

Analysis of the Impact of the COVID-19 Pandemic on Geospatial Listed Companies in China in 2020

Yanqing Chang

Surveying and Mapping Development Research Center
of the Ministry of Natural Resources
28 Lianhuachi West Road, Beijing, China

SUMMARY

COVID-19 pandemic has been made the global economy seriously damaged. The geospatial industry has also been affected. Based on the statistics of the operation status of the main listed companies in the top 15 enterprises in China's geospatial industry in 2020, this paper makes a brief summary and analysis of the operation status and the main problems faced by the enterprises during the pandemic period, and puts forward some suggestions to promote the development of the geospatial industry.

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The outbreak of COVID-19 pandemic since the end of 2019 is under the situation that China's economy is facing a period of structural transformation, the demographic dividend is shrinking, the trend of social aging is speeding up, the global economy is weak and the external environment is uncertain. The pandemic has greatly affected China's economy, and the geospatial industry has also experienced difficulties. The epidemic situation has brought impact and challenge to the management ability.

At present, there are 127000 geospatial enterprises in China, with a total output value of 647.6 billion yuan in 2019^[1]. This paper makes statistics on the operation of 15 listed geospatial companies with a market value of more than 3 billion in China in 2020^[2]. These 15 companies come from the top 100 enterprises in China's geospatial industry selected by China Geospatial Association in 2020. Among them, there are 38 listed companies. We selects 15 companies with the highest market value and representative, and makes statistics and analysis on the 2020 semi annual report and annual report of these companies, The COVID-19 pandemics situation in 2020 will be reflected in one aspect.

1. As a whole, COVID-19 has led to a decline in income and net profits

The average market value of the 15 companies is about 10.8 billion yuan. The total income and net profit in 2020 and their comparison with the previous year are shown in Table 1. Due to the obvious differentiation of performance data in 2020, the average, maximum and minimum of total income and net profit and their comparison with that in 2019 are shown in Table 2.

Table 1: Business income and profit in 2020 (unit: million)

Company abbreviation (stock code)	Report Time	Income	year-on-year income	net profit	year-on-year net profit
BDStar Navigation (002151)	first quarter	705	19.29%	21	225.91%
	semi annual	1603	20.71%	64	248.30%
	third quarter	2522	26.54%	106	3612.78%
	annual	3624	21.33%	146	122.43%
SuperMap (300036)	first quarter	221	2.31%	88	15.13%
	semi annual	523	-18.15%	42	1.98%
	third quarter	957	-9.12%	144	12.50%
	annual	1610	-7.20%	234	6.85%
eGOVA (300075)	first quarter	183	-11.17%	24	9.92%
	semi annual	486	-6.72%	71	-24.57%
	third quarter	754	-0.13%	74	-22.41%
	annual	1414	12.40%	158	21.54%
CASC (000901)	first quarter	1187	-12.46%	-61	-619.80%
	semi annual	2289	-16.91%	-105	-339.18%
	third quarter	3736	-9.50%	-95	-257.11%
	annual	5350	-9.81%	-664	-515.00%
E-HUALU (300212)	first quarter	691	5.50%	62	-19.97%
	semi annual	1201	-12.59%	155	-13.89%
	third quarter	1628	-33.20%	145	-28.92%
	annual	2806	-25.05%	685	78.39%
NavInfo (002405)	first quarter	394	-24.38%	-73	-272.71%
	semi annual	961	-11.35%	-163	-290.42%
	third quarter	1530	-0.33%	-194	-902.32%
	annual	2148	-0.0701	-309	-1.9115
UniStrong (002383)	first quarter	251	-0.1549	-124	-3.3987
	semi annual	692	0.0267	-196	-4.9376
	third quarter	1093	0.0158	-222	-3.5003
	annual	1690	0.091	-1094	-0.0311
Hi-Target (300177)	first quarter	145	-46.30%	-23	-204.25%
	semi annual	552	-23.12%	38	-1.80%

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Virtually in the Netherlands, 21–25 June 2021

	third quarter	948	-10.31%	86	109.50%
	annual	1773	9.51%	86	155.78%
CHCNAV (300627)	first quarter	148	-21.28%	19	3.22%
	semi annual	479	3.90%	53	16.53%
	third quarter	841	20.31%	109	55.47%
	annual	1410	23.04%	196	42.03%
FOREVER TECHNOL OGY (300365)	first quarter	70	-33.75%	6	-35.87%
	semi annual	244	-44.92%	34	-62.27%
	third quarter	515	-21.85%	93	-27.74%
	annual	965	-14.07%	82	-72.05%
OBT (300053)	first quarter	129	-30.65%	19	-19.62%
	semi annual	341	-14.54%	31	-45.76%
	third quarter	547	-1.62%	49	-34.79%
	annual	869	2.12%	108	146.35%
Surveying and mapping Co., Ltd (300826)	first quarter	87	-12.32%	11	-15.29%
	semi annual	203	-10.96%	28	-18.47%
	third quarter	283	-7.82%	34	-17.34%
	annual	543	6.05%	73	-15.91%
GSAFETY (300523)	first quarter	270	52.54%	-20	-1037.17%
	semi annual	634	105.18%	-3	95.45%
	third quarter	862	5.38%	3	-83.91%
	annual	1650	5.43%	92	-25.25%
PIESAT (688066)	first quarter	17	39.78%	-36	10.89%
	semi annual	208	70.49%	3	109.29%
	third quarter	408	46.76%	34	1445.91%
	annual	846	40.77%	128	53.26%
Geovis (688568)	first quarter	38	-18.13%	-20	-96.13%
	semi annual	156	19.08%	-7	-19.46%
	third quarter	317	29.39%	32	59.18%
	annual	702	43.56%	147	44.12%

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Table 2: The average, maximum and minimum of total income and net profit

	Report Time	In 2020				In 2019
		Income	year-on-year income	net profit	year-on-year net profit	year-on-year net profit
average value	first quarter	3.02	-7.10%	0.21	-159.71%	-125.55%
	semi annual	7.05	4.18%	0.64	-55.87%	-14.52%
	third quarter	11.29	2.41%	0.32	238.05%	-34.71%
	annual	18.27	7.34%	1.16	-10.11%	-52.50%
Highest value	first quarter	11.87	52.54%	0.21	225.91%	31.43%
	semi annual	22.89	105.18%	0.64	248.30%	103.16%
	third quarter	37.36	46.76%	1.06	3612.78%	66.67%
	annual	53.50	43.56%	1.46	155.78%	92.54%
Lowest value	first quarter	0.17	-46.30%	0.21	-1037.17%	-714.15%
	semi annual	1.56	-44.92%	0.64	-493.76%	-118.83%
	third quarter	2.83	-33.20%	-0.95	-902.32%	-229.87%
	annual	5.43	-25.05%	0.86	-515.00%	-513.75%

As can be seen from the above tables, COVID-19 has a relatively large impact on the performance of enterprises. In terms of the year-on-year income, in the first quarter, 10 companies decreased, accounting for 66.7%, and 5 companies increased, accounting for 33.3%. Compared with the decrease of 4 companies and the increase of 11 companies in 2019, the performance decreased significantly. In the second quarter, 9 companies fell and 6 companies rose (in 2019, 6 companies fell, 7 companies grew and 2 companies had no comparative data). In the third quarter, 9 companies fell and 6 companies rose (in 2019, 4 companies fell, 10 companies increased and 1 company had no comparative data). In the fourth quarter, 5 companies fell and 10 companies increased (in 2019, 5 companies fell, 10 companies increased and 2 companies had no comparative data).

From the year-on-year situation of net profit, the annual net profit fell by 10% on average, 9 companies increased and 6 fell. In the first and second quarters, the decline was more obvious than that in the same period of 2019, but the situation improved significantly in the third and

fourth quarters. Finally, the annual average net profit exceeded that in 2019, which was basically consistent with the measures taken by the Chinese government to strictly control the epidemic situation in the first and second quarters and to resume work and production in time in the third and fourth quarters.^[3-17]

2. The performance differentiation of each company is obvious

It can be seen from the "year-on-year net profit in 2020" and "year-on-year net profit in 2019" in Table 2 that the performance differentiation trend in 2020 is very obvious compared with that in 2019. From the published annual report, almost all companies' performance has been affected by the epidemic. On the one hand, the navigation related businesses of the automobile industry are seriously affected by the epidemic. On the other hand, with the completion of China's Three generations of Beidou, the performance related to Beidou navigation is growing rapidly.

From the perspective of net profit, the net profit of 5 companies increased year-on-year in the first quarter, with an average growth of 53%, among which BDStar Navigation increased by 226% year-on-year and 10 companies decreased year-on-year, with an average of - 266%, among which GSAFETY declined the most, with an average of - 1037%; In the second quarter, the net profit of 5 companies increased by 94.31% on a year-on-year basis, of which BDStar Navigatio increased by 248% on a year-on-year basis, and the net profit of 10 companies decreased by - 131% on a year-on-year basis, of which GSAFETY declined the most, with - 494%; In the third quarter, the net profit of 6 companies increased by 883% on a year-on-year basis, of which, BDStar Navigation increased by 3612% on a year-on-year basis, and the net profit of 9 companies decreased by - 131% on a year-on-year basis, of which the biggest decline was found in NavInfo (- 902%);

From the final situation of the whole year, the annual report shows that in 2020, the net profit of 9 companies increased year-on-year, with an average growth of 75%, of which the highest is Hi-Targe, with a year-on-year growth of 156%. The highest total profit is E-HUALU, with a net profit of 685 million yuan, far exceeding other companies. There were 6 companies with a year-on-year decrease, with an average of - 137%, of which CASC had the largest decline, with - 515%.

Among the companies with the highest performance growth, BDStar Navigation company, "the income growth mainly benefited from the rapid growth of intelligent agricultural machinery market and professional UAV market, and the high-precision board and card shipment increased significantly. The overall market demand of information equipment is strong, and the orders of information equipment business are full, achieving rapid growth. "Beidou + ecological layout advantage appears"^[3]. E-HUALU, with the highest total annual profit, mainly relies on the "data Lake" for local governments and Blu ray products that provide

massive "cloud archiving and cloud backup" data storage services for government and industry customers^[7].

Among the companies with declining performance, CASC, with the largest decline in annual performance, is mainly engaged in aerospace applications, automotive electronics, Internet of Vehicles and Industrial Internet of things. "In 2020, COVID-19 spread globally, and the major subsidiaries and its main customers stopped or reduced production, which seriously affected the company's reporting period. During the period of shutdown or production reduction, overseas companies still have to bear fixed costs such as labor costs, depreciation and amortization, which aggravates the negative impact of performance^[6]. GSAFETY, which had the worst performance decline in the first and second quarter, was affected by the epidemic, hindered the development of new projects, reduced new orders, and increased related costs and expenses compared with the same period last year^[15]. NavInfo, the worst decline in the third quarter, "the year-on-year decrease of navigation product revenue, mainly due to the impact of the epidemic in Europe", "the year-on-year decrease of chip revenue, mainly due to the impact of the epidemic at home and abroad, the limited production capacity caused by the shortage of chip industry supply, and the decrease of automobile electronic chip shipment"^[8].

3. Main risks and challenges faced by enterprises

In the half year and annual reports of 15 companies, the risks and challenges of the company's operation are described, among which the more concentrated risks and challenges mainly include the impact of epidemic (11 companies) and talent problems (11 companies), accounting for 73%.

3.1 Impact of the epidemic

In the face of the sudden epidemic, the Chinese government has taken strict control measures. In February and March 2020, most employees of companies will mainly work at home, and most of them will start to return to work in May. After June, although they will basically return to normal work order, their travel is still restricted, and field measurement and other work can not be implemented. The impact of the epidemic on these listed companies is mainly concentrated on the following aspects: (1) the global business is affected by COVID-19, and some of the main business customers of overseas companies are shutting down or reducing production, and the performance and market development are affected. (2) The government finance has been greatly reduced, the scale of related projects has been compressed, and some government bidding projects have been delayed. (3) Due to the epidemic situation, part of the business bidding could not be carried out, and the orders and income fell sharply. (4) The resumption of production of some businesses is delayed, and the implementation or acceptance of some projects is delayed.

3.2 About Talent

Geospatial industry is an intelligence intensive industry with high technical barriers and thresholds. The core technical personnel play a key role in the company's product innovation and sustainable development. The stability of the core technical personnel has an important impact on the company's development. Due to the rapid technological change in the geospatial industry, the high turnover rate of personnel, and the epidemic situation, the performance of many companies is not as good as in previous years, and the attractiveness to employees is reduced. Most companies worry about the loss of core technical personnel in their annual reports, and regard it as one of the risks of the company's development.

In addition, according to a investigation by the Surveying and Mapping Development Research Center of the Ministry of Natural Resources for more than 6000 geospatial companies in 2020, the talent problems faced by most enterprises include: (1) the epidemic has reduced the number of geospatial enterprise projects and the number of talent recruitment. (2) The decline of some enterprises' performance affects the salary, and the turnover rate of employees is high. (3) 80% of the companies said it was difficult to recruit new graduates. With the decline of performance, the attractiveness of enterprises to talents has declined. Most of the recruitment changes to online, which leads to the unsatisfactory effect. Some students delayed their employment and chose to continue their degree studies. (4) 10% of the enterprises suggested that the government provide free or low-cost professional and technical training through the Internet to improve the working ability of the staff.

As China's geospatial industry is still in a period of rapid development, enterprises need more employees, the overall employment situation of geospatial enterprises is relatively stable.

4. Geospatial industry is facing new development opportunities

Global COVID-19 pandemic has turn the world upside down in many countries, bringing people all kinds of trials and difficulties, and also affecting almost all the geospatial businesses in the world. But in general, the development prospect of the geospatial industry is still optimistic.

According to the third edition of "Future trends in geospatial information management: the five to ten year vision" released by UN-GGIM in August 2020, the impact of economic and social development needs on geospatial industry is unprecedented^[18]. The report predicts that in the next five to ten years, the maturity and application of geospatial technology will have significant development. "Among others, Artificial Intelligence, sensor technology, and the Internet of Things will drastically change how data is collected, managed and maintained". Geospatial industry has a rare development opportunity.

In 2021, Geospatial Information Section Technology Operations Service Operations Support Division Office of Information and Communications Technology United Nations issued the “Geospatial Strategy for the United Nations”^[19]. “The mission of the Geospatial Strategy aims to mainstream the use of geospatial information across the United Nations Secretariat and system for unified, integrated and accessible information; analysis and visualization for evidence based decision-making; and data action in support of peace and security, human rights, international law, development, and humanitarian aid”. It can be predicted that geospatial will play a more and more important role in the affairs of the United Nations. At the same time, it will promote governments to pay attention to geospatial role in improvement management.

According to the annual GIM International industry survey of 2020, The respondents are still optimistic about the development of geospatial industries ^[20]. “The pandemic has put our industry firmly in the public eye.” “We now have time to think about innovation. On the edge of crisis, throughout the history of humankind there have been a lot of good examples of innovations that change directions to success.” During the outbreak, a large number of cross-border initiatives to monitor and control the spread of the virus and the expansion of the network economy have created excellent opportunities for companies such as geospatial data collection, processing and visualization. “A geospatial component is being added to every part of technology. So there is increasing usage in a variety of fields beyond just disaster management and infrastructure. Hence, I strongly believe that future is very geospatial.” We can conclude that the outlook for the geospatial industry remains very promising.

5. Suggestions

COVID-19 has a negative impact on the development of the geospatial industry, but it also provides new opportunities for future development, ranging from increasing levels of automation to the Internet of Things, Big Data, Artificial Intelligence, immersive technology and the rise of Digital Twins. The speed at which innovation occurs represents great opportunities and challenges to those trying to priorities efforts. The government should further improve the policies to promote the development of geospatial industry and market access, increase investment support for integration of geospatial enterprises, and strengthen education and training. Geospatial enterprises should aim at the development trend and geospatial application demand, strengthen scientific and technological innovation, and fully release the vitality of geospatial industry.

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BIOGRAPHICAL NOTES

Yanqing Chang , Professor, Surveying and Mapping Development Research Center of the Ministry of Natural Resources, China. Main research direction: Research on strategy and policy of geospatial information

CONTACTS

Yanqing Chang

Surveying and Mapping Development Research Center of the Ministry of Natural Resources
28 Lianhuachi West Road, Beijing, CHINA

Tel. +86 010-63881526

Email: 953101987@qq.com