

Research on the Cultivation of Talent Creativity in Advanced Manufacturing Enterprises

—Taking the Report on Chengdu Agricultural Machinery as an Example

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Abstract—The aim of this research is to study on talent creativity in advanced machinery manufacturing enterprises. To investigate their cultivation of talent system, literature review, data research and comparative method are used to address the significance of talent creating. With the focus on three major factors, this paper synthesizes the restrictions to talent innovation for advanced agricultural machinery enterprises in Chengdu. For comparison, this article presents several tables of main agricultural machinery in Chengdu and Sichuan respectively. This paper applied the social filed study to Chengdu agricultural machinery, successfully analyzing problems laying in talent cultivation for advanced manufacturing. The results suggest that a designed training system should be developed to optimize recruitment system by investing more human capital in education and training. We propose to establish incentive system to reserve more innovative talents and to stimulate talent innovation.

Keywords—advanced manufacturing; talent creativity; agricultural machinery; talent cultivation

I. INTRODUCTION

Advanced manufacturing is a general term used in manufacturing. It continuously absorbs the achievements of computers, materials, electronic information and modern management technologies and applies them to production, R&D and management, bringing economic, social and market benefits in production.

Agricultural machinery and equipment is one of top ten key development areas of “Made in China 2025”. As the core element of agricultural advanced productivity, it is an

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important means to transform agricultural production methods, to improve agricultural production efficiency, and to promote the modernization of agriculture and rural areas. It is worthwhile implementing them into Chengdu agricultural machinery manufacturing enterprises so as to improve corporate performance[1].

II. DEVELOPMENT OF ADVANCED AGRICULTURAL MACHINERY AND EQUIPMENT MANUFACTURING INDUSTRY IN CHENGDU

A. Development of advanced manufacturing industry in Chengdu

Manufacturing is a pillar industry of the national economy and the basic driving force for sustainable economic growth[2]. The “Smart Factory” and “Intelligent Production” Industry 4.0 era (the fourth industrial revolution) is triggering a new round of manufacturing revolution on a global scale, aiming to find a significant integration of information technology and manufacturing, and to make new materials and energy breakthrough[3].

In this context, the State Council issued “Made in China 2025” in 2015, clearly stating that China should base on its national reality and “strive to achieve the strategic goal of ‘three steps’ to build a manufacturing powerhouse”. In the “Thirteenth Five-Year Plan for National Economic and Social Development” adopted by the two sessions in 2016, China also proposed that actively implement strategy should be taken to develop manufacturing[4]. In July 2018, Chengdu issued the “Chengdu High-Quality Modern Industrial System Construction Reform Plan”, pointing out that advanced manufacturing will be an important support for the future. It can be seen that there are supporting to manufacturing enterprises given by governments in Chengdu.

First transformation took in the manufacturing industry into an advanced manufacturing industry. It absorbed knowledge and practices in electronic information, computers, materials,

and modern management technologies. So it is necessary to conduct study on them. In order to analyze the overall situation of employees in manufacturing enterprises in Chengdu, this paper retrieved the statistical yearbook of Sichuan Province from 2014 to 2018. Results are as the following double-line chart (Fig. 1).

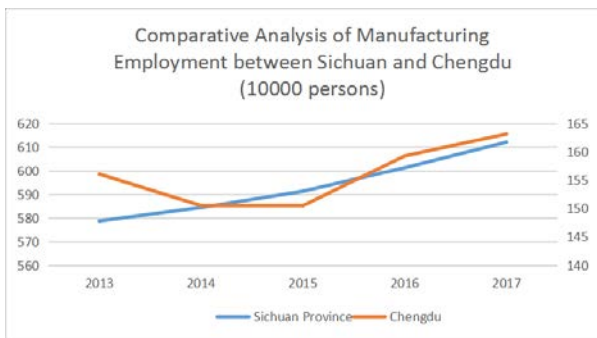


Fig. 1. Analysis of the Employment of the Manufacturing Industry in Sichuan Province and Chengdu City from 2013 to 2017

As can be seen from Fig. 1, the number of manufacturing employees in Sichuan has increased year by year in the past five years. Although there are fluctuations in the employment of manufacturing in Chengdu, considering the factors such as the improvement of human resources quality, technological progress and improvement of labor productivity, it is expected that the overall scale will continue to expand. With the continuous expansion of the employee base, the reserve of talents in the manufacturing industry has significantly increased, which is conducive to the upgrading of Chengdu's manufacturing industry.

B. Development of agricultural machinery and equipment manufacturing industry in Chengdu

According to statistics, China's agricultural machinery manufacturing industry has reached the world's leading scale, but most of its products are concentrated in the low-end. The market of traditional agricultural machinery manufacturing industry has become saturated, whereas new demand-oriented changes have emerged in. The development of the industry has entered a stage of gradual adjustment[5].

Started from the availability of data, together with the Statistical Yearbook of Sichuan Province in 2014-2018, data is collected through varied ways in the past five years. It includes the total power of agricultural machinery, the number of agricultural irrigation and drainage machinery, and the availability of large and medium-sized agricultural tractors in Chengdu, Sichuan province. The graph analysis shows that the demand for agricultural machinery and equipment in Chengdu has continued to rise in the past five years.

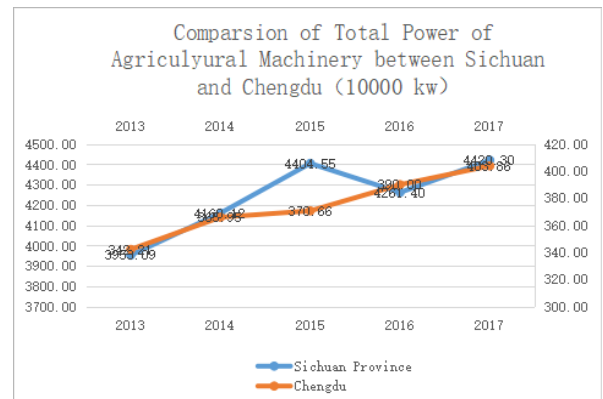


Fig. 2. Comparison of Total Power of Agricultural Machinery in Sichuan and Chengdu from 2013 to 2017

The total power of agricultural machinery refers to the total power of various power machinery mainly used in agriculture, forestry, animal husbandry and fishery production, including farming machinery, agricultural irrigation and drainage machinery, harvesting machinery, and agricultural transportation machinery. From Fig.2 that the total power of agricultural machinery in Sichuan Province and Chengdu City has been on the rise over the past five years. But there is a decline in 2016 in Sichuan Province. This is because the total power of agricultural machinery has been removed from agricultural vehicles data since 2016.

Analysis of Chengdu's agricultural machinery market shows that the number of traditional agricultural machinery such as tractors, planters, harvesters and so on has fallen sharply, while the agricultural machinery industry such as balers, grape tillers and fruit pickers has risen against the trend. Product up gradation is on urgent call in these markets due to insufficiency in innovation. And it is a field where innovative development can be carried out.

With the updating of computer and information technology and technological innovation, Chengdu's agricultural machinery and equipment manufacturing industry is accelerating, clustering into a series of emerging industrial clusters. Improving the quality of agricultural machinery enterprises is conducive to accelerating the transformation and upgrading of agricultural machinery and equipment manufacturing enterprises to advanced manufacturing enterprises. It can be an indispensable link for cultivating talent creativity.

III. THE DEFINITION AND INFLUENCE OF TALENT CREATIVITY IN ADVANCED MANUFACTURING ENTERPRISES

A. The definition of talent creativity

Creativity is the ability of an individual to discover and create activities. It consists of knowledge, intelligence, and good personality. Whether a person is creative or not is an important indicator of intelligence[3].

The characteristics are manifested as follows: flexibility, quick response, and originality. Talent creativity includes

creating new concepts, new theories; inventing new equipment, updating technology; and updating management methods.

There are two main factors affecting their creativity. First, the reserve of knowledge and information. A wealth of relevant reserves are conducive to putting forward better ideas. It can help talents to carry out scientific innovation behavior analysis, namely, identification, simplification, adjustment, correction, implementation and inspection. Second, the shaping of personality, which covers the will, sentiment and even parenting of talents. All this developed through social practices. The industry, corporate culture, career planning and talents location will affect their individual creativity.

B. The Realistic meaning of promoting talents creativity in advanced manufacturing enterprises

For a long time, the development of domestic equipment manufacturing industry has mainly focused on low-end assembly where the industrial system is not fully divided[6]. At the same time, companies invest less in research and development, while they just copy the mode. In 2017, the income of China’s agricultural machinery enterprises above designated size was nearly 430 billion Yuan, and the comprehensive mechanization rate of major crops, such as seed and harvest, reached 68%. The comprehensive mechanization rate of major crops exceeded 80%, and entered the middle and high-grade, quality development. At the stage, compared with the agricultural machinery manufacturing powerhouse, there is still a big gap in China’s agricultural machinery and equipment in terms of manufacturing quality, product technology level, production efficiency, and market share.

The advantage of advanced manufacturing is reflected in the three aspects of industrial advancement, covering technological advancement and advanced management. If agricultural machinery manufacturing enterprises want to make a breakthrough, they should carry out R&D innovation in production and management to enhance competition. The development of the enterprises is inseparable from the support of research and development of innovative talents. As the beneficiaries of talents, enterprises should actively cultivate the creativity of talents[7].

The fundamental requirement is put up by “Made in China 2025”, insisting on regarding talents as a foundation for building a manufacturing country. Therefore, it is of great theoretical and practical significance to carry out research on how to cultivate the creativity of talents in advanced manufacturing enterprises.

IV. THE STATUS AND DEFICIENCY OF TALENT CREATIVITY IN ADVANCED MANUFACTURING ENTERPRISES

A. Advanced manufacturing enterprises evade the responsibility for cultivating talents

Firstly, many manufacturing companies believe that in the domain of cultivation, the top-level design of the state assigns the tasks of teaching, cultivation and creativity training to higher vocational colleges, and the talents get employed after a short-term training can be directly employed[8]. Secondly, manufacturing companies believe that they invest too much on

talents cultivation, and they even fail to achieve the expectation after talents training. They also worry that those talents will be dug away, making them reluctant to continue make cost in training.

B. The design of corporate talent creativity training activities is not attractive

Enterprises’ chasing for spiritual pursuits and professional development is to create actual creative behaviors through the accumulation of information and reserve knowledge. Thus they can enhance individual creativity, and gain material and spiritual rewards. Many manufacturing companies only take training as a standard assessment. However, they do not combine the condition of enterprises with the preference of talents to design activities. So, it is difficult to attract and retain outstanding innovative talents.

C. The cultivation system of enterprise talent creativity is not perfect

First of all, due to the lack of classification and stratification of talents in manufacturing enterprises and the lack of a combination of phased and long-term training, the training of talents did not fully consider how to integrate their career planning with the development strategy of the company. The “emergency” training is taken before the talents who are about to be employed. Besides, after the training, there is a lack of effective evaluation and feedback, resulting in the poor training effects, let alone the significant improvement of talents creativity.

V. CONCLUSION

The advanced manufacturing enterprises resist to the cultivate talent creativity, which makes it difficult for enterprises to retain outstanding talents who pursue self-development and individualization. Enterprises turn to the talent market while becoming less concerned with internal training. And they gradually become enterprises that dig in the industry with high salaries. This vicious circle is not good for the future development of the enterprises. Based on the previous studies on status quo and dilemma of advanced manufacturing of agricultural machinery in Chengdu, the following suggestions for the cultivation of talent creativity are proposed. As it is shown in Fig. 3.

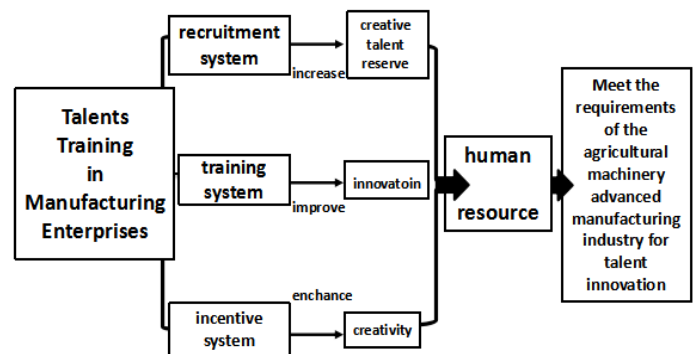


Fig. 3. Optimization path diagram

A. Improving the recruitment system and increase the reserve of innovative talents for advanced agricultural machinery manufacturing enterprises

Enterprises should attach importance to an introduction to talents training. The enterprises should also improve their recruitment system with rational and developing perspectives.

To create a benign recruitment system is to create an automated or semi-automated creative talent delivery system. Chengdu agricultural machinery advanced manufacturing enterprises should formulate scientific plan for talent introduction and reservation in accordance with the enterprise development. With focusing on creating rich recruitment channels and flexible recruitment methods, the plan address the internal training and reserve of innovative talents, supplemented by external introduction.

Innovative talents who are from internal recruitment and promotion generally have a good command of the company and its work. Hence, these talents can quickly enter new positions without creativity training. At the same time, such promotion opportunities can also motivate and retain talents. However, if the company relies too much on internal recruitment, it will lead to a narrow minded, which is not conducive to the development of creativity. Therefore, in the recruitment process, other talent introduction methods such as on-site recruitment, online recruitment, and campus recruitment should also be adopted to ensure the diversification if company's innovation.

B. Optimizing the training system and help the talent innovation of agricultural machinery advanced manufacturing enterprises

The goal of the training of talents for enterprises is to cultivate talents who are good at technology, management and who are discover new problems or new relationships, particularly in the context of the development of advanced agricultural machinery manufacturing. The system should be continuously optimized from the aspects of training management, training plans, training evaluation and internal lecturer systems.

It is a way to cultivate talent creativity by setting appropriate activities, stimulating their curiosity, and cultivating their observation and imagination. For the content of the training course, the company should cooperate with the agricultural machinery manufacturing industry association, universities, scientific research institutions and leading enterprises, etc. Enterprises should also understand the domestic and foreign markets, policies and regulations, industry dynamics, advanced technology, and human resources management, etc. Aiming at changes in the technical positions and requirements of enterprises, we need to improve the practicality of the courses, and help talents to innovate[4].

C. Improving the incentive system and enhance the enthusiasm of talent innovation in advanced agricultural machinery manufacturing enterprises

The incentive system for traditional enterprises to cultivate talent creativity is a combination of training, evaluation, assessment and employee performance appraisal. The method is to give them material or spiritual incentives. However, the salary growth and performance incentives favored by talent types are not implemented. For senior technical and management talents, enterprises can measure their innovation achievements, then give incentives to share shares. It is not only to achieve incentives, but also help reduce brain drain as a beneficial community^[4].

Spiritual incentives have a great impact on the enthusiasm of entrepreneurial talents except material incentives. In the process of creating an atmosphere that advocates learning, agricultural machinery advanced manufacturing enterprises should skillfully apply the internal lecturer in the training system. As outstanding talents served as internal lecturers, it is wise to invite lecturers to participate in corporate creativity through learning and teaching. The establishment of a system known as knowledge sharing could strengthen the sense of identity of talents to enterprises.

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