

# Study on the Development of Kangtai Biologicals in the Context of the COVID-19 Pandemic--Analysis Based on Financial Indicators

Jiayi Zhang

Nanjing University of Science and Technology, Nanjing, China

**Abstract.** According to data from the National Health Commission, as of July 23, 2022, China's full basic immunization rate was 89.7% and booster immunization rate was 71.7%. Among them, the vaccination rate of at least one dose of vaccine for the elderly over 60 years old was 89.6%, the full immunization rate was 84.7%, and the booster immunization rate was 67.3%, and the new crown vaccine has almost reached market saturation. The Novel Coronavirus Pneumonia background, the vaccine industry is facing the new crown vaccine demand instability, the second type of vaccine government supervision is small, social responsibility events occur frequently (Changsheng Biological vaccine counterfeiting events, Beijing Kexing bribery case) and high R & D investment risk, so, based on the Contagious Biological face technology, patents, production capacity and so on a number of barriers, resulting in the decline in performance of the status quo, how to adjust the strategic direction in a timely manner also become a major test. Whether it will change accounting policies to "do high" performance? How about the direction of future development? Is very worth studying. In this paper, we will take Kangtai Bio as a case study, analyze the relevant indexes of its operation ability and development ability, explore the problems in its current development, and put forward relevant suggestions.

**Keywords:** COVID-19; social responsibility; operating ability; Development capacity.

## 1. Introduction

Shenzhen Kangtai Biological Products Company Limited was established in August 1988, with the gradual improvement and development of the company carried out a number of restructuring and reorganization, in February 2017 in the Shenzhen Stock Exchange GEM listed, is a collection of biological products research and development, production and sales in one of the listed enterprises, China's major hepatitis B vaccine manufacturers. 2021 May, the company's development of a new type of inactivated coronavirus vaccine was recommended by the National Health and Health Commission and agreed for emergency use by the State Drug Administration (SDA) after organizing demonstration. Recombinant COVID-19 Vaccine (Y25 Adenovirus Vector) was authorized for emergency use in October 2021 by the Indonesian National Drug and Food Regulatory Agency.

According to the information, in 2021, the total operating revenue of Kangtai Biologicals increased by 63%, and the net profit soared by 89% to an all-time high of \$1.28 billion, and the aggressive investment has caused its share price to skyrocket and its performance to skyrocket. However, in the first half of 2022, the company released a performance forecast indicating that the net profit is expected to fall 70.29%-61.37% year-on-year, making its share price fall in response. Kangtai Biological said in the announcement that the main reason for the decline in performance is due to the large changes in the environment of new crown vaccination at home and abroad in the second quarter, the demand for COVID-19 vaccine declined faster, as well as the impact of the Russian-Ukrainian conflict, the COVID-19 inactivated vaccine related assets impaired and the phase III clinical research and development expenditures were expensed. From the preview of the provision of asset impairment, Contagious Biological COVID-19 vaccine sales are not good, but previously the company has invested heavily in this field, the subsequent market transformation remains to be seen.

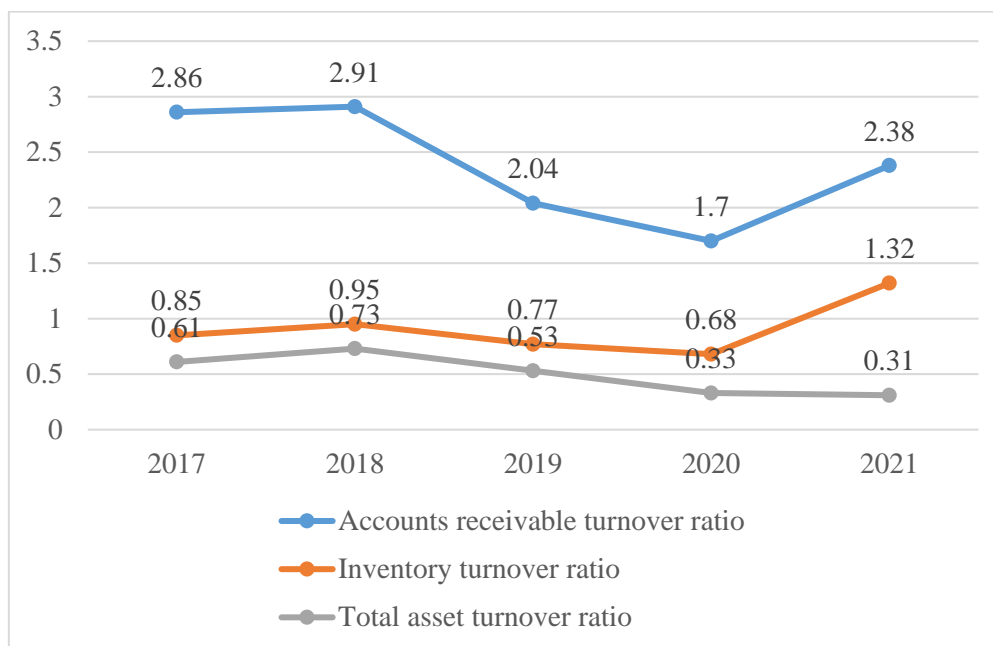
## 2. Financial Capacity Analysis

### 2.1. Operating Capacity Analysis

The indicators of operating capacity are designed to evaluate the ability of enterprises to utilize their assets to obtain benefits, and this paper selects three relevant financial indicators for operating capacity analysis, as shown in Table 1 below.

**Table 1.** Changes in Operating Capacity Indicators for Contagious Bio 2017-2021

Year Ratios	2017	2018	2019	2020	2021
Accounts receivable turnover ratio (times)	2.86	2.91	2.04	1.70	2.38
Inventory turnover ratio (times)	0.85	0.95	0.77	0.68	1.32
Total asset turnover ratio (times)	0.61	0.73	0.53	0.33	0.31



**Figure 1.** Operating Capacity Trend

It can be clearly seen through Figure 1 that the company's total asset turnover ratio is in a trend of rising and then falling, while the accounts receivable turnover ratio and inventory turnover ratio fluctuate more. In 2019-2020, due to the impact of the COVID-19, the company's vaccine product sales return decreased, the average collection period has risen, at the same time, the customer's cash turnover capacity has declined, and the company relaxes its own credit policy, so as to exchange for more sales. Although the accounts receivable turnover ratio has rebounded by 2021 as the market economy warms up, the overall rate is still at a lower level in the industry, and the strengthening and management of accounts receivable needs to be further improved. Inventory turnover rate is in a fluctuating downward trend from 2017-2020, the overall turnover level is low, and the amount of inventory at the end of 2020 increased by about 90% compared with the beginning of the period, facing the problem of inventory backlogs, especially inventory commodities increased by nearly one times. However, by 2021, the company's inventory turnover ratio was effectively improved, which was attributed to the growth in sales of COVID-19 Vaccine due to the company's newly-launched COVID-19 Vaccine being favored in domestic and international markets. The higher the total asset turnover ratio, the stronger the sales capacity of the enterprise, the better the efficiency of asset investment, while the company's total asset turnover ratio is in a downward trend, indicating that the company's overall sales scale and asset investment scale ratio needs to be strengthened, the total asset

utilization rate is low. Overall, the company's operating capacity has improved from 2020-2021, but the overall scale of sales and asset utilization rate need to be further improved.

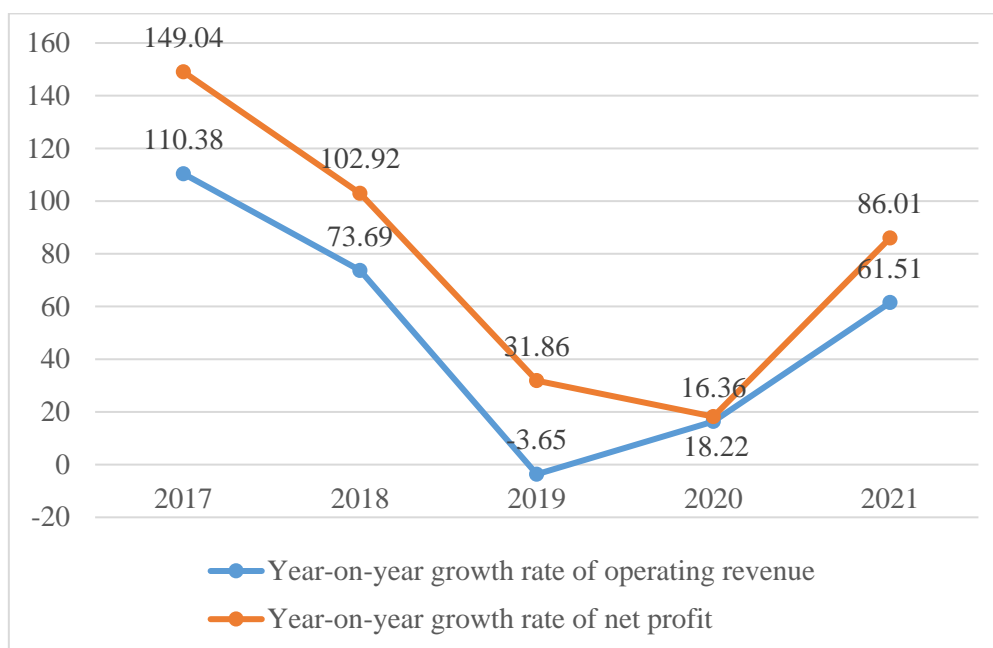
## 2.2. Development Capacity Analysis

### 2.2.1. Financial indicators analysis.

In order to have an approximate understanding of the development potential of the company's production and operation performance, and to assess its future growth capacity, this paper chooses two indicators, the growth rate of operating income and the growth rate of net profit, to be analyzed. Through Table 2, it can be directly seen that the fluctuation of the two indicators of the company has been large in recent years, and even negative in 2019, indicating that the company's sales capacity has certain deficiencies, and the development is extremely unstable, which also indicates that the company needs to further strengthen and improve its management, and it should play its maximum potential to promote the stable development of the company.

**Table 2.** Changes in Contagious Bio's Development Capacity Indicators, 2017-2021 (\$millions)

Year Ratios	2017	2018	2019	2020	2021
Revenues	116117.6	201690.3	194333.2	226117.7	365209.5
Growth rate of operating revenue (%)	110.38	73.69	-3.65	16.36	61.51
Net profit margin	21470.3	43568.5	57450.6	67918.6	126337.7
Growth rate of net profit (%)	149.04	102.92	31.86	18.22	86.01



**Figure 2.** Development Capacity Trend

The ups and downs of the growth rate of operating income fluctuate greatly, considering that the company is in the stage of R & D investment, the main business is mainly human vaccines, compared with the reference to the Caijing.com disclosure of the domestic biomedical manufacturing enterprises with the same in the period of rapid development of the data found that the average level of operating income growth rate is generally maintained in the range of 20% -45%. Through the discounted Figure 2 can be clearly seen Kangtai biological operating income growth rate and net profit growth rate of the two indicators of the direction of the basic consistent, in the past five years have experienced a “big ups and downs” process, fluctuation amplitude is larger. 2017 are greatly improved, which is mainly due to the success of the listing of Kangtai biological in 2017, as a pharmaceutical company with broad development prospects. Pharmaceutical manufacturing

enterprises with broad development prospects, by the market consistent favorable, but also received more cooperation opportunities. With the development of the market and the intensification of competition, the growth rate of operating income dropped to negative by 2019. As can be seen through the information disclosed in the annual report, the main reason is that in 2019, it was because the company's hepatitis B vaccine was not put into production, which led to the company's operating income in that year to reduce an important source of economic resources, and the corresponding growth rate of net profit decreased year on year. In 2020, due to the impact of the epidemic, the sales volume of Kangtai Biologicals' 23-valent pneumonia vaccine in 2020 saw explosive growth, with a year-on-year increase of 175%, which also resulted in a positive operating revenue growth rate, but due to the increase in raw materials and other costs and expenses that year, which compressed profit margins, the net profit growth rate declined slightly, despite the increase in revenue.

As of 2021, with the commissioning of the self-developed COVID-19 vaccine, the operating revenue growth rate and net profit growth rate gradually improved, and the company's operating situation gradually improved. Combined with the company's current operating situation can be found, the company's R & D strength is stronger, with a number of vaccine products being registered for approval (quadruple vaccine, hepatitis B vaccine, etc.), compared with domestic vaccine companies, R & D products are more diversified, and if successful in obtaining the approval of the production, it will likely usher in a surge in the number of profits. This new crown also opens the import and export path for the company, providing opportunities for further export expansion in the future. Therefore, Kangtai Biological in the future still has a certain space for development, the development ability is still relatively strong.

### 2.2.2. R&D investment analysis.

Vaccine companies mainly conduct R&D and sales of vaccines, and their investment in R&D is closely related to performance and development. Due to the impact of the COVID-19, we mainly study the R&D investment of enterprises since the beginning of the COVID-19 in 2019. From Table 3 below, we can see that in 2019-2021, the amount of R&D investment in Kangtai Biological was 215 million yuan, 273 million yuan, 738-million-yuan, accounting for 11.09%, 12.09%, 20.22% of operating revenue, and the proportion in 2021 was suddenly elevated, while the proportion was maintained at about 11-12% for many years before. According to the annual report, the reason for the rise in the proportion of the COVID-19 inactivated vaccine phase III clinical research and development investment amount is larger.

**Table 3.** Kangtai Bio's R&D Investment as a Percentage, 2019-2021 (\$Billion)

Year Ratios	2019	2020	2021
R&D investment	2.15	2.73	7.38
R&D investment as a percentage (%)	11.09	12.09	20.22

However, it is worth noting that, due to the performance growth is at a disadvantage compared to peers, Kangtai Biological R & D capitalization point to be changed to increase profits. Against the backdrop of the accounting change, the amount of capitalized R&D expenditures of Kangtai Biologicals surged, as shown in Table 4 below. 384 million yuan in 2021, accounting for 52.03% of the R&D investment, and 30.41% of the current period's net profit, which is much higher than the previous level: the company's above indicators in 2020 were 40.7 million yuan, 14.89%, and 5.99%, respectively, and in 2019 were 17.19 million, 7.98% and 2.99%, respectively. The increase in the point of capitalization of R&D contributes significantly to the company's profit in 2021. However, in the 2022 corporate earnings estimate announcement, net profit is expected to decline by 70.29%-61.37% year-on-year, with the decline mainly due to the impairment of assets related to the COVID-19 inactivated vaccine and the expensing of Phase III clinical expenditures. The risk that exists here is whether the capitalization of R&D expenditures of Kangtai Biologicals in the past three years is

reasonable, and whether accounting changes will be used to whitewash the statement in order to improve net profit?

**Table 4.** Capitalized Share of R&D Expenditures of Kangtai Bio, 2019-2021 (\$Billion)

Year Ratios	2019	2020	2021
Amounts capitalized for R&D expenditures	0.17	0.41	3.84
Capitalization of R&D investment (%)	7.98	14.89	52.03
Capitalization of net profit (%)	2.99	5.99	30.41

### 3. Problem Analysis

#### 3.1. Inefficient Asset Management and Utilization

Combined with the analysis of the metrics data of Contagious Bio, it is found that the company's assets are inefficiently utilized and have a slow turnover rate. The low management efficiency and utilization efficiency of assets leads to waste of resources. It is not conducive to the profitability of the company and long-term development, which will lead to a decline in the operating efficiency of the company, thus reducing the net profit.

First of all, accounting practice believes that the normal level of accounts receivable turnover ratio is generally maintained at about 3. However, the average level of Kangtai Biologicals in the past 6 years is 2.4, which is still a certain gap from the standard. According to the data of the annual report, it can be seen that as of 2021, the amount of bad debt provision for accounts receivable of the Company has increased by 33.69% compared to 2020, and the large amount of accounts receivable has not been effectively recovered and utilized. Secondly, through inquiring the relevant data of finance and economics network, we found that the inventory turnover rate of domestic enterprises in the same industry with Kangtai Biologicals is generally maintained at around 2-3, but the current average level of Kangtai Biologicals is 1. The efficiency of inventory use and turnover speed is low, and if the inventory backlog is too large, the vaccine products can only be scrapped when they are expired, which also means that the company's inventory cost is consumed at a higher level, which will increase a certain amount of company's operating risk, and it is necessary to further strengthen the management of inventory. Finally, during 2020-2021, the sales revenue of Kangtai Biologicals increased year by year for two consecutive years, but the total asset turnover ratio decreased year by year, indicating that the utilization efficiency of the input assets of the enterprise is low, and it does not get the return of benefits corresponding to the input assets, which is not conducive to the enhancement of enterprise value.

#### 3.2. Sales Capability to be Improved

Reflecting the direct indicators of enterprise sales capacity is the high and low level of operating income and operating income growth rate, operating income not only directly affects the value of net profit, which in turn affects the net operating profit after tax. Combined with the company's annual report information can be seen, Kangtai biological current sales focus on China's central, southern and eastern regions, the rest of the region combined sales of less than 20% of the total turnover of Kangtai biological current domestic vaccination rate increased significantly, the vaccine domestic market shrinks; and the international vaccine import and export situation is affected by a variety of factors such as political, scientific and technological, and the export of domestic vaccines is not smooth. Kangtai biology in the COVID-19 period of large investment in the research and development of new crown vaccine, due to the long period of research and development, more investment in the specificity of the enterprise is facing significant market uncertainty. It can be seen that the current sales range of Kangtai Biologicals has an obvious geographical scope, and the scope

of exports is also narrower, there is uncertainty in the return on investment, which is not conducive to the enhancement of enterprise value.

#### **4. Research proposals**

In enhancing the efficiency of asset utilization, on the one hand, we have strengthened inventory management and improved the turnover rate. Due to the efficacy of the vaccine and the applicability of different populations, the company needs to conduct a comprehensive study of the market, according to the company's market size and accurate control of future sales forecasts, from the production and sales and the number of audiences to start the strict management of inventory. Through different products in different regions to carry out planned control of production, while according to the actual order quantity flexible adjustment of the production plan, the production department and the sales department closely integrated to reduce the phenomenon of inventory backlogs, improve inventory turnover rate, reduce inventory management costs, improve utilization rate. On the other hand, strengthen the management of accounts receivable to enhance the turnover rate. The transaction amount of vaccine products of Kangtai Biologicals is large, and some of the customers are long-established trading relationships. It is necessary to establish customer integrity files and set repayment periods in a timely manner according to the actual situation. According to different customers to set up different collection methods, and timely reconciliation of accounts receivable, strict control of the occupation of settlement funds, timely clean up the delinquent fees, reduce the bad debt loss of accounts receivable and other accounts receivable, so as to improve the turnover rate of accounts receivable, and increase the operating efficiency of the accounts receivable.

In the area of improving corporate development capacity, First, expand sales channels. Kangtai biology in the human vaccine industry under the trend of fierce competition, should gradually expand the sales network in most areas of the country, the industrial sales layout to the north and western regions to extend, to seize the vaccine market has not reached saturation, and gradually expand the market share. Specifically manifested in the expansion of the sales force system, improve the sales staff training system, increase the investment in sales costs, increase the level of marketing efforts, through increased investment in advertising costs to expand publicity, enhance corporate visibility, and strengthen cooperation with vendors. Try to increase the share of the vaccine market under the premise of quality assurance and risk control.

Secondly, shift the focus of R&D. The outbreak of the COVID-19 has provided development opportunities for Kangtai Biologicals, but the factor is, after all, only a temporary factor and cannot affect the company's future development trend in the long term. Although the COVID-19 vaccine sales decline, Kangtai biological other vaccine types performed well, pulling the company's revenue growth of more than 70%. Among them, the main product quadruple vaccine sales revenue increased by about 60.13% over the same period of the previous year, hepatitis B vaccine sales revenue increased by about 20.76% over the same period of the previous year, and the newly-launched variety of 13-valent pneumococcal polysaccharide conjugate vaccine is gradually releasing the volume. Therefore, the Company should seize the opportunity to formulate the development strategy of "focusing on R&D", and take the opportunity to catalyze the R&D results to seize the vaccine market. With the accumulated R&D experience and technology platform, the company will shift to other disease areas to consolidate and improve its core competitiveness.

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