Research on Talent Ecosystem of High-end Equipment Manufacturing Industry in Zhenjiang High-tech Zone

Xinying Li
Library, Jiangsu University of Science and Technology, Zhenjiang 212003, China; E-mail: 44770222@qq.com

Abstract. Aiming at the talent ecosystem of high-end equipment manufacturing industry in Zhenjiang High-tech Zone, studies the mechanism and law of interaction between talent and talent environment from the perspective of ecology. Applies the theory of talent ecosystem to the practice of talent development in high-tech zone, establishes the talent ecosystem of high-end equipment industry in Zhenjiang High-tech Zone from the perspective of ecology, finds and solves the problem of high-tech. The problems existing in the talent system in the region provide new solutions for the construction of high-level talent system in high-tech zones, provide talent support and intellectual support for the promotion of high-quality development in Zhenjiang.

1. Introduction
Zhenjiang High-tech Zone was upgraded to a national high-tech zone in October 2014. It is one of the nine national high-tech zones relying on the construction of the National Independent Innovation Demonstration Zone in southern Jiangsu Province. It is also a leading, demonstration and radiation zone for the construction of the national self-created zone in southern Jiangsu Province. Therefore, building a healthy, stable and sustainable talent ecosystem is the basic guarantee for building a high-tech industry, high-tech enterprises, high-end talent and new technology, new mode, new finance, new business form highly concentrated Zhenjiang High-tech Zone. High-tech zones are the leading areas, core areas and main positions of Zhenjiang City to the west, and high-end equipment industries are the core leading industries of high-tech zones. Constructing the talent ecological system of high-end equipment industry in Zhenjiang High-tech Zone based on the concept of ecology.

2. Constructing Talent Ecosystem of High-end Equipment Manufacturing Industry in Zhenjiang High-tech Zone
Firstly, it analyses the characteristics of existing talents in high-end equipment manufacturing in high-tech zones, the basic elements of talent ecology in high-tech zones, establishes the research object of talent ecology, and constructs the nutritional levels of talent ecosystem. The ecological impact factors of talent industry ecosystem in Zhenjiang High-tech Zone are determined. The hard environment ecological factors mainly include infrastructure environment, greening of high-tech zone, industry and R&D environment, talent living environment, etc. The soft environment factors of talent mainly refer to policy, culture, system and mechanism. Taking Zhenjiang High-tech Zone as the regional boundary of talent ecosystem, the original ecological framework of talent ecosystem was established.
2.1 Elements of talent ecology in Zhenjiang High-tech Zone
Population is the most basic ecological unit in the study of ecology, besides individual organisms. It is also an important component of higher-level communities and ecosystems. Talent population refers to the collection of similar talents in a certain talent space. It belongs to the single biological population, but at the same time it has two types: single talent population and mixed talent population.

2.2 The characteristics of talent community in Zhenjiang High-tech Zone
Firstly, the talent community of high-tech zones consists of many different types of talent population, such as technical talent population, managerial talent population and sales talent population. Secondly, although the talent community includes many talent populations at the same time, these different types of talent population must have common talent law and coexist in an orderly state. Thirdly, the talent community must have its own characteristics. Fourthly, different talent communities have different talent boundaries. For example, the talent communities of ship and marine equipment industry in high-tech zones tend to concentrate in the same region. The Institute of Marine Equipment Research of Jiangsu University of Science and Technology is the geographical space where the talent communities of ship and marine equipment are located, and their boundaries are also obvious.

2.3 Characteristics and Composition of Talent Ecosystem in Zhenjiang High-tech Zone
The talent ecosystem of Zhenjiang High-tech Zone has the following basic characteristics: the talent ecosystem of Zhenjiang High-tech Zone is the most important structure and functional unit of talent ecology, and the research of talent ecosystem of Zhenjiang High-tech Zone is at the highest level of talent ecology in the region of High-tech Zone; the talent ecosystem of Zhenjiang High-tech Zone has certain self-regulation ability; and the people in Zhenjiang High-tech Zone. The talent ecosystem of high-tech zones has dynamic life characteristics.

3. Determine the structure framework and operation function of talent ecosystem in Zhenjiang High-tech Zone
3.1 Talent Ecological Chain in High-tech Zone
At present, there are five main talent populations in the talent ecosystem of Zhenjiang High-tech Zone. Each talent population has one or more talent ecological chains. Although each talent ecological chain will be different, there are also common rules. In the talent ecosystem of Zhenjiang High-tech Zone, talent ecological chain and talent ecological network connect talent and environment, talent producer, talent consumer and talent consumer into a unified whole, and reflect the nutritional level position and mutual relationship among all kinds of talents in talent ecosystem.

3.2 Talent Ecological Network of High-tech Zones
The different talent ecological chains in Zhenjiang High-tech Zone eventually constitute a complete talent ecological network. Each talent ecological chain is not isolated from each other, and the talent population at different trophic levels in different ecological chains is intertwined with each other. For example, the managerial talents in the talent chain of semiconductor and telecommunication industries may be transferred to the high-tech service industry at the next trophic level, while the middle or advanced technological talents in modern service industries may also be transferred to the talent ecological chain of semiconductor and telecommunication industries.

4. Establishing early warning and control mechanism of brain drain in high-end equipment industry based on talent ecosystem
4.1 Indicator System of Talent Loss Early Warning System for High-end Equipment Industry
The early warning index system of individual brain drain is designed as follows: the index of abnormal state of employees'current interpersonal relationship is measured by the frequency of interpersonal
conflict, which reflects the status quo of employees' interpersonal relationship in enterprises and their handling ability, and indirectly reflects the psychological state of employees; the index of employees' current working status is evaluated by employee absence rate, work error rate and reasonable complaint rate of customers; Indicators of job satisfaction. The early warning index system of individual brain drain includes personnel relationship index, job performance index and job satisfaction index.

4.2 Control mechanism of brain drain in high-end equipment industry

1) Establish early warning management of brain drain. Through the early warning system of brain drain, enterprises can track and understand the internal trends of key employees, and take corresponding measures in time to provide favorable conditions for the follow-up work of enterprises; 2) the construction of enterprise culture. High-end equipment enterprise culture construction focuses on improving the quality of leadership, creating a special management concept for high-tech personnel improving the management standards of high-tech personnel; 3) improving staff turnover management. When employee turnover is irreversible, there are benign exit application interview system and employee turnover system.

5. Optimizing Path to Establish Talent Ecosystem of High-end Equipment Industry

5.1 Improvement and perfection of talent ecological environment factors

A good talent ecological environment includes not only the harmony and unity of the natural environment and talent environment in the macro-region, but also the humanization of the human environment, social environment and hardware environment in the region. That is to say, we should take into account not only the overall sustainable development of the natural attributes of high-tech zones, but also the hard environment structure of human resources, such as living, leisure and entertainment. We can start with the supporting attracting environment, scientific and technological research and development environment and upgrading the retaining environment.

Table 1. The forewarning indicator system of the brain drain

| Indicator category | Indicator name | Indicator meaning | Warning level |
|--------------------|----------------|------------------|--------------|
| Personnel relationship | Interpersonal conflict frequency | Reflecting the status and processing capacity of interpersonal relationships within employees' organizations | 0 times (normal) | 1 time (warning) | >2 times (alarm) |
| Working performance | Absence rate | Customer's reasonable complaint rate | 0 % (normal) | >2% (warning) | ≥4% (alarm) |
| Working error rate | | Investigate the number of work errors caused by employees' own factors in a certain period of time | 0 (normal) | >1 (normal) | ≥3 times (alarm) |
| Customer's reasonable complaint rate | | Examine the work efficiency and service quality caused by employees' own factors in a certain period of time | 0 (normal) | >1 time (warning) | ≥3 times (alarm) |
| Job satisfaction | Compensation and welfare | Evaluate the comparability of employee compensation with other employees in the industry | >1 (normal) | <1 (warning) | <0.9 (alarm) |
| Personal and business match | | Personal work pressure, job performance, etc. | 2 minutes (warning) | 1 minute (alarm) |
| Personal development prospects | | Development prospects and promotion opportunities in the enterprise | 2 minutes (warning) | 1 minute (alarm) |
5.2 Integration and upgrading of talent ecological landscape

By introducing landscape ecology into the path optimization of talent ecosystem in high-tech zones, we can think about the competition between talent ecosystem in high-tech zones and talent competition between high-tech zones from a macro perspective. Firstly, the integration of talent ecological landscape must focus on the expansion of the scope of talent introduction, such as paying attention to the attraction of high-level and top-notch talents outside the region and overseas, and building an effective development platform; secondly, the opening of talent introduction channels; thirdly, the extension of the platform on which talent development depends.

6. Conclusion

In order to further promote the strategy of strengthening Zhenjiang City with talented people, the following aspects should be considered:

(1) Construct a talent ecosystem of leading industries such as high-end equipment manufacturing, in combination with the industrial planning of Zhenjiang High-tech Zone. To determine the ecological impact factors of the talent industry ecosystem in Zhenjiang High-tech Zone, take Zhenjiang High-tech Zone as the regional boundary of the talent ecosystem, and establish the structure and framework of the talent ecosystem in Zhenjiang High-tech Zone.

(2) According to the talent characteristics of high-end equipment industry in Zhenjiang High-tech Zone, the early warning and control mechanism of brain drain should be established. Based on the theory of brain drain and early warning, the early warning index system is constructed for individual talents and enterprises on the basis of in-depth analysis of the influencing factors of brain drain. Establish early warning evaluation method and control mechanism of brain drain of high-end equipment industry in Zhenjiang High-tech Zone.

(3) Based on the location characteristics of Zhenjiang High-tech Zone, the optimization model of talent ecosystem of high-end equipment industry in Zhenjiang High-tech Zone is established. We should rationally plan the structure and density of high-end equipment industry talents in high-tech zones, gradually establish a dynamic balance of talent flow in high-tech zones. Scientifically formulate personnel training programs that follow the law of talent growth life cycle in high-tech zones, and activate and develop the feedback and regulation functions of talent ecosystem in high-tech zones.

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