

Study on the Competitiveness of Traditional Chinese Medicine Enterprises Based on the Factor Analysis

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Abstract—Chinese Pharmaceutical industry is an emerging strategic industry with great advantages in China. Improving the competitiveness of Traditional Chinese Medicine (TCM) Enterprises is an inevitable choice for realizing the modernization of TCM. This article selects seven TCM Enterprises with strong research and development capabilities as research objects and establishes an evaluation index system from enterprises and consumers. The data of TCM Enterprises obtained by the network collection and questionnaire survey, and quantitatively study the competitiveness of TCM Enterprises based on a factor analysis method. The research shows that the factors affecting the competitiveness of TCM Enterprises are enterprise factors and social product factors. That is, TCM Enterprises still need to strengthen their business scale and corporate responsibility. It is suggested that TCM Enterprises should expand its scale to improve economic efficiency, and hold activities to shape corporate image, thereby enhancing the competitiveness of TCM Enterprises.

Keywords—Competitive Power; Traditional Chinese Medicine Enterprises; Competitiveness Evaluation; Factor Analysis

I. INTRODUCTION

(1) The competitiveness of enterprise is enterprises need to strengthen their own capabilities basically, and obtain the external beneficial resources, realize their own value on the premise of creating the customer value.

The scholars carry out research on the influential factors of enterprise competitiveness from different angles. The formation and development of Chinese Pharmaceutical industry is a very complicated process with many constraining conditions, including the quality of the Chinese Medicine raw materials, sustainability of traditional Chinese medicine resources, unclear clinical positioning of traditional Chinese medical products, etc. [1]. Pharmaceutical patent is the most important reason to realize the unique advantages of Chinese traditional medicine enterprises, and patent operation is the basic guarantee for national pharmaceutical enterprises to move forward [2]. In the competitiveness of enterprises, the decisive factor is mainly the corporate culture, which is a unique and non-replicable intangible asset, especially has a potential and intangible impact on the values and behaviors of employees, so as to change the operation of the whole enterprise [3]. In addition, improving the business procedures of enterprise,

performing the illustration to the competitiveness of enterprises encountered in the course of trading will make a contribution in solving the competitiveness of the enterprise.

(2) Study on enterprise competitiveness evaluation indexes. The basic conditions for research are to quantify competitiveness, establish a scientific and effective evaluation index system, strengthen the operability of indexes, and ensure objective evaluation results [4]. Establishing the external and internal index system for the enterprises, analyzing the changing trend of competitiveness, and strengthening the quality supervision management and profit-making ability, which will heighten the enterprise competitiveness [5]. The evaluation indexes are mainly composed of the profit-making, operation, debt payment, market controlling force, the ability of undertaking the social responsibility and technical innovation [6].

(3) The usage of enterprise competitiveness evaluation method. It applies the taxonomic method to perform the analysis to the external competitiveness of enterprises, carrying out the quantitative analysis to the influential factors of external competitiveness of enterprises and performing the enterprise ranking according to their regions, which is to perform the quantitative analysis from the externals [7]. It applies the factor clustering analysis method to analyze the competitiveness, which reveals the advantages and disadvantages in the development of TCM Enterprises whose enhancement path is mainly the continuous innovation and grasping of core technologies etc. [8]. Delphi method is used to construct the competitiveness index system for the listed TCM Enterprises from four aspects which are the scale, profit-making, sustainable development and innovation, which provides the strong technical means and the strategic basis for the research of competitiveness [9].

What has already known about the topic?

- Most academic researchers have made a lot of explorations in the field of competitiveness. They have explored and achieved results around the development status, existing problems of TCM Enterprises under different backgrounds. Due to the comprehensiveness and complexity of competitiveness, it is necessary to study the competitiveness of enterprises from different and multiple perspectives.

- Many achievements have been made in the research of ways to enhance competitiveness. Research shows that there are many and complex factors to form competitiveness and it has difficulty in measuring directly and comprehensively.

What does this paper add?

- Taking Research and Development Enterprises of TCM as an example and establishing the index evaluation system. From the quantitative research showed that the main factors affecting the competitiveness of TCM Enterprises are enterprise factors and social product factors.
- TCM enterprises can increase investment in enterprise factors and social product factors, in order to strengthen enterprise capacity and improve market position.

II. METHOD

A. Sample and setting

There are mainly two kinds of targets. One is Chinese Pharmaceutical industry. According to Research and Development capabilities, seven Chinese medicine enterprises are selected from a large number of Chinese medicine enterprises. The other is the target group of questionnaires. Because of the extensive use of drugs, all the public who have used drugs and known about Chinese medicine enterprises are the target group. Data collected are mainly from the questionnaire survey and online research, a total of 1152 questionnaires were distributed.

B. Measuring instrument

Factor analysis was used to quantitatively analyze the obtained data. Factor analysis is based on the definite matrix of the correlation coefficient matrix of variables. According to the Chinese Enterprise Competitiveness Report [10], this paper quantifies the competitiveness of enterprises and consumers, chooses four variables in enterprises and designs three variables in consumers. Explaining each variable so that the respondents can clearly understand the meaning of each variable and make an objective evaluation. Seven variables are designed to study competitiveness, and the construction variables are shown in Table I.

TABLE I. EVALUATION INDEX

Index	Index explanation
Sales Revenue	Reflects the Scale and Development of Enterprises
Net assets	Reflects the capital strength of an enterprise
Net profit	Reflects the profitability of an enterprise
Product quality	Drug efficacy Quality safety Advertising Selection of medicinal materials
Enterprise culture	Cultural background Brand positioning Scale and Image
Social responsibility	Public welfare and social donation

C. Ethical considerations

The questionnaire survey method was adopted to obtain the acceptance of the respondents. All participants obtained informed consent. The survey is strictly anonymous and ensures everyone's privacy and safety. Enterprise data acquired

by the online survey method is public data, which does not involve enterprise privacy.

III. RESULTS

A. Participants

A total of 1152 people participated in this survey, recovering 1140 valid questionnaires, with an effective rate of 99%. The majority of the respondents were aged 21-30 years, accounting for 63.19% of the total number. The age below 20 is 23.52%. The respondents aged 31-40 accounted for 8.33% of the total population, the number of people aged 41-50 is 3.21% of the total population and people aged over 51 were only for 1.74%. The educational level of the respondents was mainly undergraduate, accounting for 65.45% of the total number. Besides 11.63% of the total number is postgraduate, 1.91% is the doctoral students and 21.01% is the others. As shown in Table II.

TABLE II. DEMOGRAPHIC INFORMATION

Factors	Total-n (%)
<i>Age</i>	
≤20	23.52
21-30	63.19
31-40	8.33
41-50	3.21
≥51	1.74
<i>Educational level</i>	
Undergraduates	65.45
Postgraduates	11.63
Doctor	1.91
Other	21.01

B. Quantitative analysis

According to the factor analysis method, the relationship between the variables, the correlation coefficient matrix is shown as Table III and the Total Variance Explained is shown in Table IV. The result can be learned from the tables that the sales income, net assets, net profit and enterprise culture have a strong correlation while the product quality and social responsibility have certain correlation. The research results indicate that the common factor 1 can reserve 70% information of the original data, and the common factor 2 can reserve 25% information of the original data. By studying the above seven variables, it is identified that the strength and weakness of competitiveness of TCM Enterprises are mainly influenced by the enterprise factor and social product factor.

IV. DISCUSSION

A. Focusing on the enterprise-scale and profit-making ability

Most of the TCM Enterprises in China are middle and small-sized enterprises. Their profit-making ability and assets scale are relatively weak, as well as there are a number of TCM Enterprises are staying at the behindhand development stage without the operational management concepts, low labor production rate and aged hardware and facilities. Therefore, each TCM Enterprise shall strengthen the management

concepts, expand the scale and try to reach the scale economy so as to reinforce their core competitiveness.

B. Strengthening the enterprise culture construction and sense of social responsibility

The TCM Enterprises are the unique enterprises in China; the consumers recognize and trust the TCM Enterprises with cultural construction and a sense of social responsibility. If the TCM Enterprises intend to develop long term, they have to pay attention to the cultural construction of enterprises and perform their social and citizen’s responsibilities. Enable the consumers to profoundly fee the culture of traditional Chinese medical enterprises, experience the spirit contained in the traditional Chinese medical culture, which not only virtually improve the enterprises’ image, but also boost the development of their competitiveness

C. Striving to provide the products to meet the demands of consumers

Providing drugs to meet the medical needs of consumers is the basis of the pharmaceutical industry. Different from other enterprises, TCM Enterprises provide products for the treatment and diagnosis of diseases. If the drug has a significant effect on the product efficacy, it will undoubtedly become the first choice for a large number of consumers.

Therefore, TCM Enterprises should keep innovating in drug R & D and drug quality, strive to be the guide of medical field, and provide the medical products needed by customers to occupy the market and realize their own value in the pharmaceutical industry.

V. CONCLUSION

The traditional Chinese medicine is the conventional and featured medical and health service resource in China. Since the aging of the population and the health problem continuously appears, it enables the medicine industry’s development trend to be continuously reinforced. TCM Enterprises have problems such as slow development, intensive competition and others. According to the empirical study, what it applies the factor analysis method to identify the reasons for influencing the development of TCM Enterprises are mainly two aspects of enterprise and social product, in which the problem of the enterprise itself brings the most outstanding influences that are 70%. Therefore, the enterprises should seek their own shortages, expand the scale, strengthen the profit-making ability of enterprises, attach importance to the culture and sense of social responsibility, enhance the medicine quality, reinforce the competitiveness and promote the development of Chinese Pharmaceutical industry.

TABLE III. CORRELATION COEFFICIENT MATRIX

RELEVANCE	Sales Revenue	Net assets	Net profit	Product quality	Enterprise culture	Social responsibility
Sales Revenue	1.000	.927	.883	.702	.859	-.047
Net assets	.927	1.000	.963	.663	.886	-.138
Net profit	.883	.963	1.000	.603	.887	-.179
Product quality	.702	.663	.603	1.000	.567	.607
Enterprise culture	.859	.886	.887	.567	1.000	-.203
Social responsibility	-.047	-.138	-.179	.607	-.203	1.000

TABLE IV. TOTAL VARIANCE EXPLAINED

Ingredients	Initial eigenvalue	Initial eigenvalue	Initial eigenvalue	Extract Square Sum Loading	Extract Square Sum Loading	Extract Square Sum Loading
Ingredients	Total	Variance %	Accumulate &	Total	Variance %	Accumulate %
1	4.206	70.097	70.097	4.206	70.097	70.097
2	1.480	24.671	94.768	1.480	24.671	94.768
3	.139	2.322	97.090			
4	.112	1.868	98.958			
5	.042	.692	99.650			
6	.021	.350	100.000			

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