Investigation and Research on Crisis Management of Chinese Export-oriented Enterprises under Information Environment

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Abstract: The vigorous development of information technology has brought unprecedented development opportunities to enterprises, but also exposed them to many risks. And Chinese exporters are also facing an unprecedented crisis. The harm brought by the crisis to the export enterprises is huge, so it is urgent for the relevant researchers to analyze and study the crisis and crisis management of the Chinese export enterprises. This study was conducted precisely for this purpose. According to the research purpose, this research group analyzes the current situation of crisis management of Chinese export enterprises under the information environment through the structured questionnaire survey. The survey results show that Chinese export enterprises have a certain sense of crisis management, but the awareness of crisis early warning has not yet been established, so they can not well avoid risks and turn risks into opportunities. Therefore, enterprise operators must establish a sense of crisis prevention, and use information technology, with the help of information platform to improve its crisis management, improve their own crisis early warning ability to realize the sustainable development of enterprises.

Keywords: Information; Crisis management; Crisis early warning; Questionnaire survey

1 Introduction

The development and application of information technology has brought unprecedented development opportunities to enterprises. In addition to the deterioration of the international economic environment and the instability of the domestic economic environment in recent years, enterprises also face the risk of crisis. As the main force of China's foreign trade, export enterprises are also facing a huge crisis. Therefore, in the information environment, the enterprise crisis management is particularly important. How to effectively prevent and respond to the crisis of export-oriented enterprises is directly related to the sustainable development of China's economy.

In order to better understand the information environment of enterprise crisis and crisis management situation, this paper through the questionnaire star online questionnaire platform of enterprises of different sizes and industries, and use its related function rapid statistical analysis of various problem samples, analyze the cause of the crisis, analyze the enterprise should establish the corresponding crisis warning mechanism, crisis into opportunity, the research conclusion has certain application value for enterprise decision-making.

2 Survey design

2.1 Questionnaire design

The questionnaire of this study was designed through the field survey of the company. The questionnaire is divided into four parts: The first part is the background information of the surveyed enterprise. Including the product category, industry, enterprise development stage, enterprise scale, export market, property rights nature of the investigated enterprises. The third part is to investigate the business performance of the enterprises, including the domestic market, the foreign market and the total average sales growth rate of the enterprises in the post-epidemic period (May, 2020 to present). The third part is the frequency, type, possibility of the crisis and the importance the enterprise attaches to the crisis. The fourth part is the work situation of the enterprise crisis early warning, including the information acquisition way in the enterprise crisis warning, whether there is a special management department to deal with the crisis [liu].

2.2 Structure of export trade mode

Since 1986, Guangdong's total foreign trade export has been ranked first in China for 35 consecutive years. In 2021, Guangdong's exports totaled 5.05 trillion yuan, accounting for 23.2 percent of China's total foreign trade. Enterprises in Guangdong Province are active in foreign trade operation and have a strong representative role. Therefore, considering the convenience and comprehensiveness of questionnaire distribution and recycling, the selected research objects are export enterprises in Guangdong Province.

The questionnaire was distributed mainly through the "questionnaire star" survey. A total of 150 questionnaires were distributed, and 104 questionnaires were recovered, with a recovery rate of 69.3%, 104 valid questionnaires, and an effective feedback rate of 100%.

2.3 Export Sample characteristics

In this study, a descriptive statistical analysis of the basic information of sample enterprises was conducted to observe the characteristics and distribution of sample enterprises.

Sample enterprises are mainly distributed in Guangzhou, Shenzhen and Dongguan: In this study, 104 questionnaires were collected, including 37 in Guangzhou, accounting for 35.6% of the total recovery questionnaire, 17 in Shenzhen, or 16.3%, and 12 in Dongguan, or 11.5% of the total recovery questionnaire. The specific distributions are shown in Table 1.

Table1: Regional distribution of sample enterprises

	Guangzhou	Shenzhen	Dongguan	Sum
No. of valid questionnaires	37	17	12	66
Proportion (%)	35.6	16.3	11.5	63.4

The products produced by the sample enterprises are mainly industrial products.: From the perspective of product categories produced by enterprises, among the sample enterprises, 41 products produced belong to the category of personal consumer goods, accounting for 39.42% of the total sample number, and 42 products belong to industrial products, accounting for 40.38%, while the 21 sample enterprises produced other categories of products, accounting for 20.19%, as shown in Table 2.

Table 2: Product categories of sample enterprises

Product category	Sample number	Proportion (%)
Personal consumer goods	41	39.42
Industrial goods	42	40.38
Other goods	21	20.19

Among the sample enterprises, the most labor-intensive enterprises, followed by technology-intensive enterprises.: Among the sample enterprises, the most enterprises belong to labor-intensive industries, with 44, accounting for 42.31% of the total sample number, followed by 39 enterprises in technology-intensive industries, accounting for 37.5% of the total proportion, 48 enterprises in other industries, accounting for 10.58%, and 32 enterprises in capital-intensive industries, accounting for 9.62% of the total proportion, as shown in Table 3.

Table 3: Industry distribution of sample enterprises

Industry nature	Sample number	Proportion (%)
Labor-intensive industries	44	42.31
Technology-intensive Industry	39	37.5
Capital-intensive industries	32	9.62
Other industries	48	10.58

Most of the sample companies are in a period of rapid growth.: According to the sample enterprise management stage of division can be seen, sample enterprises in the rapid growth period, to 38, accounting for 36.54% of the sample number, followed by the initial enterprises, there are 26, accounting for 25% of the sample number, in steady growth period has 35, accounting for 33.65%, in recession enterprise 5, accounting for 4.81%, as shown in Table 4.

Table 4: The operating stage of sample enterprise

operational phase	Sample number	Proportion (%)
Early stage of establishment	26	25
Rapid growth	38	36.54
Steady growth period	35	33.65
Recession	5	4.81

The sample enterprises are mainly small and medium-sized enterprises.: In this study, the size of the sample enterprises was viewed by counting the total assets and total employees of the enterprises, as shown in Table 5. From the perspective of the total assets of the enterprise, as of April 30,2022, the largest total assets of the enterprise reached RMB198 million, while the smallest assets was only RMB100,000, and the average total assets were 1,903,846 million yuan. From the perspective of the distribution of the total assets of the sample enterprises, 46 enterprises with total assets were more than 10, 010 million yuan, accounting for 44.3% of the number of surveyed enterprises, followed by enterprises with assets of RMB 1.01-5 million, 21, accounting for 20.2%, 20 enterprises with assets between RMB 5.01-10 million, accounting for 19.2%, and 17 enterprises with assets of RMB 1 million or less, accounting for 16.3%.

Table 5: Scale of sample enterprises

Total Assets Range	Sample number	Proportion (%)	Number of employees	Sample number	Proportion (%)
≤RMB1 million	17	16.3	≤100	39	37.5
RMB1.01 million-5 million	21	20.2	101-300	27	26
RMB5.01 million-10 million	20	19.2	301-500	7	6.7
≥10.01 million	46	44.3	501-1000	31	29.8

In terms of the total number of employees, there are 73 enterprises with less than 500 people, accounting for 70.2%, and 31 enterprises with 501-1000 people, accounting for 29.8%. According to the data of the total assets and total employees of the sample enterprises, the export enterprises surveyed are mainly small and medium-sized enterprises.

The sample enterprises are mostly private enterprises.: Among the sample enterprises, 84 are private enterprises, accounting for 80.77%, 13 are foreign-funded enterprises, accounting for 12.5%, and 7 are wholly state-owned or controlled, accounting for 6.73%, as shown in Figure 1.
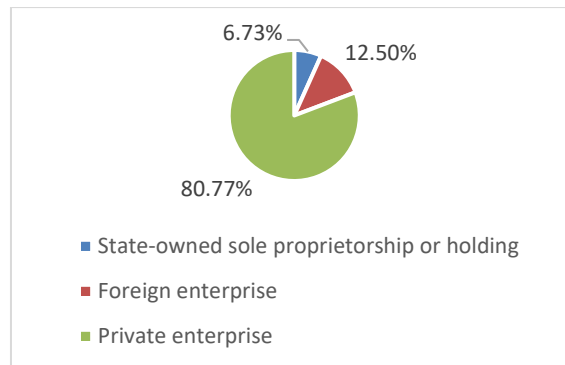
Figure 1-The nature of sample enterprises

The export market of sample enterprises is mainly distributed in North America, Europe, Japan and other developed countries and regions.: Sample enterprises to export to North America, Europe, Japan and other developed countries and regions of enterprises, to 53, accounting for 50.96% of the total sample number, followed by exports to Australia, central and southern America, Hong Kong, Macao and Taiwan and other emerging economic countries and regions, there are 40, accounting for 38.46%, exports to Africa, southeast Asia and other underdeveloped countries and regions have 11 enterprises, accounting for 10.58%, as shown in Table 6.

Table 6: Export markets of sample enterprises

Export market	Sample number	Proportion (%)
North America, Europe, Japan and other developed countries and regions	53	50.96
Australia, Central and South America, Hong Kong, Macao and Taiwan and other emerging economic countries and regions	40	38.46
Africa, Southeast Asia and other underdeveloped countries and regions	11	10.58

Operational performance of sample enterprises: In terms of the operating performance of the sample enterprises, 7 had the negative average growth rate of total exports before COVID-19, accounting for 6.73%, 48 had the average export average growth rate of 1-20%, accounting for 46.15%, 77 had the average export average growth rate of 21-40%, accounting for 40.5%, and 28 had the average export average growth rate of 41-61%, accounting for 26.92%. During the COVID-19 period, 10 with average export growth rate were negative, accounting for 9.62%, 82 with average export growth rate of 1-20%, accounting for 78.8%. 8 with average export growth rate of 21-40%, accounting for 7.69%. 4 with average export growth rate of 41-61%, accounting for 3.85%. During the post-epidemic period, there were 8 with negative total export average growth rate, accounting for 7.69%, 51 with average export average growth rate of 1-20%, accounting for 49.04%. 38 with total export average growth rate of 21-40%, accounting for 36.54%. 7 with total export average growth rate of 41-61%, accounting for 6.73%, as shown in Table 7.

Table 7: Operational performance of sample enterprises

Average growth rate of total exports (%)	0 and below	1-20	21-40	41-61
Before COVID-19	7	48	21	28
Proportion (%)	6.73	46.15	20.19	26.92
During COVID-19	10	82	8	4
Proportion (%)	9.62	78.8	7.69	3.85
Post-epidemic period	8	51	38	7
Proportion (%)	7.69	49.04	36.54	6.73

Crisis occurrence of sample companies: 16.35% respondents believe that their enterprises belong to enterprises with high incidence of crisis, 34.62% think that their enterprises are moderate, 41.35% think that they have low crisis occurrence, and 7.69% of respondents believe that their enterprises cannot judge the frequency of crisis, as shown in Figure 2. That is to say, 92.31% of enterprises realize that they are facing a crisis. Therefore, if enterprises want to achieve sustainable development, they must first recognize the crisis they are facing and the extent that may happen in the future.
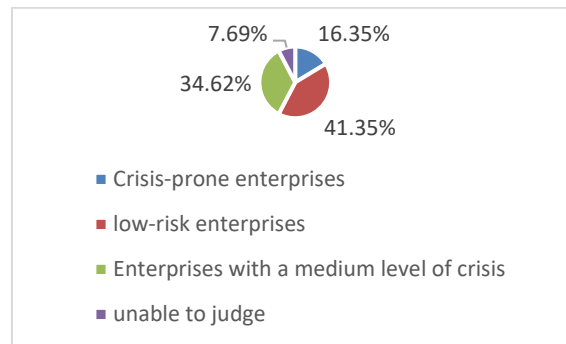

Figure 2-The degree of crisis in sample companies

The development crisis caused by the human resource crisis and the rapid expansion of enterprises is still the one that the surveyed enterprises think they may face in the future, accounting for more than 20%, as shown in Table 8.

Table 8: Types and degrees of crises that sample enterprises may face in the future

Crisis type	Possibility	Most likely
Strategic crisis	16(15.38%)	13(12.5%)
External environmental crisis	10(9.62%)	3(2.88%)
Production and marketing	18(17.31%)	3(2.88%)

crisis		
Human resources crisis	24(23.08%)	20(19.23%)
Financial crisis	10(9.62%)	7(6.73%)
Customer crisis	17(16.35%)	3(2.88%)
Supply chain crisis	11(10.58%)	8(7.69%)
Development crisis	36(34.62%)	20(19.23%)

The importance of the sample enterprises to the crisis: The proportion of the surveyed enterprises recognized 89.42% of "prevention and early warning work before the crisis occurs", which reflects that the surveyed enterprises attach great importance to the crisis and are fully aware of the importance of crisis early warning work. Crisis early warning has become the key link of crisis management.86.54% of the survey enterprises believe that "the crisis occurs to do a good job of crisis management", enterprises can timely capture the crisis signal, find the root cause, prevent minor problems.84.62% of the surveyed enterprises believe that "after the crisis to do a good job of recovery and summary", and strive to minimize the losses, summarize the experience and lessons, formulate future measures to deal with the crisis [4].

Implementation of crisis management of sample enterprises: Among the sample enterprises, 66.35% set up special crisis management departments, while 33.65% did not set up special crisis management departments. More than half of the enterprises have established crisis management departments, which shows that many enterprises have realized the importance of crisis management, which shows that crisis management is only in the initial stage in many enterprises, and crisis management has not been regarded as an essential work in the daily operation of enterprises.

2.4　Analysis of the reliability and validity of the questionnaire

In this study, SPSS software 13.0 found that the overall reliability index of the scale was good (Krumbaha coefficient was 0.814), as shown in Table 9. At the same time, the reliability analysis of the items involving the importance of sample crisis management, crisis warning and crisis possibility found that their Cronbach α system values were greater than 0.5, indicating that the questionnaire has a certain reliability [5]. The Cronbach α system values of each subscale are shown in Table 10.

Table 9: Overall reliability index

Factor category	Cronbach α	Items No.
Overall reliability	0. 814	12

Table 10: Consistency test of each subscale

Factor	Cronbach α	Items No.
Crisis management awareness and awareness of the crisis	0.255	2
The importance of crisis management work	0.530	4
Crisis warning	0.790	12
The possibility of a crisis occurring	0.807	8

Then, a construct validity test was performed, and the results are shown in Table 11.

Table 11: KMO and Bartlett's test for each subscale

Scale	KMO measure	Bartlett's test for sphericity		
		Approximate Chi-square	df	Sig.
Crisis management awareness and awareness of the crisis	0.500	1.303	1	0.254
The importance of crisis management work	0.576	43.653	6	0.000
Crisis warning	0.787	753.379	66	0.000
The possibility of a crisis occurring	0.695	313.576	28	0.000

The KMO values above 0.6 indicate that the effect is barely acceptable. According to Table 11, the KMO of crisis management awareness and crisis awareness is less than 0.6, and the p value of Bartllett spherical test is greater than 0.05, indicating that the validity fails; the KMO value of each component is greater than 0.57, and the p value is less than 0.05 for validity.

3 Form enterprises to prevent and respond to the crisis countermeasures and suggestions

3.1 Increase the awareness of crisis management

The uncertain environmental factors have become the key factors restricting the development of enterprises, and the future of enterprises largely depends on the crisis management ability of enterprise operators. Enterprises should actively prevent and control the occurrence of the crisis, and strive to minimize the losses. No matter what kind of crisis, before it will send signals, business operators should be good at capturing these signals, in order to timely respond to the crisis. This requires enterprise operators to strengthen the awareness of crisis management, formulate a complete crisis management plan, build a crisis management team, timely detect all kinds of possible crises, and eliminate the potential crises in the embryonic stage [3].

3.2 Improve the methods and means of crisis management

In the face of sudden enterprise crisis events, enterprises can confirm the crisis through information technology and other effective means. When dealing with a crisis, pay attention to the methods and skills of communication with the media to avoid the further spread of the crisis. At the same time, information tools are used to distinguish the performance of crisis

management, so as to ensure the effectiveness of crisis management and the utilization effect of resources. Handle it properly so as to minimize the loss of the crisis and even turn the crisis into an opportunity [2].

3.3 Using information means to distinguish and analyze the enterprise crisis

The establishment of enterprise crisis identification system is the core work of enterprise crisis early warning. After collecting the crisis information, it is necessary to detect the abnormal information of the enterprise in time, and input these strange information into the enterprise crisis management early warning software system to judge the level of the enterprise crisis, so as to identify the emergency degree of the enterprise crisis and take corresponding measures. Enterprises can also use the enterprise crisis management early warning software to distinguish the enterprise strategy and operation status, to understand whether the enterprise is in a crisis state, to avoid the enterprise into the predicament of failure and bankruptcy. Avoid failure and bankruptc [1].

4   Conclusions

The survey found that many enterprises have been in crisis, and the impact is far-reaching. Some of these crises are caused by the force majeure factors such as flood and earthquake, some are caused by the external environment such as mining accidents and financial crisis, and more crises are caused by the management mistakes of enterprises themselves, such as excessive debt, poor product quality, and excessive expansion of enterprise scale. The crisis has brought huge and far-reaching harm to the enterprises, and some enterprises quickly declined or even collapsed after the crisis.

Enterprise crisis is inevitable, but how to withstand the test of the crisis, crisis management is particularly important. Crisis management is a complex system engineering. When an enterprise encounters various crises, it is necessary to deeply analyze the enterprise management mode and operation mechanism, find the weakest link inside, and find the crisis handling way suitable for the enterprise's own situation. With the acceleration of the information process, the information technology will be more fully applied to the enterprise crisis management work, and the integration of all levels, departments and the external information within the enterprise will promote the development of the enterprise crisis management to a higher stage. Enterprise operators should also take crisis early warning and management as an important part of enterprise management, calmly face the pressure and challenges faced by enterprises, and promote the sustainable growth of enterprises.

To sum up, everyone in an enterprise should have the concept of "crisis consultant", and they should know how to prevent and deal with various corporate crises. Business operators should not only have the concept of competition, but also crisis; not only crisis management consciousness, but also master the method of crisis warning; not only pay attention to the abnormal crisis situation, but also the crisis warning concept carried out and permeated into the normal management of enterprises.

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