Analysis of Commercialization Paths and Investment Value of Leading Artificial Intelligence Large Model Enterprises

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Abstract. As the technology of generating Artificial Intelligence (AI) develops incredibly dynamically, the commercialization of the AI large-scale model companies takes center stage as an issue of interest in the technology sector and capital market. Nevertheless, the main challenges that remain unresolved in the industry include technology adaptation and vague business models. This paper will use the example of three major technology firms in the US, namely OpenAI, Google, and NVIDIA, to comprehensively examine the logic behind computing power support and the major influence of variations in computing power supply on the efficiency of model iteration. Among them, the hypothesis of computing power adaptation is the degree of compatibility between the level of parallel computing power and the level of energy consumption of the hardware architecture (GPU/TPU) with the size of model parameters and training tasks of large models. The findings indicate that causing the commercial success of large AI models are computing power adaptation, scenario cultivation, and ecosystem building as three fundamental factors. Such a conclusion is not only useful to enable AI companies to develop differentiated commercialization strategies but also assists investors to better assess the value of a long-term investment in major AI companies in order to support the decision making of investors in a new fast-paced market environment.

Keywords: Large AI Model, Commercialization Path, Investment Value, Computing Power Support, Corporate Competitiveness.

1 Introduction

Since OpenAI launched ChatGPT at the end of 2022, the global artificial intelligence field has ushered in a disruptive development and transformation. The implementation and application of large-scale language models have promoted the large-scale popularization of artificial intelligence technology from niche scenarios. In fact, the development of artificial intelligence can be traced back ten years, but its application was limited to simple areas such as image recognition and voice assistants, and it failed to form a wide market impact. It was not until the advent of ChatGPT that large-scale language models were truly commercialized on a global scale. By 2025, ChatGPT had surpassed 100 million monthly active users, and the competitive landscape of the industry had

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rapidly taken shape. Against the backdrop of rapid development of artificial intelligence technology and the gradual formation of industry competition, the commercialization of large-scale artificial intelligence models has become a core area of common concern for technology companies and investors. Although the technology has shown disruptive application potential in multiple industries such as customer service and content creation, the path to sustainable monetization is still in the exploratory stage and a clear, scalable business model has not yet been formed. This is similar to the early days of the Internet, where many technologies with good development prospects have been difficult to scale up due to the unclear commercialization path.

The development of large-scale artificial intelligence models is essentially dependent on computing power. This element is also recognized as the core driving force in the three stages of deep learning, big data and distributed computing applications, and self-supervised learning in the evolution of large-scale models. The technical differences in computing power are also directly reflected in the hardware architecture choices of leading companies [1]. The GPUs provided by NVIDIA have powerful parallel computing capabilities, which can efficiently handle the massive matrix operations required for training large language models, adapt to the training needs of models with billions of parameters, and provide more than 80% of the graphics processing units (GPUs) for mainstream large language models, including OpenAI [2]. Google launched the Gemini model based on its proprietary Tensor Processing Unit (TPU) infrastructure, which quickly became a core competitor of OpenAI. Google also insisted on developing its own TPU ecosystem, which greatly reduced its dependence on NVIDIA GPUs and became a typical example of differentiated development in the computing power field. TPU has been specifically optimized for linear algebra operations in the core of neural network computing, achieving lower power consumption, lower cost and higher computing efficiency compared to general-purpose GPUs [1,2].

However, the high dependence of companies such as OpenAI on NVIDIA GPUs has also become a potential constraint on the development of industry. Any supply shortage or cost fluctuation in the production of NVIDIA GPUs may directly affect the training progress and iteration speed of models such as ChatGPT [2]. Google's expertise is particularly important in the context of large model parameters growing from billions to trillions. Not only can it efficiently mitigate the threat of computing bottleneck due to the increasing power consumption and operating cost growing exponentially, but it also reduces the time required to train the models, which enables the enterprises to address the market needs and technological advances faster. Hardware architecture-model fit has also been a determinant of the technological competitiveness of an enterprise when it comes to artificial intelligence. Simultaneously, the TPU architecture adopted by Google also enables the company to address the two requirements of technological independence and cost management, which is why it is a critical model in designing research and development functions independently in the computing power arena.

It is based on this in that, how can the major artificial intelligence models break through the commercialization bottlenecks, therefore achieve large-scale commercialization so as to become a substantial part of the daily life similar to the Internet, and be an unavoidable infrastructural component of social growth; Second, what development potential do the OpenAI and GM of ChatGPT and Google, respectively, have based on

their respective technical architecture and development models? So what is the implication of such a possibility on the market of the artificial intelligence industry and investments in such companies?

In order to respond to the abovementioned core questions, this paper will consider the use of a structured research framework: it will review in detail the relevant literature in the sphere of development and commercialization of artificial intelligence to establish the theoretical basis of research. Secondly, this paper will target two principal categories of successful corporations in the artificial intelligence sector including the large model service providers including OpenAI and Google, and the computing infrastructure providers including NVIDIA, and examine their technical attributes, commercialization rationality and investment worthfulness respectively. In the conversation, this is followed by the entire competitive environment of the existing artificial intelligence industry and an insight into possible disruptive variables of its evolution. Finally, according to the research results, this paper suggests possible commercialization of the large artificial intelligence models, and the investment value assessment methods of artificial intelligence firms. The potential impact of the study is in the fact that rather than contributing to the scientific literature alone, it will be possible to synthesize the concepts of technology adoption theory and platform economics to build a framework of commercial analysis adjusted according to the peculiarities of the development of the artificial intelligence industry, thereby enriching the research in the area of artificial intelligence. Practically, the research will extend to the formation of a pool of analytical strategies using real world data to bring scientific basis of decision making to the investor and to assist the investor in making accurate evaluations of the long-term development value of artificial intelligence companies in the ever-changing market space.

2 Commercialization Path of Large-Scale Artificial Intelligence Models

A company's computing power base (GPU/TPU) determines its technology adaptability, which in turn influences its choice of commercialization path. Companies with advantages in general-purpose computing power, Nvidia tends to focus on ecosystem integration, companies with their own computing power architecture. Google emphasizes ecosystem embedding, and companies without hardware advantages. OpenAI chooses a tiered approach of "consumer-facing + business-facing" breakthroughs.

2.1 Layered Path of C-end Traffic Acquisition and B-end Monetization

The layered approach of "C-end traffic acquisition + B-end monetization" is particularly suitable for companies like OpenAI that have taken the lead in launching general-purpose large models. The choice of this path is highly related to their computing power foundation. The company's computing power foundation (GPU/TPU) determines its technology adaptability, which in turn affects the choice of commercialization path. Companies with advantages in general computing power, Nvidia tends to bind their ecosystems, companies with their own computing power architecture. Google focuses

on ecosystem embedding, and companies without hardware advantages. OpenAI chooses to break through in a layered manner of "C-end + B-end". This also repeats the essence of the logic of commercialization path choice of large-scale model companies. The first step to take by businesses is to introduce a free version of the model product to capture a high volume of C-end users to usage and experience the product, promptly create brand recognition and market validation demand. It is on this basis that people will be in a position to roll out paid subscription features like ChatGPT Plus to offer users more features and services, thus receiving a predictable cash inflow to finance the next technological version of the model. As OpenAI reported in its annual report, its subscription service revenue in 2024 will amount to 62 percent of its total revenue, and its Application Programming Interface (API) business revenue will increase over 150 percent a year to a year. The associate commerciality of this model is also confirmed by this data. The model capabilities will be captured as a standardized API interface and sold to B-end business that need to use services including smart customer service, content creation, and data analytics in order to record large-scale growth in revenues once a foothold is established in the consumer market. The B-first, C-later model can use C-end traffic to develop better technology as well as C-end products as well as use the B-end business market to raise revenue, one of the effective ways to commercially monetize large models [1].

2.2 Rapid Implementation Path by Embedding into the Existing Ecosystem

Google has its gemini model using this path of commercialization. In contrast to the OpenAI that got its inception through the development of fresh algorithms to create the market, Google simply integrates the AI functionalities of Gemini into its already existing mature service landscapes, such as Google search, Google cloud and smart office systems. Other applications of smart search engines in other platforms allow users to directly enjoy the comfort of artificial intelligence tools like smart question-answer and summary of contents in their everyday lives. By doing so, large-scale model technology can use existing traffic benefits to commercialize its products and services fast by reaching out to hundreds of millions of users and enterprise clients with minimal cost borne on market education and product promotion expenses [3].

2.3 Ecosystem Integration Path for Computing Infrastructure

The fundamental commercial strength that NVIDIA possesses is in the area of computing infrastructure. Since NVIDIA supplies major model manufacturers across the world with graphics cards, it is participating not only in supplying high-performance hardware products to the market but also in building the CUDA software platform to give the developers the entire tool chain, starting with model training through deployment. As of today, the CUDA platform of NVIDIA serves more than 4 million developers across the entire world, penetrating 85% of the market of the AI chip software ecosystem. When the developers become accustomed to the CUDA platform used to develop the models, they will become strongly stuck to it and will not be able to cope with other hardware architecture platforms [4, 5].

3 Key Factors Shaping the Investment Value of Artificial Intelligence Companies

3.1 Self-Reliance in Core Technologies is the Foundation of Investment Value

The autonomy of core technologies directly determines a company's technological barriers and risk resistance capabilities and is the primary factor in assessing investment value. As it has absolute control over the market when it comes to the general-purpose computing sphere, NVIDIA dictates the resources of primary computing power to train big models. Its hardware products have over 80% of the major model development in the world. Google, however, has no longer relied on external hardware vendors: It has created its own chips, the TPU. TPUs are explicitly designed to perform computations of neural networks and have benefits of reduced power consumption and increased performance, in comparison to general-purpose GPUs. This will enable them to adjust better to the training requirements of their models and manage the R and D expenditure efficiently. Although TPU of Google is modified to its model, it is not versatile and cannot address the needs of third-party companies. Despite consumers highly consuming power, NVIDIA GPUs possess a mature ecosystem and are highly compatible and are still the industry standard [4]. Conversely, firms which do not have the freedom of core technology implementation and rely on external suppliers to buy the necessary hardware will easily be influenced by the supply chain volatility and price hikes, and their technological upgrade cycle will be silenced leading to quite high investment risks [6,7].

3.2 A Clear Business Model is the Core of Investment Value

Having a clear and sustainable business model is the core element for transforming a company's technological advantages into investment value. A good business model needs to balance short-term profitability and long-term growth. For example, OpenAI adopts a dual-track model of "subscription service + enterprise API". Subscription services can bring stable cash flow to enterprises and ensure daily operation and R&D investment; API service for B-end has broad growth potential and can achieve exponential growth in revenue as the number of partner companies increases [1]. This model achieves a balance between short-term survival and long-term development, providing investors with stable and continuous returns. AI startups that rely solely on short-term government projects and sporadic orders are unlikely to have long-term investment value due to a lack of stable sources of profit and a clear growth path [2].

3.3 Ecosystem Resilience is an Important Guarantee of Investment Value

Ecosystem resilience is an important guarantee for measuring the long-term investment value of a company, and it is also a key factor that is easily overlooked. Companies with well-developed ecosystems can build formidable competitive moats through network effects. Taking NVIDIA as an example, its CUDA software platform has attracted

millions of developers worldwide. The more developers there are, the richer the applications developed based on the platform will be, which in turn attracts more companies to purchase NVIDIA's hardware products, forming a positive cycle of "hardware-software-developers" [5]. The network effects brought about by this ecosystem enable companies to effectively withstand the impact of market competition and technological changes and provide investors with more stable long-term returns [8-10].

4 Conclusion

In the present paper, the authors dwell on the example of OpenAI, Google, and NVIDIA and analyze the commercialization and investment value of large-scale AI models systematically. Its main findings are as follows: The key to commercialization of large-scale AI models is in accuracy of suitability of technology and the market demand. Businesses must take the right directions, based on their independent resources, including the C-end traffic acquisition and B-end monetization of OpenAI tiered model, ecosystem embedding model offered by Google, and computing power ecosystem binding model offered by NVIDIA. Three key aspects of core technology independence, sustainable business model, and ecosystem resilience are the primary determinants of the investment value of major AI companies. Organizations that have all these are more competitive in industry. The current AI large-scale model industry is in its critical stage of transitional development between technology and commercialization exploration phase. The results of the research can serve as a practical source of information by the corresponding companies to develop differentiated commercialization approaches or serve as information that the investor can use in the analysis of the long-term investment profitability of top AI companies.

The research paper has some limitations: only publicly available literature, annual reports of the companies, and industry reports were used as sources of data, and the research article did not receive direct information about the main activities of enterprises and specifics of technology research and development. It could also not give an in-depth analysis of major data like model reiteration expenses and profit framework. The conclusions consist primarily of qualitative descriptions, and they have no specific data behind. In the meantime, the research failed to use any quantitative analytical techniques and drew conclusions only by contrasting the surface attributes of the three firms. This complicates the process of quantifying the influence of other factors like the autonomy of technology and the ecological resilience to the value of investments that could lead to a more general forecast of long-term investment of the companies in question. The logicality and validity of the analysis are not adequate.

The use of questionnaires and interviews in future research will provide first-hand information about the AI industry and allow obtaining a better insight into the pain points of commercialization, as well as align conclusions more closely with industry realities. It is also capable of bringing quantitative models like discounted cash flow and Porters Five Forces and integrating company information with industry trends, in order to determine, quantitatively, the return of investment of such leading companies, as a basis for making quantitative investment decisions. In the future, as the rate of

technological change accelerates, and the industry ecosystem can constantly be enhanced, AI big data models will be profoundly incorporated into all industries and become the main infrastructure to facilitate the digital transformation and release massive commercial and social value.

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