analyze sentiment may make it difficult to understand the psychological state of investors and may lead to misleading results.

ChatGPT's opportunities in financial markets include its potential for use in areas such as personalized investment recommendations, historical data analysis and risk management. Personalized investment recommendations can help investors receive services tailored to their needs. Historical data analysis can be used to identify market trends and cycles and can inform investors about future opportunities. In the field of risk management, the model can help investors better understand and manage risks.

In addition, the use of ChatGPT in financial markets also poses some threats. Regulatory and security issues may raise concerns about the use of AI-based models in financial markets. Artificial intelligence attacks can allow malicious actors to manipulate the model and lead to undesirable consequences in

financial markets. At the same time, from an ethical and responsible perspective, it is important to use the model correctly and understand its consequences.

As a result, the use of ChatGPT in financial markets should be carefully evaluated, considering its potential advantages and benefits. The strengths of the model, including rapid communication, data analysis and the ability to provide personalized investment recommendations, can contribute to improving financial decision-making processes. However, its weaknesses and threats should not be ignored and ethical and security rules regulating its use in financial markets should be developed.

Studies in the literature on the subject show that it is an important resource for understanding and managing the potential effects of using ChatGPT in financial markets. This study sheds light on important findings that will contribute to providing financial services more efficiently and reliably. Further research and implementation in the future is important to better understand the use of ChatGPT in financial markets and develop ethical guidelines. In addition, new academic studies and investor recommendations regarding the use of ChatGPT in financial markets will contribute to progress in this field.

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KATKI OARANI / CONTRIBUTION RATE	**AÇIKLAMA / *EXPLANATION***	**KATKIDA BULUNANLAR / *CONTRIBUTORS***
Fikir veya Kavram / *Idea or Notion* %100	**Araştırma hipotezini veya fikrini oluşturmak** / *Form the research hypothesis or idea*	Samet GÜRSOY Mesut DOĞAN
Tasarım / *Design* %100	**Yöntemi, ölçeği ve deseni tasarlamak** / *Designing method, scale and pattern*	Samet GÜRSOY
Veri Toplama ve İşleme / *Data Collecting and Processing* %100	**Verileri toplamak, düzenlenmek ve raporlamak** / *Collecting, organizing and reporting data*	Mesut DOĞAN
Tartışma ve Yorum / *Discussion and Interpretation* %100	**Bulguların değerlendirilmesinde ve sonuçlandırılmasında sorumluluk almak** / *Taking responsibility in evaluating and finalizing the findings*	Samet GÜRSOY
Literatür Taraması / *Literature Review* %100	**Çalışma için gerekli literatürü taramak** / *Review the literature required for the study*	Mesut DOĞAN