Proceedings of the 3rd International Conference on Business and Policy Studies
DOI: 10.54254/2754-1169/106/20241421

Impact of the LLM on Google

Yue Wu[1,a,*], Jingxuan Lin[2,b], Zijie Zheng[3,c], Kevin Cao[4,d]

[1]Department of math, Hong Kong Baptist University, Hong Kong, 999077, China
[2]Collège Alpin International Beau Soleil, Villars-sur-Ollon, 1884, Switzerland
[3]Shanghai Guanghua Cambridge International School GHCIS, Shanghai, 200100, China
[4]Wuhan Britain-China School WHBC, Wuhan, 430030, China
a. 21252963@life.hkbu.edu.hk, b. bonnielin0603@icloud.com, c. jamesz1024@gmail.com, d. 15927299237@163.com
**corresponding author*

Abstract: In recent years, the emergence and development of large language models has occurred. The authors of this paper are intrigued by how this will affect the stock market of Google. Therefore, they have written this thesis paper to investigate the effect of emergence of LLMs on the stock prices of Google. Using the method of event study, this paper sets an event window to observe the stock market of Google when encountering the emergence of different LLMs. The authors have calculated the AR (abnormal return) and CAR (cumulative abnormal return) of Google. Next, they put these statistics into various models to investigate the impact LLMs have caused. They determine the significance of the impact by checking if AR or CAR have exceeded confidence band. After carrying out the investigation, the authors have concluded that LLMs apply limited influence on the stock market of Google.The purpose of this paper is to inform large old-school technology companies like Google to stick to its own plan. They can rest reassured as LLMs are unable to truly threaten them for a while, and should also accept the advancement of LLMs.

Keywords: Chat-GPT, Google, Microsoft, Event study, Efficient Market Hypothesis

1. Introduction

1.1. Emergence of Large Language Models(LLMs)

When speaking of artificial intelligence(AI), people tend to regard it as a novelty. In fact, the concept was first identified dating back to 1950 when Alan Turing carried out the Turing test. Since then, many scholars have made effort to advance this new technology [1]. In recent years, there was a massive breakthrough in the field of AI. Large language models(LLMs), are models capable of sophisticated learning that function based on human languages[2]. These models are able to process questions asked and answer using original text, allowing it to substitute search engines to some extent.

Large language models may sound unfamiliar, but Chat-GPT, an example of a LLM, has grown exponentially recently in terms of popularity. The first version of Chat-GPT, GPT-1, was developed by AI research laboratory OpenAI in 2018. It consists of 117 million parameters and was trained with the dataset BookCorpus. The model was able to acquire information based on texts with significant

DOI: 10.54254/2754-1169/106/20241421

length. OpenAI continued to release new versions which generally had increasingly more parameters, larger datasets and even more remarkable capabilities[3].

Chat-GPT has potential in the field of prevention of natural disasters. In situations when natural disasters are incoming, people tend to acquire information about it from television, videos, online searches or other methods of information diffusion administered by humans. These mediums can sometimes consist of much irrelevant information, making it difficult to find information that is actually needed. In urgent circumstances, this can be a significant problem. However, Chat-GPT can generate concise information of high relevance efficiently. Rapid response is ensured and people can rely on it to warn them anytime. Guidance in emergencies can also be provided, for instance disaster response plans and rescue methods[4]. Effective usage of Chat-GPT may diminish the impact of natural disasters.

Moreover, Chat-GPT has already obtained the ability to write a scientific article. Scholars Manohar and Prasad applied the help of this AI language model in their work about the simultaneous occurrence of lupus and HIV[5]. The AI language model demonstrated impressive accuracy and coherence using language that is easy to understand and free of controversy[6]. It can be observed that large language models can substitute Google to some extent. In this case, Chat-GPT has undermined the dependence of scholars on search engines such as Google to do research.

1.2. Background Information of Google

Google is one of the most dominant technology companies. The firm possesses a staggering market cap of $1.718 trillion as of September 2023[7]. It provides a vast variety of technological goods and services. One of Google's most well-known services provided is its search engine. As of July 2023, the search engine of Google takes up a market share of 83.49%[8]. Other than search engine, Google also provides online advertisement, computer software and many other services.

1.3. Deciding which Version to Investigate

Launched on November, 2022[9], GPT-3.5 possesses improved fine-tuning methods. By carrying out reinforcement learning from human feedback(RLHF), feedback from inquirers can be utilized by it to improve its ability to carry out problem-solving operations. This stands out among other large language models, which can only learn from existing data[3]. Perhaps this is one of the reasons why GPT-3.5 went viral.

GPT-3.5 took only 5 days to reach a million users, and has attracted 100 million users by January 2023. In June 2023, the large language model received a total of 1.6 billion visitors[10].

Google was reluctant to miss out participating in the field of large language models after GPT-3.5 was launched. Therefore, two months after the release of GPT-3.5, Google streamed the demo of Bard, an AI language model developed by them. However, Bard answered with inaccuracy when asked about the James Webb Space Telescope. Consequently, Google's stock prices plummeted[5]. Considering its dominance in the market, Google's reaction to GPT-3.5's emergence also proves the significance of this version of Chat-GPT.

Furthermore, there is an apparent overall drop in the stock prices of Google within the window period of 15 days after the launch of GPT-3.5.

DOI: 10.54254/2754-1169/106/20241421

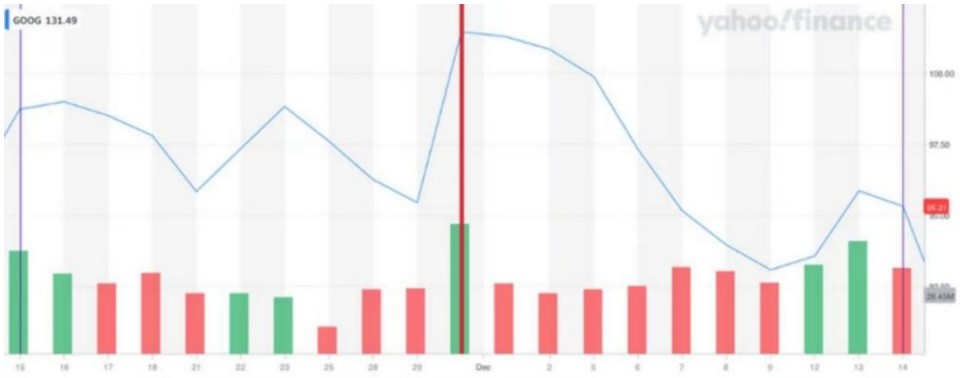

Figure 1: The stock prices of Google within the window period of 15 days after the launch of GPT-3.5.

This accords with the hypothesis of this paper, and this pattern cannot be observed after the release of other versions of Chat-GPT.

After considering all of the factors mentioned above, the authors of this paper decided to investigate GPT-3.5 particularly.

2. Hypothesis

The hypothesis of this thesis paper is that large language models will cause a downward trend in the stock prices of Google. This hypothesis is made because the authors of this paper initially believed that the emergence of LLMs will undermine investors' confidence in Google.

2.1. Null Hypothesis

The null hypothesis of this paper is that the average value of abnormal return is equal to 0. If the confidence interval is exceeded, the null hypothesis is rejected, and significant impact on Google's stock market by LLMs is made evident. If it is not exceeded, then vice versa.

2.2. Efficient Market Hypothesis

The efficient market hypothesis(EMH) refers to the assumption that prices are able to reflect all available information in the market. If abnormal return exceeds the confidence interval, the efficient market hypothesis is rejected, and the market is proved inefficient and unpredictable. The unpredictability of the stock market of Google signals the significance of the impact exerted by LLMs. Whereas if abnormal return does not surpass the confidence interval, the efficient market hypothesis is accepted. In this scenario, the market reflects all available information and is efficient. The stock market for Google is predictable, indicating that the emergence of LLMs was unable to affect the stock market of Google significantly.

3. Method and data collecting

We use event study as our method, by collecting and calculating data such as Google's and Microsoft's stock prices, to explore whether AI language could have an impact on Google's stock price.

3.1. Emergence of Chat-GPT 3.5

Chat-GPT 3.5 was released on 30th November 2023 which is the event date, and we chose a longer estimation window from 9th March 2020 to 28th October 2022 which is 666d for the accuracy of the

DOI: 10.54254/2754-1169/106/20241421

normal returns. The event window is [T-5, T+10] for a total of 15 days. We downloaded the close prices of GOOG and S&P500 from Yahoo Finance and analyzed them using the event study methodology to explore whether and to what extent the release of GPT3.5 had an impact on Google's stock price.

3.1.1. NR

We downloaded the close prices of GOOG and S&P500 from 9th March 2020 to 28th October 2022. We use the formula (1) to calculate the true returns for both during the estimation window. Then we performed a regression analysis on the two sets of true returns and obtained a regression plot of Google's return on the market's return shown in Figure 2.

$$R_{it} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \tag{1}$$

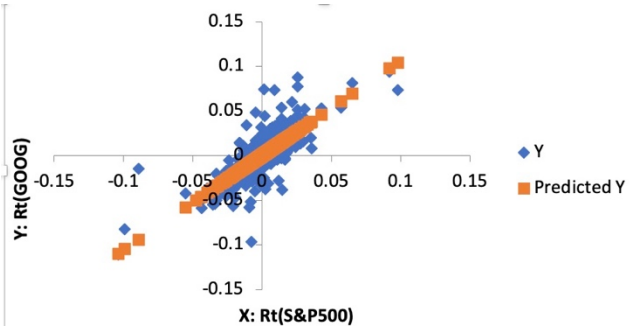

Figure 2: Regression plot of S&P 500 and Google from 9th March 2020 to 28th October 2022 (666 days).

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.7778998
R Square	0.6051281
Adjusted R S	0.6045343
Standard Err	0.0134323
Observation	667

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	1	0.1838704	0.1838704	1019.0905	2.63E-136
Residual	665	0.1199833	0.0001804		
Total	666	0.3038537			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0002306	0.0005206	0.442998	0.6579112	-0.000792	0.0012527	-0.000792	0.0012527
X Variable 1	1.0599623	0.0332035	31.923196	2.63E-136	0.9947659	1.1251586	0.9947659	1.1251586

Figure 3: Data obtained from regression analysis between the Rt of S&P 500 and Google.

According to Figure 3, we may acquire variables including α, β and standard error. So, we can use the market return to get the normal return (NRt) of GOOG for each day (t) of the event window by the formular (2).

$$NR_t = \alpha + \beta R_{mt} \tag{2}$$

3.1.2. AR&CAR

After calculating ours we get the AR of GOOG during the event window, so we go to calculate the abnormal return using the formula (3)

$$AR_t = R_t - (\alpha + \beta R_{mt}) \tag{3}$$

DOI: 10.54254/2754-1169/106/20241421

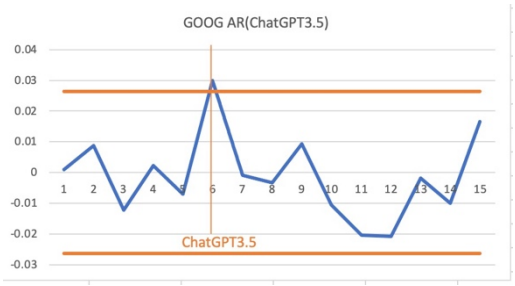

Figure 4: Abnormal return of GOOG with confidence interval (the orange line is the date of the release of Chat-GPT 3.5).

Similarly, cumulative abnormal return is obtained by accumulating the abnormal return from the beginning to the end of the event window using the formula (4).

$$CAR_t = \sum_{i=1}^{t} AR_i \quad (4)$$

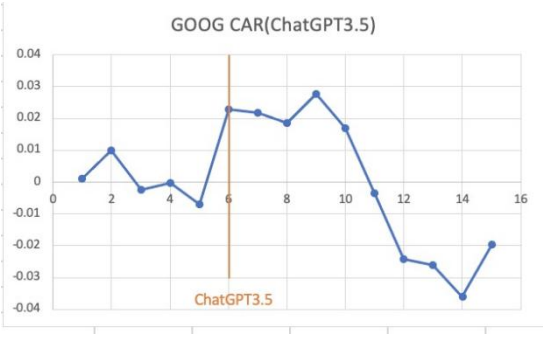

Figure 5: Cumulative normal return of GOOG during the release of Chat-GPT 3.5 (the orange line is the date of the release of Chat-GPT 3.5).

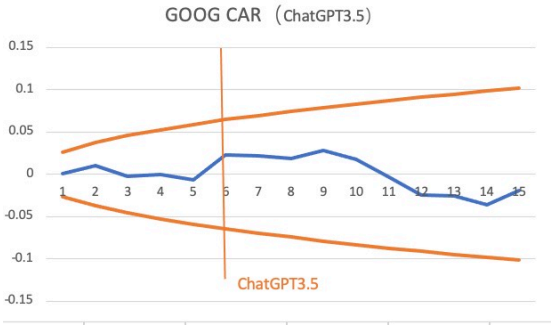

Figure 6: Cumulative normal return with confidence interval of GOOG during the release of Chat-GPT 3.5 (the orange line is the date of the release of Chat-GPT 3.5).

3.2. Emergence of Bard

3.2.1. Google

The date when the bard appeared is also on the event date of 6th February 2023. Since the subject of the study is still Google and the two events occurred at similar times, we chose the same estimation window (666 days) as before for the convenience of the calculation, thus, we can directly use some of the data obtained from the previous regression analyses. We chose the same event window period

DOI: 10.54254/2754-1169/106/20241421

of 15 days (1st February 2023, 22nd February 2023) and applied the event study methodology to investigate the impact of the emergence of bard on Google's stock price.

NR&CAR

We applied the same methodology to obtain the abnormal return (Figure 7) and cumulative abnormal return (Figure 8&9) during the event window period.

Figure 7: Abnormal return of GOOG with confidence interval (the green line is the date of the release of Bard)

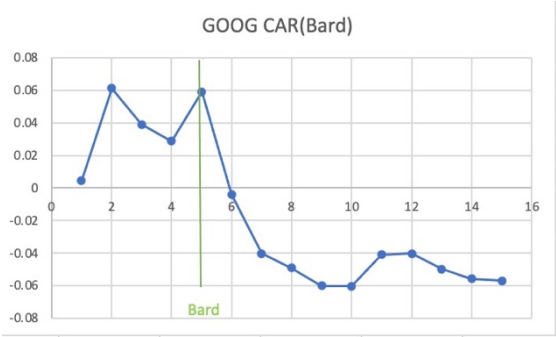

Figure 8: Cumulative normal return of GOOG during the release of Bard(the green line is the date of the release of Bard)

Figure 9: Cumulative normal return with confidence interval of GOOG during the release of Bard (the green line is the date of the release of Bard)

Volume

In addition, we found that the volume of Google had a relatively large change when the bard appeared, so we downloaded the data before and after the emergence of the bard from Yahoo Finance for nearly 40 days and made the corresponding chart (Figure 10)

DOI: 10.54254/2754-1169/106/20241421

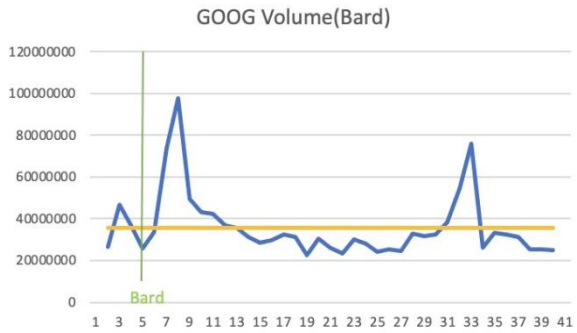

Figure 10: Volume of GOOG (the green line is the date of the release of Bard and the yellow line is the average of volume in 40 days)

Whole AR

Since Chat-GPT 3.5 and Bard were released around the same time and have consecutive causality, we lengthened the timeline to look at the normal rate of return for the whole process, making a Figure 11

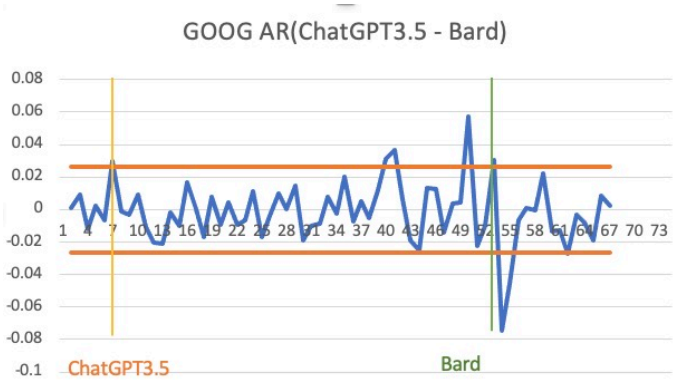

Figure 11: Abnormal return of GOOG with confidence interval (the orange line is the date of the release of Chat-GPT 3.5, and the green line is the date of the release of Bard)

3.2.2. Microsoft

For the study of the impact of bard on Microsoft's stock price we chose an estimation window of 756 days from 2nd January 2020 to 30th December 2022with an event window from [T-7, T+ 15] (22 days). We used the same method for the event study and obtained Figures: 12, 13, 14 & 15.

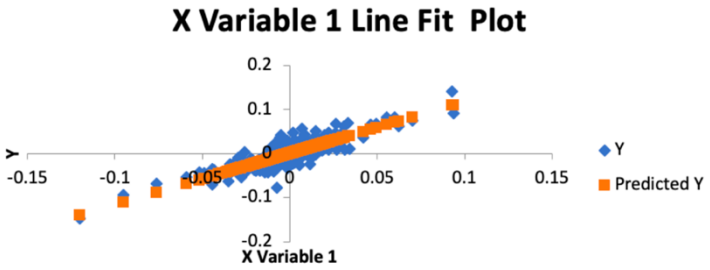

Figure 12: Regression plot of S&P 500 and Microsoft from 2nd January 2020 to 30th December 2022 (756 days).

DOI: 10.54254/2754-1169/106/20241421

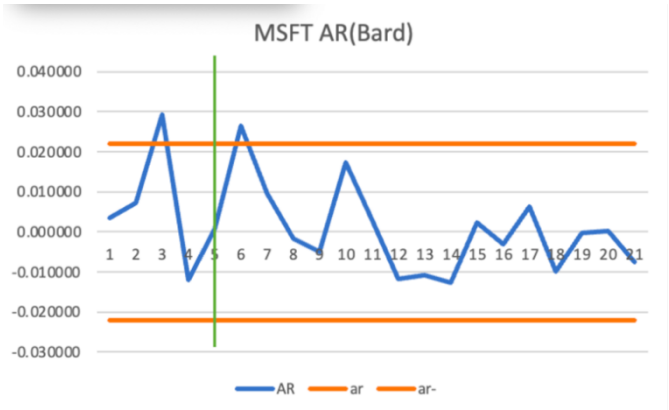

Figure 13: Abnormal return of MSFT with confidence interval (the green line is the date of the release of Bard)

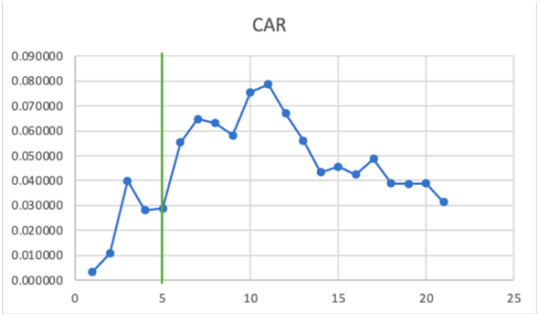

Figure 14: Cumulative normal return of MSFT during the release of Bard (the green line is the date of the release of Bard)

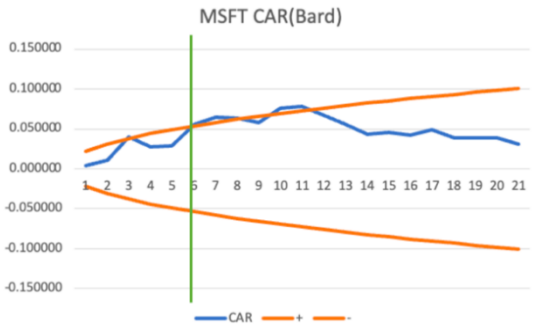

Figure 15: Cumulative normal return with confidence interval of MSFT during the release of Bard (the green line is the date of the release of Bard)

4. Result

4.1. Emergence of Chat-GPT 3.5

From the data we have collected and compiled, we can see that the release of Chat-GPT 3.5 did not have a big impact on Google's share price. As shown in Figure 5&6, after the release of Chat-GPT, although CAR is roughly trending down for a certain period of time, which will affect the stock price a little bit negatively, it still lies between the confidence bands in general, so we accept our hypothesis, that is, Chat-GPT3.5 has no effect on Google's stock price. In order to make the results more

DOI: 10.54254/2754-1169/106/20241421

convincing, we went on to analyze the AR, as can be seen in Figure 4, the AR curve exceeds the confidence interval, therefore this proves that Chat GPT3.5 has a significant impact on google's Abnormal return when it appears as it rejects the EMH. However, since the AR curve is exceeding the positive confidence interval Thus it can be concluded that Chat-GPT has a positive impact. This may be because the emergence of chat-gpt3.5 has increased the popularity of google, which is a company that is related to search engine. In addition, it may be explained by people are using google as a tool to search for chat-gpt3.5. Of course, we can't exclude other external factors. Besides, in the two days after the release of ChatGPT3.5, the AR decreased and became negative, which shows that there is a certain negative impact, but it is still within the confidence bands. Therefore, we can conclude that although the curve of AR shows that chat-gpt3.5 has a certain impact on Google, the overall impact is minimal, and it can be said that chat-GPT3.5 has almost no impact on Google.

4.2. Emergence of Bard

From graph 8, it can be seen that the CAR curve only fluctuates a bit before and after the bard's launch, and a clear downward trend starts the day after the incident. Thus, the absence of a drop on the day of the incident can be explained by the information delay. This extremely rapid and continuous decline can highlight the negative impact on bard's stock market of the error it made on its first demo. With the addition of the confidence band (Figure 9), It can be noticed that Google's CAR curve drops sharply and exceeds the confidence interval only after the event. The excess indicates that the data rejects the null hypothesis. In other words, it shows that bard's presence had an impact on Google's share price, however, despite being outside of the confidence interval, the graph is only out of range by a small margin, so it can be concluded that bard's error had some impact on Google, but the problem was not fatal. The AR curve can be an alternative reference that examines the Efficient market hypothesis. From Figure 7, AR has strong fluctuations around the time of the bard's failure. The excess, again, proxies for the data rejecting the EMH. A rejection of the EMH implies that this data cannot be predicted in time with the available data, highlighting its high influence.

In graph 10 drawn from the number of volumes during the event window, a huge volume climb can be noticed after the bard demo error. The volume after Google exposed Bard, is much higher than the usual average transaction volume marked with a yellow line. This represents that the bard's failure incentivized a lot of users to take action on their holdings. This unusual and excessive trading volume laterally accentuates the fact that the bard demo had a significant impact on google.

According to Figure 13, the CAR graph conveys that Microsoft’s cumulative abnormal return underwent a significant increase right after Bard’s publication conference. Next, Microsoft’s CAR reached its peak on the 11th date of the event window followed by a downward trend. This significant rise in CAR indicates that the failure illustration on Bard’s first demo had a positive impact on Microsoft. As the launch of Bard by google was a counterattack to the emergence of Chat GPT 3.5, its mistake once again made the strength of Chat GPT, thus giving positive response to Microsoft, the company that Open AI's Chat GPT is associated with. As demonstrated by Figure 14, a segment of CAR after the event date exceeds the orange confidence interval. Thus, implies that the emergence of Bard has significant positive impact on Microsoft. Similarly, we examined the AR, which fluctuates sharply around the event date, marked in green, as shown in Figure 12. An AR curve that exceeds the confidence interval indicates that the AR curve rejects the EMH, implying that the emergence and failure of the Bard once again had a relatively significant positive impact on Microsoft's stock market. However, since the AR curve stays within the confidence interval, this impact does not have a long-term effect.

DOI: 10.54254/2754-1169/106/20241421

5. Discussion

5.1. Artificial intelligence has a limited impact on Google

In the first half of the article, we used the event study method to examine the impact of chatgpt3.5 on Google and bard on Google and Microsoft stock prices respectively. A series of reference data such as normal return, abnormal return and cumulative abnormal return were calculated according to the formula, and relevant charts were made by using excel, and t-test method was used to verify whether our assumptions were correct or not. And our main finding is that Chat-GPT has some influence on Google, but the effect is not significant. First of all, the emergence of Chat-GPT 3.5 does not have a significant impact on Google. This can be proved by the fact that Google's AR curve before and after the emergence of Chat-GPT 3.5 exceeds the confidence interval slightly yet the CAR curve does not. Instead, Google immediately released a version of its own LLM, Bard, to benchmark Chat-GPT, a reaction that directly confirmed the considerable influence of Chat-GPT3.5. Thus, we analyzed the data around the emergence of Bard. We may find that the appearance of Bard not only did not bring a positive reaction to Google, but instead brought a negative. From this we can conclude that the AI language will have some negative impact on Google's share price, but it is not fatal, and the impact is only temporary, and Google will be back on track soon.

In hindsight, while the world is screaming that "AI like chat-gpt is disrupting Google", the real picture reflected in the data is that "Google is still invincible". Google has not been as expected by the obvious impact people largely overestimated the impact of ChatGPT on search engines. ChatGPT and other artificial intelligence chat software is essentially a productivity tool to improve efficiency, the core is to help users generate content. And the core of the search engine is to get information. Of course, ChatGPT can help users generate answers directly to the user's information, but this scenario is only suitable for specific search with a clear answer. In the open answer scenario, ChatGPT can not independently meet the user's needs, users need to search for answers to form their own knowledge and understanding. More importantly, the accuracy of ChatGPT cannot replace the search engine. If the question asked by the user is vague or contains part of the wrong information, ChatGPT may provide wrong answers and generate false links.

Of course, generative AI enriches the search experience, and the integration of the two is trending, but Google may not be pulled away by AI such as Chat-gpt. For example, ChatGPT application of the core architecture - Transformer is a product developed by Google, Google launched the latest Palm2 model in the logical inference ability to assess the score than the GPT4.0 but also slightly higher. But Google's over-worrying and major mistakes will become more serious than the impact of AI, as the bard's launch bard. In fact, Google does not need to worry too much, not to mention that AI is only a complement to the search engine, in addition to smarter AI, search engines have to compete with who has a more complete web page information to provide content material, which is precisely Google's advantage.

In this case, I'm afraid that Google's decline is living in a dream unless AI can completely overwhelm it in terms of experience. As the results of our study prove, the impact of LLM on Google is so small that there is absolutely no need for Google to worry, in other words, AI is still far away from hitting Google hard or even disrupting it.

5.2. Limitations and future work

There are a number of limitations to this study that warrant further research. Event information is highly prospective, it is difficult to accurately identify the date of the event and other events that occurred within that date, the model for estimating normal returns is biased, etc. Also, we were unable to fully determine whether the impact was entirely due to the occurrence of Chat-GPT 3.5 or Bard.

DOI: 10.54254/2754-1169/106/20241421

We were unable to include all other factors, resulting in our analysis not necessarily being fully comprehensive. Subsequent studies could address these limitations by expanding the estimation window and narrowing the event window on an hourly basis, thereby providing insight into other events that may have occurred within the event window for other researchers to build upon.

6. Conclusion

Overall, our event study dives deeper into the impacts of language models, like chat GPT, on the stock prices for prominent companies like Google. First off, we examined the background of Google including their asset values, then looked for data on past stock prices. By applying various diagrams and comparison tables, as well as implementing the regression model, we perceived that AI, specifically chat-GPT, does not currently have much of an influence on Google stock prices. Our analysis of the cumulative abnormal return graphs for Google showed no great significance with most of the lines inside the confidence band interval. In addition, we observed that the stock prices for both Google and Microsoft only showed fluctuations for very short periods at during the times of our study, and are neutralized shortly afterwards.

During our event study, we chose the version of GPT with the most influence on stock prices, organized stock prices for Google and Microsoft around the time period and looked into cases like the release of LaMDA's Bard. Bard, which was a failure product for Google, was released as a measure against the release of GPT 3.5, and had a severe influence on the stock prices for Google during a short time period. Past literature exemplify chat GPT's powerful analysis skills and how it can reshape our future. Yet, through our findings, a different conclusion was drawn, and that chat GPT will not immoderately impact the stock prices for Google, as for both Google and Microsoft, both the null hypothesis and the efficient market hypothesis (EMH) were rejected as the graphs of the cumulative abnormal returns and for the abnormal returns were both on the whole inside the confidence band intervals. However, while GPT did not have an effect on Google prices from past and current data, it is important to recognize that GPT is a growth company. With the expectation of GPT-5 coming out possibly next year in 2024, questions will be raised about whether or not this GPT version will be the finishing blow to Google. The improvements between successive GPT models are exponential, so the potential for GPT-5 is unpredictable. Thus, our scope of research may have covered insufficient data range, resulting rejection of our hypothesis. Another aspect to consider is whether or not Google's dominance in the market was underestimated and underrated. Google is the workplace of some of the most skilled technicians around the globe, and attracting more due its title as a Big Tech. Besides the search engine, Google also offers services such as online advertising and cloud. These, combined with Google's innovation in computer software and hardware, brings Google to a more stable position on the market and decreases the chances of its replacement by chat GPT.

In order to reach higher accuracy results, more data in the future is required. By understanding the current and potential affects of language models like chat-GPT, large companies like but not limited to, Google, one of the Big Tech, can better analyze what they should do to maintain their dominant position on the market. The results can also provide more insight into the benefits and harms of AI, and whether they should be used more frequently or with more caution in the years coming up. With the strength of a stable company like Google, they should not have to stress over the takeover by GPT, but take their time with researching and creating another successful release from LaMDA. Once this is achieved, GPT will no longer pose as a threat to Google, which will by then have further secured its position on the market and the new launch of its AI product will enable it to extend and upgrade all of its past features.

DOI: 10.54254/2754-1169/106/20241421

Acknowledgement

Many thanks to all of the group members.Everyone really worked hard and did great work. There is no order in the group. Everyone are equally contributed and are all first authors.

References

[1] *Copeland, B. J. (2023, August 31). Artificial Intelligence. Encyclopædia Britannica. https://www.britannica.com/technology/artificial-intelligence*

[2] *Blank, I. A. (2023). What are large language models supposed to model? Trends in Cognitive Sciences. https://doi.org/10.1016/j.tics.2023.08.006*

[3] *Zhang, C., Zhang, C., Li, C., Qiao, Y., Zheng, S., Dam, S. K., Zhang, M., Kim, J. U., Kim, S. T., Choi, J., Park, G.-M., Bae, S.-H., Lee, L.-H., Hui, P., Kweon, I. S., & Hong, C. S. (2023, April 4). One small step for generative AI, One giant leap for AGI: A complete survey on chatgpt in AIGC era. arXiv.org. https://arxiv.org/abs/2304.06488*

[4] *Xue, Z., Xu, C., & Xu, X. (2023, July 21). Application of chatgpt in natural disaster prevention and reduction. Natural Hazards Research. https://doi.org/10.1016/j.nhres.2023.07.005*

[5] *Manohar, N., & Prasad, S. S. (2023). Use of chatgpt in academic publishing: A rare case of seronegative systemic lupus erythematosus in a patient with HIV infection. Cureus. https://doi.org/10.7759/cureus.34616*

[6] *Hill-Yardin, E. L., Hutchinson, M. R., Laycock, R., & Spencer, S. J. (2023). A chat(gpt) about the future of Scientific Publishing. Brain, Behavior, and Immunity, 110, 152–154. https://doi.org/10.1016/j.bbi.2023.02.022*

[7] *Alphabet (google) (GOOG) - market capitalization. CompaniesMarketCap.com - companies ranked by market capitalization. (n.d.). https://companiesmarketcap.com/alphabet-google/marketcap/*

[8] *Bianchi, T. (2023, August 28). Global Search Engine Desktop Market Share 2023. Statista. https://www.statista.com/statistics/216573/worldwide-market-share-of-search-engines/*

[9] *Mehta, T. (2023, June 25). GPT-5: Everything we know so far about OpenAI's next chat-GPT release SlashGear. https://www.slashgear.com/1322736/chat-gpt-5-release-open-ai-details/*

[10] *Duarte, F. (2023, July 13). Number of CHATGPT users (2023). Exploding Topics. https://explodingtopics.com/blog/chatgpt-users*