

The Prospects and Risks of Artificial Intelligence Industry

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Abstract. Nowadays, with the rapid development of scientific and technological information, artificial intelligence has gradually penetrated into people's lives and become an indispensable part. The purpose of this article is to understand and analyze the artificial intelligence industry, and further make suggestions and improvements on its potential risks and prospects. This paper mainly studies the prospects and risks in the field of artificial intelligence, and analyzes them from different perspectives by analyzing the leading enterprises in three fields of artificial intelligence. This paper adopts PEST analysis method to understand the macro trend of artificial intelligence by analyzing the industry, and then analyzes the financial reports of these three companies to comprehensively understand the operation situation and potential risks of these three companies by analyzing four financial indicators. According to the overall analysis of the article, Iflytek and Topband have a better prospect, while TRS and Iflytek are riskier. Topband had the lowest liquidity risk, followed by TRS and finally Iflytek.

Keywords: Artificial intelligence; PEST Risk; Prospects.

1. Introduction

1.1 Background

With the rapid development of science and technology, smart phones, smart cars and the Internet have gradually entered people's vision and become an indispensable part of the family. Intelligent voice systems, smart home and electronic devices support people's clothing, food, housing and transportation. Alipay, Wechat Pay, face recognition and our personal privacy are also closely related. The field of artificial intelligence has gradually become a necessity for human beings, and its potential risks and hidden dangers are related to the development and progress of the human. With the outbreak of COVID-19, from 2020 to now 2022, the epidemic has brought unprecedented pressure and hidden dangers to the field of artificial intelligence. The shrinking of manufacturing industry, the decline of customer demand, the reduction of average salary, and the rise of maintenance costs have all brought uncertainties to each enterprise. Humans should be aware of the importance of artificial intelligence. Through the analysis of this article, people should understand the root cause of its risks and the prospect of artificial intelligence, which is the top priority for human development.

1.2 Related research

The prospects and risks in the field of artificial intelligence are affected by many factors, so the article mainly analyzes the four parts of PEST macro environment analysis.

From the policy factors, in March 2011, the government came out "12th Five-year plan" [1], and in November 2021, the Ministry of Industry and Information Technology issued the "14th Five-Year Plan for the In-depth Integration of informatization and industrialization" [2]. The main tasks will be on developing software and information technology services, focusing on emerging information technology services, promoting digital transformation of industries, building a new foundation for integrated development, stimulating new vitality of enterprises, and fostering a new cross-border and integrated ecology. With the deep integration of intelligence and digitalization and industry, the further development of intelligent products will be promoted. At the same time, the intelligent trend of industrial manufacturing is enhanced, and the demand for intelligent controllers will also increase. So, the field of artificial intelligence will have a bright future, and it will have a low bankruptcy rate.

Zhao analyzed the financing efficiency of Iflytek, and pointed out that Iflytek had core competitiveness in the early stage. Therefore, there is a certain amount of capital accumulation in the early development of the enterprise, and it can be seen from relevant data that the bank loan increases [3]. This part of the capital will meet the daily business activities, and then is set aside for the expansion of reproduction. Hua [4] and Lu [5] analyzed its asset investment value and found that Iflytek's net profit margin on other sales and the return on equity were low, indicating its weak profitability. Although the proportion of property rights has gradually increased in recent years, which indicates its long-term debt repayment ability has been enhanced, nonetheless, the overall debt repayment ability is still weak.

As the first mainstream input method in the early stage of China, Iflytek occupies a place in the early stage, but it failed to make a great many of money in the early stage, also facing the road of enterprise transformation. Wang pointed out in her paper that Iflytek has many alternatives in the field of AI voice, such as Xiaomi, Huawei and Vivo [6]. In order to compete in the field of artificial intelligence, they have launched their own and increasingly sophisticated intelligent voice assistants. Previous enterprises such as Baidu, Tencent, change the original partnership into competitors. Therefore, only by constantly recruiting innovative qualified personnel and constantly innovating can Iflytek keep its first state.

At present, there are many intelligent controller enterprises in China, and the competition pattern is scattered. The main reason is that intelligent controller products are selected quickly. In terms of market share, the leading enterprises in the intelligent controller industry are Topband and H&T. According to the literature [7], this paper finds that Topband has only one major competitor in the market. Topband attaches great importance to sci-tech customers. Sci-tech customers are usually small and have diverse needs, which leads to large R&D expenditures. Nowadays, Sci-tech customers have low bargaining power and they can accept higher prices. In the era of intelligence, the market demand science and innovation customers must be huge. Topband, which attaches great importance to science and innovation customers, has more opportunities and grows faster. The remaining companies are far inferior to Topband in many respects, and they have little influence on Topband business. Therefore, Topband is risky but not high.

Wang pointed out that the combination of the pandemic and the war made the external environment goes down in the first quarter of 2022 [8]. Manufacturing is difficult, and the material is out of stock, which puts a lot of pressure on the company's inventory and costs. However, Topband is still growing fast against the trend, and the number and volume of customer market share are increasing, so in this case, the growth space is large.

Feng pointed out that Text Retrieval System takes TRS as its main product and develops a general platform [9], industry application software products and data services. It is the first echelon in the field of artificial intelligence in China, with strong big data technology support. The company has a high degree of self-research and independent core technology. Its products are easy to use and widely used. TRS has always attached great importance to customer resources since its establishment, and has continuously formed a large range of cross-border customer groups. Customer stickiness is very high, and above 10,000 long-term partners. It has a leading position and strong brand advantage in a number of industry segments. TRS also develops fast, and it committed to becoming a leader in the artificial intelligence industry.

1.3 Objective

Firstly, this paper conducts macro analysis on the political environment, economic environment, social environment and technical environment through PEST analysis, to analyze the prospects and applications of artificial intelligence. Later, it analyzes the financial situation of three companies representing different aspects of AI, namely Iflytek, Topband and TRS. To understand the future prospects and potential risks of the artificial intelligence industry by analyzing its four financial aspects: gross profit margin, net return to parent, operating income and R&D expenses. Finally,

people can get an understanding of the prospects and risks in the field of artificial intelligence, analyze and suggest these risks, and guide the investment in the field of artificial intelligence.

2. PEST

This paper mainly uses PEST analysis method, taking three companies as cases to study, analyzes the potential risks in the field of artificial intelligence and the prospect of artificial intelligence. Suggesting targeted suggestions, and providing suggestions for future related research, so as to improve the situation of AI and achieve optimal resource allocation.

2.1 Political environment

In the 12th and 14th Five-Year Plans, the Central Committee of the CPC stressed the need to vigorously develop the field of artificial intelligence, and the government gave a lot of subsidies and preferences to enterprises within the relevant scope. In the far future, the article predicts that the field of artificial intelligence will have a full development, the scale of the industry will increase, and the growth rate will also rise steadily, for example, the intelligent control electronics industry. From the perspective of industry-related technology patents, with the continuous development of intelligent control industry in our country, the number of relevant technology patents also increases. According to the research, in 2021, the number of intelligent controller related patent applications in China was 1,497, an increase of 8.3% year-on-year.

2.2 Economic environment

With the continuous progress and development of science and technology, the manufacturing capacity is getting higher and higher, the products are gradually diversified, and the average income of people is also rising significantly. In today's ubiquitous technology, technology has penetrated into every aspect of us. People's demand for technology is also increasing, and more and more money is being invested. With the iterative upgrading of science and technology, products in the field of artificial intelligence are also changing rapidly. Therefore, this paper believes that the growth rate of product manufacturing and investment in the field of artificial intelligence will increase rapidly.

2.3 Social environment

Nowadays, with the rapid development of technology, electronic products exist everywhere in our life. In our daily life, we search for information online, watch videos, watch movies, listen to music, use WeChat or Alipay to pay fees, etc. Electronic products are everywhere in our life. Today's devices are becoming connected, always-connected is in great demand for intelligent controllers and artificial intelligence. From a different angle, the potential privacy, information leakage and other risks within artificial intelligence cannot be fully protected at present. Therefore, the article can foresee that the prospects and risks of artificial intelligence are huge.

2.4 Technological environment

With the gradual development of science and technology, human's industrial manufacturing is more and more exquisite, and the control of technology and process and the yield of products are very important. For example, Taiwan Semiconductor Manufacturing Co., LTD., the leading company in the mobile phone chip industry, has invested a large amount of money in technology research and development every year. From the original 28nm chip to the mass production of 4nm chip, the complexity of the internal components of the chip and the precision of the components have been rapidly improved. For the field of artificial intelligence, technical environment is very important, and technological progress comes from technological progress, so this paper believes that the prospect and growth rate of artificial intelligence are huge.

3. Financial comparison

In order to analyze the prospects and potential risks in the field of artificial intelligence, the paper selects three leading enterprises representing different commodities In the field of artificial intelligence, namely Iflytek, Topband, and TRS.

3.1 Data

(002230) Iflytek Co., Ltd: Focusing on the auto speech recognition technology and providing related devices products and customized application services, which are mainly applied in education, medical treatment, working office, and smart city area. Running a competitive market share in China.

(002139) Shenzhen Topband Co., Ltd (Topband): Relying on the core technology of electronic control, motor, battery, power technology and IoT platform. Providing customized intelligent solutions for home appliances, tools, new energy, industrial and other industries. Yielding its revenue from the global market.

(300229) Text Retrieval System (TRS): The main business includes providing artificial intelligence and big data software platform services, big data products and services and data security products and services, etc.

By collecting relevant data of these three companies in different aspects, processing and comparing these data, the paper can further analyze the financial situation of these three companies and judge their marketing achievements and operation quality. Therefore, the article chooses the following four financial indicators, namely gross profit margin, operating revenue, net profit attributable to shareholders of the parent company, and research and development expenditure. Since it is now September 2022, and the annual report of 2022 has not been published. Besides, a comprehensive quarterly report is not comparable. Therefore, the paper chooses the annual reports of these three companies from 2018 to 2021 to make a comparison, as shown in the following figure, which is not detailed here.

3.2 Gross profit margin

As shown in Fig.1, it finds that the gross profit margin of Iflytek [10] and TRS [12] are high, even reaching 50% and above, only Topband [11] shares is low. An enterprise's higher gross profit margin on sales indicates that its products have high added value, relatively advanced technology and strong market demand. Gross profit is positively correlated with total profit. High gross profit rate means a high profit rate, which reflects a good trend of enterprise development.

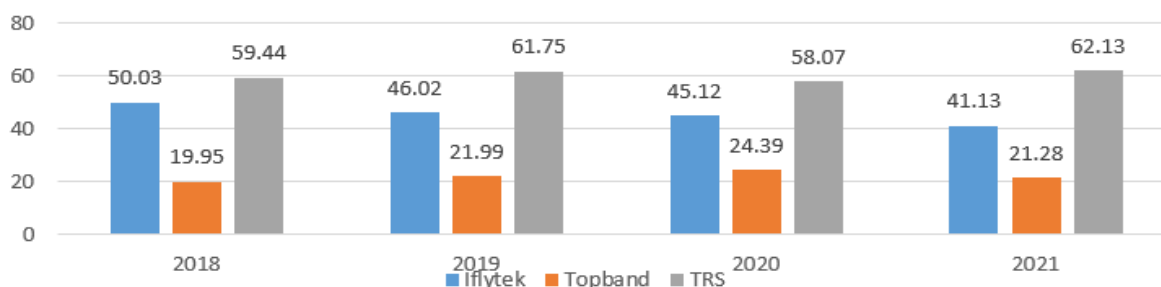


Fig 1. Gross profit margin (percent).

3.3 Operating revenue

The operating income of an enterprise is the core index of an enterprise, which reflects the scale, profitability and survival ability of an enterprise. If enterprise operating income is high, it indicates that enterprise products sell well. From the above figure, the article finds that Iflytek has the highest operating income among the three enterprises, which indicates that its enterprise scale is larger, products are more abundant and its growth speed is faster. This side-fact also shows that the quality of the enterprise's products is excellent, win the love of customers.

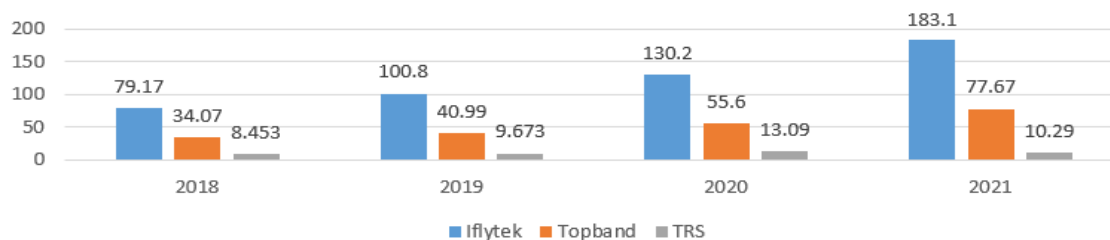


Fig 2. Operating revenue (billion).

3.4 Research and development expenditure

From the above figure, we can see that Iflytek's research and development investment cost increases rapidly, indicating that the company has a large R&D investment ratio, which means that the company has high innovation vitality, stronger innovation ability and high employee benefits. The increased investment in research and development means that the enterprise pays more attention to and supports scientific and technological innovation.

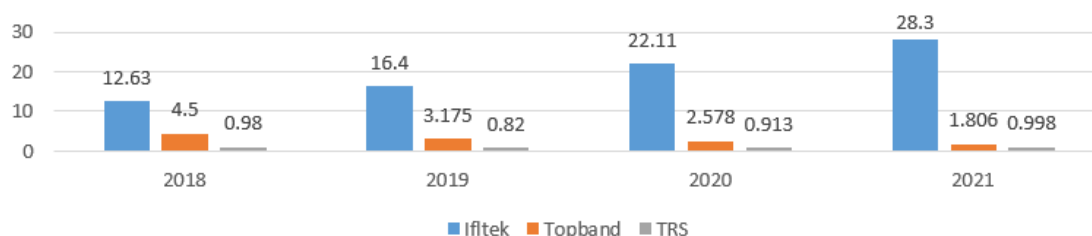


Fig 3. Research and development expenditure (billion).

3.5 Net profit attributable to shareholders of the parent company

Net profit attributable to shareholders of the parent company is the net income attributable to the owner of the parent company, which reflects the earning capacity of a company. As Fig.4 above, the net profit attributable to the parent of Iflytek increased significantly, indicating that the enterprise's business is in a good direction and its development potential is getting better and better. The net profits of Topband and TRS in 2021 are stagnant or even regressive.

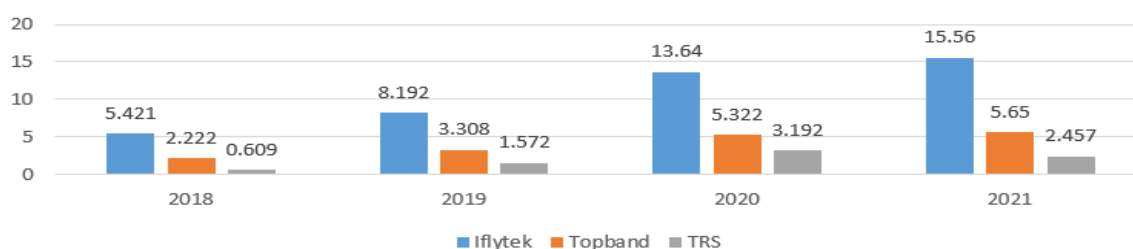


Fig 4. Net profit attributable to shareholders of the parent company (billion).

4. Discussion

4.1 Iflytek

From the table above, Iflytek's operating revenue grows rapidly, and its volume greatly exceeds Topband and TRS. This is because its products are abundant in number and cover a wide range of fields. Therefore, it is not possible to make a direct quantitative comparison between its R&D cost and its net profit attributable to shareholders of the parent company, so this paper will make a longitudinal comparison by analyzing its growth rate and related factors.

Iflytek's business is mostly relied on the speech technology. However, algorithmic progress and the upgrade of the industry chain are needed, since there are great obstacles lying in the speech recognition technology, including human voice separation, multi-round interaction etc. Therefore, the

rapid growth of research and development expenses of Iflytek is needed. Iflytek's main source of income comes from the sale of hardware, so due to the pandemic, the manufacturing capacity is reduced, resulting in a decrease in its gross profit margin. On the other hand, although Fig.2 shows that Iflytek's revenue is rising. However, through relevant data, this article found that in the increasingly fierce competition in the low-end market, Iflytek's share has been declining, which makes it difficult to ensure that its main products can continue to develop as before. Second, Iflytek's market prospects in the automotive AI voice interaction system are relatively limited, as more market shares are occupied by high-tech and top automotive companies. In addition, it is hard to predict whether Iflytek can continue to grow at a sustained rate as more third-party software competitors join the fray. Therefore, these three factors greatly increase the business risk of Iflytek. Iflytek has a large number of products and a wide product market, it has more potential competitors and the biggest business risk. But because of its rich products and wide coverage with strong product impact. The paper thinks the outlook of Iflytek is still positive.

4.2 Topband

As for Topband, the advantage of main business originates from the self-developed achievements, including battery cells, balanced magnetic switch and battery pack, eliminating the external dependence. Its R&D is mainly focusing on the new application scene of its battery instead of technology breakthroughs, so Topband's spending on R&D is enough. The main products of Topband are hardware, which has a low gross profit margin. However, during the epidemic period, the demand for smart home controllers has not decreased, so its business revenue is still rising and the development is in good condition. Besides, Topband has the largest share in the market where competition is not quite fierce, with only one major competitor H&T, and greatly supported by government policies of AI industry. Hence, both two factors make Topband have relative lower business risk than Iflytek.

4.3 TRS

Finally, as for TRS, its main product is its self-developed TRS system, which has a high technical fortress and irreplaceability. Software often has high gross profit margins. Nevertheless, TRS's customers rely heavily on the government. Under the impact of the epidemic, the demand for government websites and their operating platforms decreased, which led to a significant decline in its operating revenue and net profit attributable to shareholders of the parent company. Also, it is not difficult to find in the table that the research and development investment of TRS has been around 100 million yuan, without significant change, indicating that the investment of TRS may be in transformation and upgrading, but the R&D cost remains unchanged despite its high gross margin, which is a potential problem. In the future, if the investment remains unchanged, the technology may fall behind and couldn't follow the development of science and technology, which will lose its leading position. TRS, on the other hand, has gained a lot of key support from government policies. Its main products are government servers and operational websites. With the continuous increase of government support, TRS is expected to become one of the rapidly growing sub-markets of the server market in the future. In addition, TRS has a large market share in its segment and few competitors. Therefore, these three factors lead to the relatively low business risk of TRS compared with Iflytek. Therefore, through the analysis of relevant factors, Iflytek's business risk is the biggest among the three companies.

5. Conclusion

Through the research, this paper finds that the prospect of the field of artificial intelligence is optimistic. Despite the impact of the pandemic, the financial situation of all sectors in the field is good. In the face of more uncertainty, enterprises take more management measures to adjust the running state of enterprises. At the same time, this article finds that there are also more risks in the

field of artificial intelligence. People should not underestimate the occasional decline or stagnation of data for enterprises. With the development of science and technology, there are more and more potential competitors, and the management risk will be more and more. This article has made up for the gaps in the understanding of the operation status of AI since the epidemic period, provided help for other researchers to further analyze the impact of the epidemic on the field of artificial intelligence, and made people fully aware of the prospects and potential risks of AI. On the other hand, the current research also lacks the analysis of the state of artificial intelligence in the microeconomic environment. Future research should further understand the operating state of each enterprise in the enterprise through SWOT model analysis and conduct a detailed analysis.

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