The impact of COVID-19 on corporate investment behaviours

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Abstract. The COVID-19 pandemic has had a significant impact on the investment strategies of corporations worldwide. This has led to many companies reevaluating and adjusting their investment approaches in response to the changing business landscape. To understand these shifts, this article used a paired t-test methodology to analyse changes in various financial components, including accounts receivables, inventory, fixed assets, and intangible assets, from 2019 to 2021. The study also examined the proportion of each of these components in the total assets of the companies under investigation. The findings revealed a consistent upward trajectory in the aforementioned asset categories, even during the pandemic outbreak. This implied that companies continued to invest in these areas, which may have been less affected by the pandemic. However, apart from intangible assets, the proportion of the remaining asset categories in the total assets of these companies experienced a decline. The article suggested that companies may change their investment priorities or reallocate resources in response to changing economic conditions brought on by the epidemic. Therefore, it is beneficial to improve the overall performance of the company through efficient use of resources.

1 Introduction

Investment is a crucial economic activity for companies, and their holding assets are good indicators of their investment behaviour. Accounts receivables play an important role in risk management, and effective account receivables management is one possible insolvency protection strategy [1]. Inventories are held to meet the needs of daily production operations, and efficient inventory management can significantly improve companies’ total financial performance [2]. Fixed assets contain property, machinery, and equipment. Fixed Asset Turnover has a significant positive impact on the profitability of financial performance [3]. Intangible assets include patents, trademarks, and proprietary technology. Intangible assets are regarded as the foundation of a company’s value generation, assisting the company to attain success and a major source of the company’s competitive advantage [4]. Investing and holding these assets helps companies manage operating risks, maintain competitiveness, and increase profitability.

However, due to the impact of the COVID-19 epidemic, many companies were affected causing huge economic losses, the company may make a shift in strategy to cater to the environment change. Researchers have discussed the change in companies' behaviours during or after the epidemic. The coronavirus crisis in 2019 promoted large-scale organizational adoption and development of digital and remote working [5]. Consumers relied more on online shopping and electronic payment methods during the outbreak, so there is a need for businesses to strengthen their e-commerce areas [6]. The extraordinary healthcare demand caused by the abrupt breakout of the coronavirus disease 2019 (COVID-19) pandemic has nearly brought healthcare systems to their knees, particularly in developing countries [7]. In order to curb the spread and propagation of COVID-19, the State has issued a ban to lock down the area, which has brought the tourism industry to a temporary [8]. Leisure and internal tourism had a sharp fall due to the present pandemic COVID-19, resulting in revenue losses of more than 50% [9]. COVID-19 had the greatest impact on retail and hotel buildings, as well as, to a lesser extent, offices, whereas the residential and industrial sectors were less affected [10]. Restricted mobility and reduced purchasing power have greatly affected the demand for food, especially among those affected by chronic hunger, small farmers and children from low-income families [11]. COVID-19 has had a negative impact on the agricultural sector, with farmers facing labour shortages and shortages of agricultural products such as seeds, fertilizers and pesticides, leading to an increase in the cost of production and higher prices for their products [12].

Since the current study only examined the impacts and changes in different industries caused by the epidemic, there is less literature related to the changes in investment with companies. Therefore, it is relevant to study the changes in firms’ investments after the epidemic. This paper used a paired-t-test to discuss the changes in companies' assets investment. This paper may have two contributions. First, this paper filled the gap that there was little research analysing companies’
changing investment behaviour after the epidemic. Second, this paper analysed the reason for companies’ changing assets holdings, which may give some suggestions for better management and operation.

2 Method and sample

2.1 Method
Covid 19 occurred in December 2019, so this paper used paired t-tests to analyse the changes in firms’ investment in different asset categories from 2019 to 2020, 2020 to 2021 and 2019 to 2021 respectively.

2.2 Sample
In this paper, a sample of 3,597 Chinese A-share listed companies was obtained by excluding the financial sector, ST companies and unqualified observations with missing values. The amounts of account receivables, inventories, fixed assets and intangible assets holdings were selected as the indicators of corporate investment behaviour, and all data were obtained from the CSMAR database.

3 Results

3.1 Changes in account receivables
The t-test results from Table 1 showed that the change was significant at 90% confidence level from the year 2019 to 2020. Account receivables increased significantly at 99% confidence level from the year 2020 to 2021. Overall, the account receivables increased a lot from the year 2019 to 2021.

Table 1. Paired t-test for account receivables

<table>
<thead>
<tr>
<th>Account receivables</th>
<th>Mean (RMB)</th>
<th>t</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019-2020</td>
<td>50,959,743.88</td>
<td>1.752</td>
<td>3597</td>
<td>0.080</td>
</tr>
<tr>
<td>2020-2021</td>
<td>223,362,336.79</td>
<td>9.780</td>
<td>3597</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2019-2021</td>
<td>274,322,080.67</td>
<td>6.376</td>
<td>3597</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

3.2 Changes in inventory
The t-test results in Table 2 showed that the change in inventory was significant at 95% confidence level from the year 2019 to 2020. Inventories increased significantly from the year 2020 to 2021, which was almost more than twice the increase from year 2019 to 2020. Overall, inventory changed significantly from the year 2019 to 2021.

Table 2. Paired t-test for inventory

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Mean (RMB)</th>
<th>t</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019-2020</td>
<td>199,025,558.73</td>
<td>2.310</td>
<td>3597</td>
<td>0.021</td>
</tr>
<tr>
<td>2020-2021</td>
<td>385,923,740.14</td>
<td>6.246</td>
<td>3597</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2019-2021</td>
<td>584,949,298.87</td>
<td>4.480</td>
<td>3597</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

3.3 Changes in fixed assets
The t-test results in Table 3 showed that fixed asset was significant at 90% confidence level from the year 2019 to 2020. Fixed assets increased significantly at 99% confidence level from the year 2020 to 2021. Overall, Fixed assets increased largely from the year 2019 to 2021.

Table 3. Paired t-test for fixed assets

<table>
<thead>
<tr>
<th>Intangible assets</th>
<th>Mean (RMB)</th>
<th>t</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019-2020</td>
<td>172,040,250.91</td>
<td>1.890</td>
<td>3597</td>
<td>0.059</td>
</tr>
<tr>
<td>2020-2021</td>
<td>285,726,049.58</td>
<td>6.369</td>
<td>3597</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2019-2021</td>
<td>457,766,300.49</td>
<td>4.376</td>
<td>3597</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

3.4 Changes in intangible assets
The results of the t-test in Table 4 showed that intangible assets were significantly different between the years 2019 and 2020, the years 2020 and 2021, and the years 2019 and 2021. Intangible assets increased significantly from the year 2019 to 2021.

Table 4. Paired t-test for intangible assets

<table>
<thead>
<tr>
<th>Intangible assets</th>
<th>Mean (RMB)</th>
<th>t</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019-2020</td>
<td>94,697,698.66</td>
<td>5.529</td>
<td>3597</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2020-2021</td>
<td>131,838,514.82</td>
<td>5.516</td>
<td>3597</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2019-2021</td>
<td>226,536,213.48</td>
<td>6.261</td>
<td>3597</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

3.5 Changes of asset categories
Table 5 showed that only intangible assets gradually increased from 2019 to 2021, which totally increased by 0.18% of the total assets. The proportion of fixed assets to the total assets was decreasing every year from 2019 to 2021 with a total decrease of 1.74%. And it also was the asset with the largest decline in proportion in 2020, falling by 1.08% in one year. However, fixed assets still accounted for the highest proportion of the four types of assets. Inventory declined in 2020, falling by 0.69% in one year, but with a slight rebound in 2021; Account receivables were the most volatile assets.

![Table 5. Assets proportion](image)

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Account receivables</td>
<td>7.78%</td>
<td>7.32%</td>
<td>7.62%</td>
</tr>
<tr>
<td>Inventory</td>
<td>18.46%</td>
<td>17.77%</td>
<td>17.80%</td>
</tr>
<tr>
<td>Fixed assets</td>
<td>21.14%</td>
<td>20.06%</td>
<td>19.40%</td>
</tr>
<tr>
<td>Intangible assets</td>
<td>4.77%</td>
<td>4.81%</td>
<td>4.95%</td>
</tr>
</tbody>
</table>

Fig. 1 and 2 reflect the same trend for accounts receivable and inventory, with a decreasing proportion in 2020 but an increasing proportion in 2021.

Fig. 3 and 4 reflect an opposite trend in fixed and intangible assets, with the share of fixed assets decreasing year on year and the share of intangible assets increasing year on year between 2019 and 2021.

![Fig. 3. Changing trend of fixed assets.](image)

![Fig. 4. Changing trend of intangible assets.](image)

4 Discussion

4.1 Potential risks

While an increase in assets is usually a sign of business growth, however, such growth is often accompanied by a range of potential risks.

The increase in accounts receivable may reflect a decrease in customers' ability to pay or delays in payment. If customers are not able to repay within the required timeframe, there is a risk that the company will be exposed to bad debt provisions, which may lead to a shortage of cash flow or lack of liquidity, which also could affect the company's ability to operate in the short term. In addition, high receivables may cause concern among investors and shareholders. This can trigger a bad signal that the company may be facing collection problems, which can affect the share price and reputation. Due to transportation issues.

Epidemic-controlled blockades made it unable to sell commodities smoothly, and a weak economy caused people to demand less, resulting in a buildup of stockpiles. Large inventories mean that a company's money may be sitting idle in unsold products, this results in insufficient liquidity to pay debts or meet other urgent expenses. In addition, the company's storage of inventory takes up storage space, which increases the
company's operating costs, and long storage times are accompanied by expiration, depreciation, and obsolescence, which reduces the sales value of the merchandise.

As fixed assets increase, maintenance and depreciation costs will also increase, which may have a negative impact on the company’s profitability. Particularly in the case of the epidemic global recession may result in the company's investment in fixed assets not being able to adapt to market demand, which may result in losses.

Intangible assets include intellectual property, patents, and trademarks. Its value may decline as new technologies are created. In addition, intangible assets are often more difficult to measure accurately, which can make it difficult for companies to reflect their true value in their financial statements, so it is an important challenge for companies to assess the value of intangible assets objectively and fairly.

4.2 Suggestions

To mitigate these potential risks, the company may consider the following strategies or measures.

Relevant corporate personnel should improve consumer credit assessment, optimize the accounts receivable management process, give incentives to encourage timely payment and improve customer communication. More cautious administration and monitoring of accounts receivable is needed in times of economic turbulence, particularly in instances such as the COVID-19 epidemic.

Effective inventory management is critical to ensuring smooth corporate operations and capital flow. A company can alleviate the problem of inventory build-up by forecasting changes in market demand and adjusting production on time, as well as by implementing promotions and marketing campaigns to stimulate product sales and reduce inventory build-up for inventory that is already backlogged. Adequate risk assessment is important before investing in fixed assets. Internal asset managers should consider factors such as technological upgrades and changes in market demand and set strict capital budgets to ensure that fixed asset investments are in line with the company's long-term strategy and profitability.

Investments in intangible assets also require an adequate risk assessment, taking into account market trends and choosing to develop where the market demands are high, and investing in technical support and development of the drug industry was a wise investment decision. In addition, companies should pay close attention to technological changes to ensure that the technical value of their intangible assets remains competitive.

5 Conclusion

This paper analyzed companies' changes in assets investments after the covid-19 epidemic. This paper examined the changes in accounts receivable, inventory, fixed assets and intangible assets over the period 2019-2021 through the CSMAR database, and the findings showed that the four assets have an upward trend. However, the proportion of accounts receivable, inventory and fixed assets (as a percentage of total assets) is decreasing, and the proportion of intangible assets is generally increasing year by year. In addition, this paper presented the potential risks of the increase of each asset, such as excessive accounts receivable and inventories may cause the company to face a shortage of liquidity, which in turn affects normal operations. Additionally, high accounts receivable may also trigger investors' concerns and negatively affect the company's image and reputation. On the other hand, an increase in inventory will bring additional operating costs. As well as excessive fixed assets and inherent assets will depreciate over time, without a good risk assessment system, the company will be subject to huge losses of depreciation. However, this paper only analyzed the changes in four types of companies' assets holdings, which contributed to half the total assets. Through this article, the company can better balance the choice of liquid assets and investment percentage to ensure the effective use of resources. Although this may explain companies' investment behavior to some extent, as these four types of assets are important for companies' operations. Neglecting the other half of total assets may not capture the full picture of companies' investment behaviors. Future researchers may explore further to study the impact of the epidemic on companies' investment behaviors.

References

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