

SWOT Quantitative Analysis of Small and Medium-Sized Catering Enterprises in China under the Background of COVID-19 Epidemic

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Abstract—Based on the impact of the new crown epidemic on the development of small and medium-sized catering companies in China, this article uses a SWOT quantitative analysis model based on the four-dimensional (polar) coordinate method to determine the development strategy of minor and medium-sized catering companies. A combination of qualitative and quantitative methods is adopted to ensure specificity and comprehensiveness of the research results. When constructing the SWOT quantitative analysis model, first determine the company's SWOT analysis elements, and obtain the factor strength results based on the questionnaire design and expert scoring. By constructing a strategic quadrilateral and calculating the strategic type azimuth angle and the strategic strength coefficient ρ , it is obtained that $\theta = 2.2849$ ($\approx 130.94^\circ$) and $\rho = 0.5044$. The development strategy of small and medium-sized catering companies is positioned in the second quadrant, which is a pioneering and enterprising type strategy. Finally, the development plan of the company is detailed to lay the foundation for the development of small and medium-sized catering companies under the background of the normalization of the epidemic.

Keywords-COVID-19; Small and medium-sized catering enterprises; SWOT quantitative analysis; development strategy

1. INTRODUCTION

In early 2020, COVID-19 swept across the whole country, which had a significant impact on China's economic development and production and life. According to the data of the National Bureau of Statistics, the number of catering enterprises in China was only 9.414 million in 2020, a decrease of 15% compared with 2019, especially the small and medium-sized catering enterprises. Small and medium-sized catering enterprises can not only improve people's

happiness index, but also play an important role in solving people's livelihood problems. Therefore, improving the anti-risk ability of small and medium-sized catering industry and exploring its new development strategy have important application value and social significance. The SWOT analysis proposed by K. J. Andrews has certain limitations in the company's strategic analysis because it highlights the independence of the four factors and lacks the integrated thinking of the interaction among the factors [1]. This paper studies the SWOT quantitative model based on four-dimensional (polar) coordinate method, realizes the mutual transformation between qualitative analysis and quantitative data, and combines it with the qualitative ability of SWOT, to alleviate the nonobjective factors in the process of SWOT analysis [2]. This paper analyzes and discusses various factors affecting small and medium-sized catering enterprises, determines the development strategy type and strategic strength of small and medium-sized catering enterprises in China, ensures the quantification and objectivity of strategic choice, and provides reference for the future development of enterprises.

2. SWOT ANALYSIS ELEMENTS OF SMALL AND MEDIUM-SIZED CATERING ENTERPRISES

2.1 SWOT analysis elements sources of small and medium-sized catering enterprises

In this paper, from four aspects of S (strengths), W (weaknesses), O (opportunities) and T (threats), 40 professionals in the industry were investigated by interview and recorded during the interview. After the interview, summarize its contents and sort out 14 SWOT analysis elements.

2.2 SWOT analysis elements of small and medium-sized catering enterprises

2.2.1 Strengths (S)

2.2.1.1 Diversification of product categories

In order to adapt to the diversity of consumers' dietary life, small and medium-sized catering enterprises show an obvious trend of food diversification. Today, with the increasingly blending of catering culture, the composition of food in the catering industry is also continuously optimized. For small and medium-sized catering enterprises, whether they choose individual cuisine or cross-selection, they can create diversified product structures to provide consumers with a balanced diet.

2.2.1.2 High degree of flexibility in operation mode

Small and medium-sized catering industry has few restrictions, so it can flexibly choose the mode of operation according to local conditions. At the same time, in case of operation problems, they can quickly change their operation ideas according to the actual situation to avoid losses to a certain extent.

2.2.1.3 Low initial capital investment

Small and medium-sized catering shops are small in scale, with less investment in fixed assets such as early decoration and equipment purchase, and lower entry threshold. In addition, the

number of workers is small, and the related personnel training and personnel turnover costs can be controlled, greatly reducing the initial investment.

2.2.1.4 Low consumer price level

The main target customers of small and medium-sized catering enterprises are low-income groups. Therefore, they set a lower price of food, highlight its characteristics of high quality and low price, and attract consumers' attention with products of low price and high quality.

2.2.2 Weaknesses (W)

2.2.2.1 Weak brand awareness and brand effect

Although there are many well-known brands in China's catering industry at present, as far as small and medium-sized catering enterprises are concerned, there are still a few catering enterprises that attach importance to brand influence and exert brand effect. On the one hand, small and medium-sized catering enterprises do not attach importance to the brand building, and there are deviations in the business philosophy. On the other hand, enterprises encounter bottlenecks in the process of brand building, lack of proper brand building methods leads to low brand influence, and even produces adverse effects contrary to the original intention of building.

2.2.2.2 Low professional level of management personnel

At present, China's small and medium-sized catering enterprises are still under the management of non-professionals, and there are defects in the standardization of working system and management mode. Although many catering enterprises are aware of the problem of nonstandard system, they just follow the business model of other successful enterprises, and have not formed their own core system, which has laid a hidden danger for the future development of enterprises.

2.2.2.3 Low standardization of supply chain system

The choice of suppliers in small and medium-sized catering enterprises is single, which leads to increased purchasing risk. The imperfect supply chain structure and low degree of standardization have seriously hindered the development of enterprises and increased the operational risks of enterprises during the epidemic.

2.2.2.4 Weak compressive capacity

According to a report from the National Bureau of Statistics, the national catering revenue in 2020 was 3952.7 billion RMB, a 16.6% decrease from the previous year. In 2020, the monthly data of the cumulative growth of the catering industry's income is negative for the whole year, of which the cumulative growth in February reached an astonishing -43.1%. During the epidemic, the catering industry suspended offline business in response to the government's call. As a result, the turnover of small and medium-sized catering enterprises, which mainly focuses on offline income, plummeted, and even some enterprises went bankrupt under the pressure of expenditure and debt.

2.2.3 Opportunity (O)

2.2.3.1 Huge market

According to the annual statistics of the National Bureau of Statistics, the total retail sales of consumer goods in China in 2018 and 2019 were 377,783.1 billion RMB and 40,801.72 billion RMB respectively, of which the accumulated income of the catering industry was 4,271.59 billion RMB and 4,672.07 billion RMB respectively, accounting for 11.30% and 11.45%, which fully shows that the catering industry plays an important role in China's national economic structure. With the increasing demand of consumers for diet, more market space has been provided for the development of small and medium-sized catering companies.

2.2.3.2 The progress of Internet technology

In recent years, with the continuous development of Internet technology, the trend of leading industrial change is becoming more and more obvious. The arrival of "internet plus Catering" mode helps enterprises to realize intelligent take-out distribution mode, and makes the management of enterprises continue to extend in the direction of digitization, which brings significant changes to the development of small and medium-sized catering enterprises.

2.2.3.3 Government policy support

Of expanding domestic demand, which provided a broad market prospect for catering enterprises, the Central Bank and other five departments jointly issued the Notice on Further Strengthening Financial Support to Prevent and control the Epidemic of Pneumonia in novel corona virus, especially proposing that the industries that are greatly affected by the epidemic, such as catering, should not blindly lend, cut off or hold down loans [3]. For small and medium-sized catering enterprises, the government adheres to the general tone of tax reduction and fee reduction, and issues temporary preferential tax policies to reduce their tax burden.

2.2.4 Threats (T)

2.2.4.1 Intensified market competition

The catering industry is a complex and diverse industry, and the competition problem is particularly prominent. In the process of competition, small and medium-sized catering enterprises are often hit by dimension reduction from large catering enterprises. Large catering enterprises suppress small and medium-sized catering enterprises with their capital, technology, and other strengths to grab market share. In addition, after large-scale foreign chain catering enterprises entered China [4], they adjusted the domestic market and reduced the product price, which brought great impact to the development of small and medium-sized catering enterprises.

2.2.4.2 Market economy downturn

During the epidemic, the domestic economy was in recession and the national income decreased. Therefore, the per capita disposable income decreased, and the consumption power weakened, which led to a sharp drop in the catering industry revenue.

2.2.4.3 Consumers' awareness of food safety continues to increase

Over the years, food safety issues in my country have emerged one after another, Food safety issues have been paid more and more attention by consumers, and the promotion of quality consumption concept has been deeply rooted in the hearts of the people. However, small and medium-sized catering enterprises are often biased because food safety is not guaranteed.

3. SWOT ANALYSIS QUANTITATIVE MODEL OF SMALL AND MEDIUM-SIZED CATERING ENTERPRISES

3.1 Questionnaire design and expert scoring

Through qualitative selection of influencing factors, a questionnaire was designed aiming at 14 influencing factors of the development of small and medium-sized catering enterprises, including strengths (S), weaknesses (W), opportunities (O) and threats (T), and 20 experts from senior employees in the industry were invited to participate in the questionnaire scoring.

Among S_{1-4} , W_{1-4} , O_{1-3} , T_{1-3} represents the four major factors of strengths, weaknesses, opportunities, and threats elaborated in SWOT analysis. The questionnaire is distributed to all experts through the network. The interviewed experts use AHP to analyze the importance of each influencing factor and give the weight. The weights of S, W, O, and T are all 1. According to the sensitivity of each factor during the epidemic, the score range is $\pm 4 \sim \pm 1$. ± 4 indicates that the reaction is extremely sensitive, relatively sensitive, moderately sensitive, and slightly sensitive [5]. Among them, the strengths and opportunities are represented by positive values, and the higher the sensitivity, the larger the value. Weaknesses and threats are represented by negative values, and the higher the sensitivity, the greater the absolute value. The results of the interviewees are summed and averaged, and the average weight of each factor is multiplied by the average score to obtain the weighted score. The detailed results are shown in Table I.

TABLE I. SWOT SCORE STATISTICS

	factor	Average weight	Average score	weighted average
Strengths (S)	S1	0.1828	2.50	0.4570
	S2	0.2993	3.00	0.8980
	S3	0.2792	2.17	0.6049
	S4	0.2387	2.83	0.6764
	Sum Σ	1.0000	—	2.6362
Weaknesses (W)	W1	0.1751	-2.67	-0.4669
	W2	0.3002	-2.83	-0.8504
	W3	0.3106	-3.00	-0.9319
	W4	0.2198	-2.83	-0.6226

	Sum Σ	1.0000	—	-2.8718
Opportunity (O)	O1	0.3680	2.50	0.9200
	O2	0.3560	3.00	1.0680
	O3	0.2760	2.83	0.7820
	Sum Σ	1.0000	—	2.7700
Threaten (T)	T1	0.1893	-2.17	-0.4102
	T2	0.4177	-2.33	-0.9747
	T3	0.3930	-2.83	-1.1135
	Sum Σ	1.0000	—	-2.4983

3.2 Calculation of influence degree of factors

Sum up the 14 factors in SWOT analysis to get the strength of SWOT. The formula is as follows:

$$\text{Strength strength of the } i\text{th factor } S_i = \text{average weight} \times \text{average score}; \quad (1)$$

$$\text{Weakness strength the } j\text{th factor } W_j = \text{average weight} \times \text{average score}; \quad (2)$$

$$\text{Opportunity strength of the } k\text{th factor } O_k = \text{average weight} \times \text{average score}; \quad (3)$$

$$\text{Threat strength of the } l\text{th factor } T_l = \text{average weight} \times \text{average score}. \quad (4)$$

According to formulas (1)~(4), by summing up the strengths, weaknesses, opportunities, and threats respectively, we can get the total strengths (S), weaknesses (W), opportunities (O) and threats (T) of small and medium-sized catering enterprises in China.

Results: The total dominant strength $S = \sum S_i / ns = 2.6362$, total inferior strength $W = \sum W_j / nw = -2.8718$, total chance $O = \sum O_k / no = 2.7700$, total inferior strength $T = \sum T_l / nt = -2.4983$.

3.3 Building a strategic quadrilateral

After SWOT quantitative analysis of Chinese small and medium-sized catering enterprises, the development strategy decisions are quantified by using four-dimensional (polar) coordinate tools and concepts such as intensity and strength, so that the four elements of strengths, weaknesses, opportunities, and threats are objective and comparable [5]. Take the four variables of total strength (S_1), total weakness (W_1), total opportunity strength (O_1), and total threat strength (T_1) as the semi-axis, and find the corresponding points of, on the coordinate axis, and connect the four in turn Click to get the strategic quadrilateral $S_1 O_1 W_1 T_1$. According to the calculation, the SWOT strategic quadrilateral (Fig. 1).

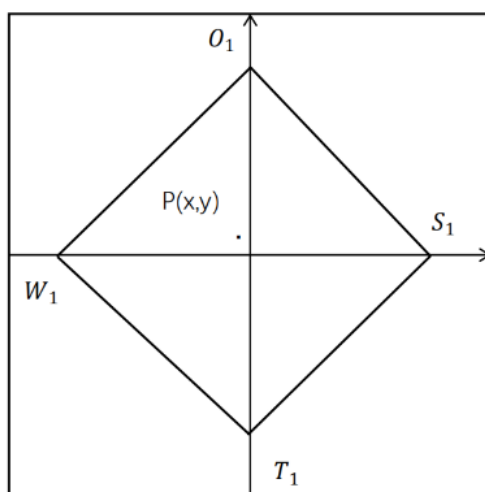


Figure 1. Factor strength strategy quadrilateral

3.4 Determine the strength and type of strategy

For strategic quadrilateral $S_1O_1W_1T_1$, let the center of gravity coordinate be $P(x, y)$, and the calculation formula is as follows:

$$P(x, y) = (\sum x_i/4, \sum y_i/4) \quad (5)$$

Among x_i are the abscissa of S_1, W_1, O_1, T_1 , and y_i are the ordinate of S_1, W_1, O_1, T_1 . On this basis, the azimuth angle of the strategy type θ is calculated, and the formula is: $\tan \theta = y/x$, ($0 < \theta < 2\pi$), and then solved by inverse function θ . According to the exact location of the θ 's quadrant and the size of θ , to determine the corresponding strategic type. (TABLE II)

TABLE II. STRATEGIC TYPE ORIENTATION θ CORRESPONDING RELATIONSHIP BETWEEN ANGLE AND STRATEGIC TYPE [5]

First quadrant		The second quadrant		The third quadrant		Quadrant iv	
Pioneering strategic area		Striving for strategic area		Conservative strategic area		Resistance-oriented strategic area	
<i>Type</i>	<i>Zone</i>	<i>Type</i>	<i>Zone</i>	<i>Type</i>	<i>Zone</i>	<i>Type</i>	<i>Zone</i>
Strength type	$(0, \frac{\pi}{4})$	Aggressive type	$(\frac{\pi}{2}, \frac{3\pi}{4})$	Retreat type	$(\pi, \frac{5\pi}{4})$	Adjustment type	$(\frac{3\pi}{2}, \frac{7\pi}{4})$
Opportunistic type	$(\frac{\pi}{4}, \frac{\pi}{2})$	Adjustment type	$(\frac{3\pi}{4}, \pi)$	Avoidance type	$(\frac{5\pi}{4}, \frac{3\pi}{2})$	Aggressive type	$(\frac{7\pi}{4}, 2\pi)$

3.4.1 Strategic azimuth θ Meaning and calculation of

According to formula (5), we can get $P(x, y) = (-0.0589, 0.0679)$, $\tan \theta = -1.1528$, $\theta = 2.2849$ ($\approx 130.94^\circ$). Obviously, point P is in the second quadrant of the coordinate system, $\pi/2 < \theta < 3\pi/4$ which belongs to the aggressive strategy of the striving strategic area.

3.4.2 Strategic intensity coefficient meaning and calculation of

For the same strategic area, we can adopt a positive pioneering strategic situation or a stable and conservative strategic situation, so we still need to determine the strength of the adopted strategy. When adopting any intensity, both strategic positive intensity (U) and strategic negative intensity (V) should be considered [7].

The positive strategic intensity is the result of internal strengths and external opportunities, and the formula is:

$$U = S_1 \times O_1$$

The negative strategic intensity is the result of the interaction of internal weaknesses and external threats, and the calculation formula is:

$$V = T_1 \times W_1$$

From this, the strategic intensity coefficient (ρ), the calculation formula is:

$$\rho = U/(U + V), \rho \in [0,1]$$

The size of ρ is positively correlated with the strategic intensity, $\rho = 0.5$ is the critical point when $\rho > 0.5$, China's small and medium-sized catering enterprises adopt an active pioneering strategy; When $\rho < 0.5$, China's small and medium-sized catering enterprises adopt a stable conservative strategy.

According to formula (8), $\rho = 0.5044 > 0.5$, so China's small and medium-sized catering enterprises should adopt an active pioneering strategy.

3.5 Strategic positioning and intensity selection

According to the quantitative analysis of the data of the Chinese small and medium-sized caterers, the development strategy of the Chinese small and medium-sized caterers is in the second quadrant, and is in the $(\pi/2, 3\pi/4)$ within the region, the aggressive strategy of striving for strategic areas should be adopted, according to the strategic intensity $\rho = 0.5044 > 0.5$, active pioneering strategy should be adopted.

4. DEVELOPMENT STRATEGY OF SMALL AND MEDIUM-SIZED CATERING ENTERPRISES

4.1 The development strategic positioning of small and medium-sized catering enterprises

According to the quantitative analysis of small and medium-sized catering business by SWOT, the development strategy of small and medium-sized catering business in China is reverse. Enterprises should actively explore opportunities, reduce weaknesses, and develop weaknesses into their own strengths.

4.2 Development strategy content of small and medium-sized catering enterprises

4.2.1 Enhance the brand effect and occupy a stable market

Brand effect is an important element of enterprise development, and it is very important to enhance the influence and competitiveness of enterprise brands. When consumers eat out, brand catering enterprises are very popular. Especially during the epidemic period, most people consume through take-out. Currently, it is the brand effect of enterprises that have an impact on consumers' choices. Therefore, small and medium-sized enterprises must strive to build their own brands, focus on building brand ideas, improving brand quality, enhancing brand reputation, and establishing brand image in consumers' minds. After the epidemic, the catering industry ushered in a major reshuffle. Small and medium-sized catering enterprises should take the opportunity, analyze the market environment, and find their own market position. Make the brand better, better, and stronger. Small and medium-sized catering companies should emancipate their minds and break the traditional mode of thinking, the focus is to improve the cultural level [8], understand consumers' needs for catering, improve product quality and improve consumers' satisfaction. Strengthen brand marketing, establish modern marketing concepts, fully grasp target customers, attract more potential customers, and firmly grasp the future market.

4.2.2 Be able to use public policies to improve the resistance of enterprises

If small and medium-sized catering enterprises want to develop better, the government's policy support is only driven by "external forces", and it is "internal forces" improves the core competitiveness of enterprises themselves. The operators of small and medium-sized catering enterprises should make timely and rational use of relevant preferential policies, establish their own strong core competitiveness, and give full play to their own advantages. In the development of post epidemic period, we can expand profit margins, increase capital accumulation, and enhance our ability to resist risks. When an enterprise promotes its core competitiveness, it should combine its own actual development needs and not be divorced from its own situation. Only by improving the level of core competitiveness can enterprises weaken the influence of external threats when the environment changes. Reduce the impact brought by the external environment.

4.2.3 Improve the supply and service system by using the development of digital intelligence.

Enterprises can combine digital-driven development, establish an intelligent logistics system, ensure the effectiveness and timeliness of logistics information, standardized and systematic supply chain management to improve the efficiency of raw material procurement. With the progress of the Internet era, the purchasing support role of third parties to catering enterprises is gradually increasing. Small and medium-sized catering enterprises can adopt the mode of "internet plus" to promote the communication between suppliers and catering enterprises with the help of third-party platform, to improve the supply stability of catering enterprises [9]. In terms of service, we can adopt a new mode of non-contact intelligent offline ordering and distribution, and the number of people in the store can be automatically controlled by the ordering applet. Order information can be transmitted to the kitchen in real time, and intelligent robots can be used to deliver food. Intelligently distribute take-out within the specified range, realize non-contact distribution, meet the requirements of epidemic normalization prevention and control, and ensure dining safety [10].

5. CONCLUSION

In this paper, SWOT quantitative model based on four-dimensional (polar) coordinate method is used to overcome the lack of quantitative analysis in previous related research. The development strategy of small and medium-sized catering enterprises under the background of epidemic normalization is of great significance to the operation of small and medium-sized catering enterprises. Due to the limitations of its own academic ability and region, the research process and data collection still need to be improved. It is hoped that future generations can overcome the relevant situation and conduct more detailed discussion and research on relevant factors such as regional differentiation and internal category differences in the catering industry.

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