

Research on Talent Demand of Key Supporting Industries in Henan Province—Taking the Medical Industry as an Example

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Abstract

As an important part of China's national economy, the medical industry is a key support industry in Henan Province. In order to gain an advantage in the fierce competition in the medical industry, the key lies in talents. Based on the development status and environment of Henan medical industry and the demand of talents in Henan medical industry, this paper analyzes the problems of talent demand in Henan medical industry and puts forward some suggestions for supporting the development of Henan medical industry.

Keywords

Henan Province, Medical Industry, R&D Talent, Marketing Talent

1. Introduction

With the economic development of all countries in the world, especially the economic development of emerging markets, and the improvement of people's living standards, the global medical expenditure keeps increasing, which strongly promotes the development of the medical industry. New medical technologies, medical devices and medical products keep emerging, and the market size of the medical industry is expanding day by day. According to the 2012-2016 statistics of China's high-tech industry statistical yearbook, as a key industry supported by Henan province, the number of medical industry enterprises in Henan Province with a revenue from principal business of more than 20 million has continued to increase from 597 in 2012 to 796 in 2016; the revenue from principal business continued to grow from 2012 to 2016, reaching 293.1 billion yuan in 2016. In 2017, the medical industry has had major changes, and the government of the

national government has issued over 1700 pharmaceutical policies to push forward the supply-side reforms of the medical industry, which have been widely and deeply influenced by the development and competitiveness of the industry. China's pharmaceutical industry will face increasingly brutal competition as the conditions for drug registration become stricter, and new drug approval and supervision are strengthened, and the quality consistency evaluation of generic drugs is promoted. The medical industry is a technology-intensive industry. Talents are vital to the development of the medical industry and the key to the development of medical companies. The competition in the medical industry is concentrated in the competition of talents (Zhang, 2017). Therefore, this paper will analyze the trend of talent demand, problems and solutions in the medical industry in Henan Province, aiming at improving the quality of talents in the medical industry in Henan Province and helping Henan medical companies to gain competitive advantage.

2. Analysis of Talent Demand in the Medical Industry in Henan Province

2.1. Regional Analysis of Talent Demand

By September 30, 2018, According to the statistics of medical network enterprises (Table 1), the data shows that Henan medical industry enterprises are mainly distributed in Zhengzhou, Xinxiang, Anyang and Luoyang. Obviously, Zhengzhou enterprises have provided more jobs, mainly affected by gas location advantages and industrial environment. Zhengzhou is an important central city in central China, an important comprehensive transportation hub in the country and a core city in the central plains economic zone. More importantly, Zhengzhou's medical industry policy environment is excellent. In 2017, the Zhengzhou Municipal Government issued the "13th Five-Year Development Plan for Zhengzhou Biomedical Industry", which increased the cultivation of biomedical industry in Zhengzhou City, increased the support of financial funds for planning implementation, and provided the accumulation of medical companies. More job positions.

Table 1. Regional distribution of medical enterprises in Henan Province.

city	Zhengzhou	Luoyang	Nanyang	Shangqiu	Anyang	Xinyang
proportion (%)	32.69	6.66	4.24	3.15	7.63	1.69
city	Pingdingshan	Zhoukou	Xinxiang	Kaifeng	Jiaozuo	Luohe
proportion (%)	1.94	2.54	14.77	5.33	4.60	3.03
city	Zhumadian	Sanmengxia	Xuchang	Puyang	Hebi	
proportion (%)	2.91	2.30	2.54	2.42	1.57	

Data source: medical network (<http://www.pharmnet.com.cn/company/1/1128/1.html>).

2.2. Subdivision Industry Analysis of Talent Demand

According to the implementation plan of Henan Province to promote the healthy development of the medical industry (2016), by 2020, the revenue from principal business of bio-medicine, chemical medicine, production of finished traditional Chinese herbal medicine, medical equipment and appliance will be 100 billion, 150 billion, 100 billion and 50 billion respectively. Therefore, in the future, the demand for talents in the medical industry in Henan Province will be more concentrated in chemical medicals, bio-medical and proprietary Chinese medicines. In addition, the “Thirteenth Five-Year Plan” will become a key period for the development of China’s medical and health industry. It is expected that with the implementation of the “Healthy China” strategy, the medical and health industry around the “Thirteenth Five-Year Plan” will be able to break through the health, health and medical care industries. With the size of the trillion market, the entire health care industry and the big health industry will enter the golden period of development. With the continuous deepening of the reform of the medical system, social capital will enter the period of scientific norms and accelerated development, which makes medical students more sought-after, especially related to the maintenance of the elderly, health care, biomedical manufacturing and the implementation of two-child policy. The demand for professionals in the field is expected to usher in a sustained and large-scale growth in the coming period.

2.3. Structure Analysis of Talent Demand

Recruitment information can directly reflect the company’s demand for talent (Cheng, 2018). According to Iresearch consulting’s semi-annual report of China’s online recruitment industry 2017, in recent years, using Internet platforms to release talent recruitment information has become the main channel for enterprises to recruit talent. In order to study the positions and qualifications of talents in the medical industry in Henan Province, 29 Henan medical companies were selected, which were distributed in bio-medical, chemical medical, production of finished traditional Chinese herbal medicine, medical equipment and appliance enterprises. Through the company’s website, 51job.com and Baidu campus recruitment, the paper collected the recruitment information of these 29 medical enterprises in the category of 728 positions in 2018, and obtained the position and educational background from the recruitment information.

1) Position Structure Analysis of Talent Demand

In order to analyze the position structure of talent demand in the medical industry in Henan Province, it is necessary to classify the positions. According to the job categories set by the recruitment website, the data of different functions of the positions in the medical industry in Henan Province are classified and summarized. The positions were classified into: production, R&D and technology, quality management, functional management, declaration and registration, warehousing and logistics, computer, marketing and other categories. According to the statistics of recruitment information of 29 enterprises in the medical in-

dustry in Henan Province in 2018 (**Table 2**), the talents demanded by the medical industry are mainly concentrated in the two major fields of marketing, R&D and technology. Because some companies have no restrictions on the number of marketing and R&D talents when recruiting, but there is no statistics in statistics, so the data in **Table 5** is not involved. Therefore, the actual marketing and R&D and technology classes required by the actual medical industry enterprises The proportion of talent is higher.

2) Educational Attainment Analysis of Talent Demand

Through the recruitment information of representative enterprises in the medical industry in Henan Province, the data were collected and summarized. The total analysis was carried out. The distribution of the various applicants to the job seekers was summarized in **Table 3**. The ranking of educational qualifications for talent in the medical industry is related to college, university, graduate, medium vocational education and lower level. According to the analysis of educational background of different positions (**Table 4**), R&D, and technology positions have the highest educational requirements of all positions, among which 21.68% require graduate education and 46.40% require university education, which is consistent with the work content of talents in R&D and technology positions. With the deep reform of the medical industry The key to determining whether a company has a competitive advantage is to develop talents, especially high-level R&D talents, such as those with doctoral or master's degrees.

Table 2. Distribution of jobs in the medical industry.

Job categories	Proportion (%)
production	3.22
R&D and technology	20.02
quality management	5.15
functional management	5.23
declaration and registration	0.86
warehousing and logistics	5.04
computer	1.48
marketing	56.58
other	2.43
total	100.00

Table 3. Educational attainment of talent demand in the medical industry.

Educational attainment	Proportion (%)
medium vocational education and lower level	4.56
college	56.69
university	30.70
graduate	8.05
total	100.00

Table 4. Educational attainment of talent demand in the medical industry by position.

Job Categories	Educational attainment proportion (%)			
	Graduate	University	College	Medium Vocational Education and Lower Level
production		33.57	18.57	47.86
R&D and technology	21.68	46.40	31.92	
quality management	1.70	55.74	41.28	1.28
functional management	3.03	54.54	41.13	1.30
declaration and registration		80.00	20.00	
warehousing and logistics		3.51	91.67	4.82
computer		83.58	16.42	
marketing		12.53	82.18	5.29
other	1.06	62.77	25.53	10.64

3. Problem Faced in the Talent Demand in the Development of Medical Industry in Henan Province

3.1. Lack of an Attractive Medical Industry Environment

The talent environment is the key to attract talents, and the environmental factors to attract talents include industrial development environment, organizational nature, regional location and other factors (Zhang & Hu, 2012; Cao et al., 2015). From the perspective of industrial development environment, the number of provinces and cities that have been approved for national bio-industry bases has reached 21, mainly in the Bohai-rim and Yangtze River Delta regions in China. For example, the Shanghai area has become the most concentrated base for R&D institutions in the biomedical field and the most prominent innovation for new drugs. The Jiangsu region has now formed biomedical R&D bases in Suzhou, Taizhou, Lianyungang and Nanjing. Tianjin has more than 500 relevant institutions engaged in production and research and development, leading the modernization level of traditional Chinese medicine in China. However, the medical companies in Henan province are small in scale and weak in strength. Moreover, the medical industry cluster has not been formed, so Henan medical industry is in a weak position in attracting talents. In terms of quantity, there are not many large medical companies in Henan Province. By October 13, 2018, in the medical listed companies (Table 5), the number of listed companies in Henan is much lower than that in Jiangsu, Shandong, Zhejiang and Guangdong province. From the quality point of view, Henan medical Company is not strong. In the top 100 Chinese medical industry in 2017, the number of enterprises listed in Shandong, Zhejiang, Jiangsu and Guangdong provinces was 13, 11, 10 and 8 respectively; Henan Province was only listed on the list, that is Furen medicines group, whose rank is 35. From the perspective of student employment choices, medical students are more willing to be employed in hospitals and other administrative institutions in China (Zhang & Wang, 2018); and the choice of workplaces is more inclined to developed regions (Yun, 2016), and Henan med-

ical industry enterprises are not attractive in terms of unit nature or region.

3.2. Insufficient Proportion of R&D Talents

The proportion of R&D personnel in the medical countries of the United States, Germany, the United Kingdom, and Japan accounted for 23.5%, 18.6%, 17.6%, and 16.5% (Xue & Liu, 2009). At present, the proportion of R&D personnel of medical industry in China in 2012-2016 is 7.79%, 8.16%, 8.87%, 8.55%, and 8.93%, which is a big gap with foreign medical giants. This shows that China's medical companies are almost imitation. In 2016, the proportion of Chinese generic drugs in the total medical market reached 90%. If Chinese medical companies gain a competitive position in international competition, they must only innovate. In recent years, the policies of the medical industry, such as the "Opinions on Reforming the Approval System for Drug Medical Device Evaluation and Approval", the policy on the new drug approval and the evaluation of the consistency of generic drugs, and the guidance on strengthening and promoting the innovation of food and drug science and technology. "Thirteenth Five-Year Plan for TCM Science and Technology Innovation", "Deepening the review and approval system reform and encouraging drugs" medical instruments Innovative opinions, etc., all prove the importance of innovative research and development. There is no doubt that we need to increase research and development, and we need more R&D talents in the future. According to the 2012-2016 statistics of China's high-tech industry statistical yearbook (Table 6), medical enterprises in Tianjin, Zhejiang, Guangdong, Jiangsu, Shanghai and Shandong with good development in China's medical industry have increased recruitment of R&D personnel and the proportion of R&D personnel in the past five years. However, the proportion of R&D personnel in Henan Province has been lower than the average, far below the level of developed regions, and there is a downward trend. In order to achieve the goal of the "Henan Province promotes the healthy development of the medical industry implementation plan": by 2020, the province's medical manufacturing new product output rate of more than 15%, medical companies R&D investment accounted for 2% of sales revenue, Henan medical enterprises need a large number of research and development talents.

Table 5. The number of listed companies in the medical industry in five provinces.

Subdivision industry	Henan	Jiangsu	Shandong	Zhejiang	Guangdong
biomedical medicine	2	4	2	2	2
chemical medicine	0	9	7	21	3
production of finished traditional Chinese herbal medicine	3	2	3	5	8
medical equipments and health care	1	3	5	8	13
total	6	18	17	36	26

Table 6. The proportion of R&D personnel in the annual average number of employed personnel in the medical industry.

Year	Average	Henan	Jiangsu	Shanghai	Shandong	Zhejiang	Guangdong	Tianjin
2012	7.79	5.16	8.64	7.92	7.59	11.17	9.93	12.46
2013	8.16	5.88	8.67	9.12	7.74	11.61	9.67	13.34
2014	8.87	5.36	9.80	10.40	9.67	12.30	9.99	15.18
2015	8.55	5.03	9.89	9.96	9.36	12.56	10.15	15.94
2016	8.93	4.88	10.88	10.32	10.22	12.71	9.56	18.14

3.3. Short Supply of Marketing Talents

With the rapid rise of multinational medical companies and the rapid development of local R&D institutions, demand for research and development is growing. From the current development of the medical industry, marketing talents are still considered the most scarce talent by medical companies. As China becomes the world's second largest consumer market for medicals, and with the opening of the two-child policy, the significant trend of population aging, and the increase in per capita income, the demand for medical products is also rising. Based on the above background, marketing talents have played an important role in the process of drug research and development, market promotion and drug efficacy feedback. They have become one of the targets sought by most medical companies. The recruitment data of Henan medical companies also shows that the demand for medical marketing talents is the biggest. On the one hand, with the entry of medical foreign-funded enterprises, the rapid development of private medical companies and the deepening of the medical system reform, the demand for medical marketing talents is huge. According to China's high-tech industry statistical yearbook, the strength of medical enterprises with a revenue from principal business of more than 20 million yuan in the medical industry in China is from 10,730 in 2012 to 12810 in 2016; the number of medical enterprises with a revenue of more than 20 million in Henan Province is from 597 in 2012, continued to grow to 796 in 2016, and medical companies are increasingly competitive. In order to realize the "Implementation Plan for Promoting the Healthy Development of the medical Industry in Henan Province", by 2020, the province's medical manufacturing industry's revenue from principal business will exceed 400 billion. With the intensification of competition and insufficient supply of research and development talent, medical companies can only rely on marketing talent. The improvement of medical performance in Henan Province requires more marketing talents, and more needs higher level, more professional and compound marketing talents. On the other hand, medical or pharmaceutical students prefer to choose medical administrative units such as hospitals rather than marketing positions. They think marketing jobs pay less and are hard work. It can be seen from above that the increasing demand for marketing talents by enterprises and the insufficient supply of

marketing talents by schools lead to the shortage of marketing talents in medical enterprises.

3.4. Well-Rounded Talent Scarcity

As the external environment of enterprises changes faster and the competition becomes more and more fierce, enterprises need well-rounded talents. In the process of reviewing the recruitment advertisements of 29 Henan medical companies, it was found that some companies recruiting marketing talents requiring students to major in medical, medical, biomedical, chemical or marketing, which means that medical-related majors or marketing professionals can engage in medical marketing positions, but the best marketing talents should be those who understand both medicine and marketing. In the interview with Xiangyu medical company in Anyang city of Henan province, the senior management of the company thought that there was a lack of well-rounded talents. To be specific, in the aspect of marketing talents, well-rounded marketing talents with medical professional knowledge and professional marketing ability are needed. In the production of drugs, a large number of well-rounded production and management talents who know both medical knowledge and management are needed. In the aspect of functional management, the well-rounded management talents who know both medicine and functional management are needed. However, in China, the current medical students generally only focus on the medical professional knowledge, and less on management or marketing knowledge. Management or marketing students learn only management or marketing related courses, and do not involve medical knowledge. There is no doubt that the professional talent training mode in China's higher education system cannot meet the needs of the medical industry for inter-disciplinary talents.

4. Talent Countermeasures to Support the Development of Medical Industry in Henan Province

4.1. Enhancing the Attractiveness of Talents in the Medical Industry in Henan Province

The government should further study the development of the medical industry in Henan Province, increase industrial support, identify the medical industry segment, and break through market segments, such as medical devices in Xinxiang and Anyang. Second, the government should increase the introduction of reward systems for outstanding medical talents. Talents are the key to the competition of medical companies. It is necessary to further enhance the convenience of excellent medical R&D or marketing talents settled in Henan and increase the intensity of reward. Third, the government supports the listing of medical companies. The listing includes domestic new three board, main board, small and medium board, GEM and Hong Kong stocks, as well as foreign countries, such as the United States, the United Kingdom, Singapore and other places listed. Listing can help medical companies perfect their governance structure,

improve the management and management capabilities of medical companies, and obtain financial support. At the same time, listing can also expand the attractiveness of recruiting talents. Therefore, the Henan provincial government should guide or introduce policies to encourage or carry out activities to allow Henan medical companies to communicate with venture capital companies and securities companies.

4.2. Improve the Quality of Medical Talents

Because medical companies need high-quality R&D talents, high-quality marketing talents and well-rounded talents. In terms of R&D talents, it is necessary not only to further expand the number of master's or doctoral students in medicine-related majors, but also to improve the quality of master's or doctoral training in medicine-related majors. In terms of marketing talents, students should be guided to understand the career prospects of medical marketing, and cooperate with medical companies to develop marketing talents in advance, so that students can understand medical marketing in medical companies and learn about medical products and marketing knowledge. In the aspect of well-rounded talent training, according to the development needs of the medical industry, the medical professional training program should adjust the training curriculum, increase or further increase the management and marketing courses.

4.3. Improve the Level of Human Resources Management in Medical Enterprises

The demand for talents in the medical industry is large, and its turnover rate is also particularly large. In the "Research report on recruitment index of white-collar worker job-hopping in spring 2018" issued by Zhilian, the actual action of job-hopping in the medical and medical industries accounted for 69.9%, ranking in the report number 5. In order to attract, retain and fully exert talents, it is necessary for all medical companies to comprehensively improve the level of human resources management. First, the scientific research enterprise talent position setting and job quality requirements. According to the company's sales target and the company's operating environment, determine the talent position setting, and determine the qualifications, experience, knowledge and ability of each position. Second, adhere to the recruitment of personnel matches. According to the needs of the post and the quality of the post, it is necessary to carefully study the background, values, abilities and other qualities of college students, and use scientific methods to find the perfect match with the company. Third, science trains talent. In addition to carrying out regular trainings to improve employees' abilities, personnel training should also help employees to develop career so that employees can take the initiative to work hard. Finally, use the appropriate incentives. In addition to performance appraisal, compensation and benefits are key incentives. It is suggested to adopt compensation schemes that can tie employees' interests to the interests of the enterprise or the team, such as equity incentive and option incentive.

5. Conclusion and Discussions

In recent years, the rapid economic development of Henan Province and the key support industry support policies of Henan Province have provided historical opportunities for the development of the medical industry in Henan Province, and at the same time provided a good development platform for talent development. The medical industry has been a profitable industry in recent years, and it is also a key support industry in Henan Province. Its development requires a large number of outstanding talents. In order to meet the demand of Henan medical enterprises for talents, colleges and universities in Henan province are actively transforming their talent cultivation model and transforming themselves into applied or entrepreneurial universities.

This paper analyzes the talent demand trends and existing problems in the medical industry in Henan province through the collection and processing of statistical data and open data. However, due to the limited sample data, the analysis results may be affected. In the future, the research sample can be further expanded to investigate the quality requirements of medical industry talent demand, and analyze the key factors influencing the demand of medical talent, so as to provide better support for scientific decision-making of medical industry enterprises, university administrators, students and teachers.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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