Evaluation Method of High-Tech Talents Training Mechanism Based on Competency Model

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Abstract. In view of the difficulty of cultivating modern high-tech talents and the inaccurate evaluation of the existing training mechanism, this paper studies the evaluation method of high-tech talents training mechanism based on competency model. In this paper, the training mechanism of high-tech talents in large enterprises is firstly studied. Then, the determinants of high-tech talents training is selected. Besides, based on the competency model theory, it constructs the competency model of high-tech talents in large enterprises, and finally builds a clear relationship between the incentive mechanism according to the model to realize the evaluation of the high-tech talents training mechanism. The experimental results indicate that the proposed method can be used to scientifically evaluate the talent training mechanism in enterprises, and has certain application value.

Keywords: Competency model · Large enterprises · High-tech talents · Talent training mechanism

1 Introduction

Enterprise experts are mainly divided into management experts, professional technical specialists and professional skills experts. In practical work, the proportion of enterprise experts can be adjusted according to the different nature of enterprises. For example, some energy enterprises belong to productive enterprises, and the proportion of management experts is often not high and subdivided into multiple specialties. Enterprises often focus on professional and technical specialties and professional and technical experts [1]. Enterprises have different evaluation criteria for these two kinds of talents: professional technical specialists should attach importance to their professional theoretical level and scientific research ability, as well as the ability to transform achievements into technology and benefits. In addition, their recognition in the industry is also an important evaluation index. Professional skill experts should attach importance to their professionalism, technical ability, and problem-solving ability [2].

Innovative talents are the key to training. Super-large enterprises often have abundant funds and attach great importance to the training mechanism of innovative talents. Many scholars have discussed talents. Du Pengcheng has analyzed the reasons for brain

X. Yuan et al. (Eds.): ICEKIM 2023, AHCS 13, pp. 389–395, 2023.
https://doi.org/10.2991/978-94-6463-172-2_43

drain in small and medium-sized science and technology enterprises [3]. John Mill, a British thinker, said, "a man of genius, by the predestination of the word, has more personality than any other man." To cultivate and develop innovative talents in science and technology, we are not afraid of outstanding individual shortcomings, but we are afraid that the advantages are not prominent [4]. Liu Wucheng analyzed the strong correlation between the growth law of new engineering science and technology talents and the stage characteristics of personnel training. The environmental factors involved in personnel training cross each other and have complementary functions [5]. Qin Yanhua analyzed the main reasons for the loss of innovative talents in high-tech enterprises and the risks caused by the loss. On this basis, countermeasures to prevent the loss of innovative talents were put forward [6]. Wang Fengchun analyzed the knowledge possessed by innovative talents. It is not general knowledge, but the knowledge that can adapt to and serve the technological innovation of enterprises [7]. To develop innovative talents, we must change our concepts in time, select them according to knowledge and evaluate them according to ability. Wang Hongcai analyzed that ability and quality affect the efficiency and success of innovative activities [8]. Modern enterprises can take various measures to promote organizational innovation, but in essence, organizational innovation depends on the innovative intellectual capital of the organization, and the basic carrier of innovative intellectual capital is innovative talents.

Based on this, this paper carries out the scientific evaluation research on the training mechanism of high-tech talents in super-large enterprises. It first analyzes the determinants of high-tech talents training, then constructs the competency model of high-tech talents in super-large enterprises, and finds out the training incentives of enterprise development goals and talent development goals in order to improve the accuracy of the evaluation of training mechanism and promote the rapid development of enterprises.

2 Decisive Factors in Selecting High-Tech Talents Training

For large enterprises, to achieve sustainable development in the future, in addition to requiring high-tech talents to form a unique way of thinking, they should also present diversification and individualization in terms of demand [9]. Because the personality characteristics of high-tech personnel can fully reflect their unique heterogeneity, based on this, the role of the characteristics of the high-tech personnel is analyzed. Five decision-making factors affecting the effect of high-tech personnel training are determined by combining with the five-force model. The five-force model of high-tech talent training mechanism is shown in Fig. 1.

The determinants of the five aspects in the model in Fig. 1 from top to bottom and from left to right are respectively: the development force factor of high-tech talents; the learning force factor of promoting the organization of high-tech talents; the competency factor of building high-tech talents, the incentive factor of building high-tech talents, and the qualification factor of setting up high-tech talents [10]. Combined with the five forces model shown in Fig. 1, some more important determinants are separated from many factors affecting the cultivation of high-tech talents, and they are grouped into a set, which is used as a set of decision-making factors for the cultivation of high-tech talents, providing decision-making basis for the subsequent construction of the competency model for high-tech talents in super-large enterprises.

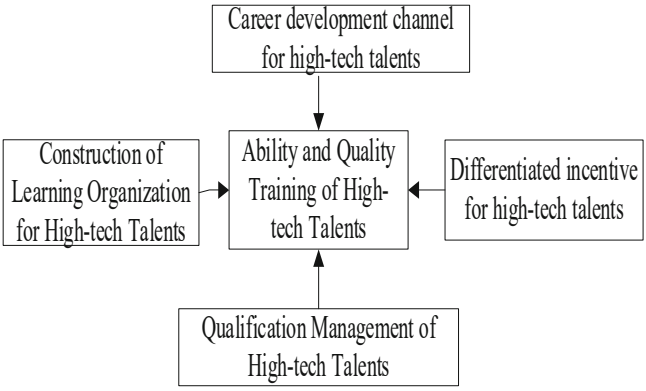

Fig. 1. Five-force model of high-tech talents training mechanism

3 Constructing the Competency Model of High-Tech Talents in Large Enterprises

To ensure that the training of high-tech talents can fully meet the needs of large enterprises, we should build a talent competency model on the basis of defining the determinants of high-tech talent training [11]. The factors affecting competence are divided into goal and action group, help and service group, influence group, management group, cognitive group and self-concept group. It determines the level of each competency for content in different families, as shown in Table 1.

In Table 1, the first three are threshold qualities, and the last three are excellent qualities [12]. The output of the competency model is the competency of high-tech talents, and the specific competency value can be calculated by the following formula:

$$P = P_m / P_y \tag{1}$$

In the formula, P represents the competency of high-tech talents; P_m represents the threshold quality score; and P_y represents the excellent quality competency score.

The scores of various competencies can be comprehensively evaluated through the test results of high-tech talents and the completion of daily work. On this basis, the

Table 1. Competency elements and levels of competency model for high-tech talents

Number	Class	Competent quality
(1)	Level 2 and above	Knowledge search, technical expertise, teamwork, etc.
(2)	Level 3 and above	Initiative, self-confidence, interpersonal insight, etc.
(3)	Level 4 and above	Deductive thinking, inductive thinking, etc.
(4)	Level 5 and above	Influence
(5)	Level 6 and above	Achievement oriented

comprehensive evaluation model of enterprise talent cultivation is constructed, and the formula is as follows:

$$E = \sum_{i=1}^{n} \lambda P_i \tag{2}$$

Where, λ refers to the comprehensive evaluation weight of talent cultivation, P_i refers to the competency values of various indicators of talent, and $i = 1, 2, \cdots n$.

4 The Design of the Evaluation Method for the Training Mechanism of High-Tech Talents

To realize the evaluation of the training mechanism, this paper introduces the evaluation model of high-tech talent training, and makes a comprehensive analysis of the training mechanism from four aspects: training system, training environment, training mode and practice mode [13]. In every aspect, there are factors that affect the implementation effect of the training mechanism of high-tech talents. Define the functional relationship of the three hierarchical structures in the model, as shown in the following formula:

$$X = \lambda(Y_1, Y_2, \cdots, Y_n) \tag{3}$$

Where, X refers to the top target level function of the model; Y_1, …, Y_n respectively refers to each secondary evaluation index in the middle layer of the model. The above four aspects are regarded as the first-level indicators of the evaluation model of high-tech talent training mechanism, and each first-level rating indicator corresponds to a number of second-level evaluation indicators. Table 2 is the evaluation index system table of the high-tech talent training mechanism.

In view of the contents recorded in the above table, the correlation between the corresponding and the implementation effect of the high-tech personnel training mechanism is obtained from both quantitative and qualitative aspects, and there is a positive correlation between the selected secondary indicators and the implementation effect of the mechanism [14].

Table 2. Evaluation index system of high-tech talents training mechanism

Number	Level 1 indicator	Level 2 indicator
(1)	Training system	Leadership mechanism Training policy; Incentive mechanism, etc.
(2)	Cultivation environment	Academic exchange among employees; Construction of high-tech talent team, etc.
(3)	Training model	Training content; Cultivating ideas; Culture methods, etc.
(4)	Practice model	Scientific and technological activities; Scientific research projects; Research and development of new technologies, etc.

According to the above discussion, the evaluation results of each secondary index are substituted into the above evaluation model, and finally, the quantified evaluation results are obtained. The value range of the output results calculated by the model is between 0 and 1. The larger the X value is, or the closer it is to 1, the more ideal the culture effect is, and the more reasonable the establishment of the culture mechanism is; on the contrary, the smaller the X value is, or the closer it is to 0, the less ideal the culture effect is, and the more unreasonable the establishment of the culture mechanism is.

5 Case Analysis

Through the above discussion, this paper puts forward an evaluation method for the training mechanism of high-tech talents in super-large enterprises. To verify whether the practical application of this mechanism is feasible, based on a large enterprise, this paper adopts the design method to scientifically evaluate the training mechanism currently adopted by the enterprise. It is known that the super-large enterprise was established in 1988, and the type of enterprise is a high-tech private enterprise with employee stock ownership. With its rapid development in recent years, the company has successfully entered the global communications market. The enterprise has developed from a "small workshop" with less than 20 people and registered capital of only 20000 yuan to today, and has achieved annual sales of 16 billion US dollars, becoming a large-scale high-tech enterprise in China. The enterprise needs all kinds of high-tech talents, so it attaches great importance to the training of high-tech talents. Output the primary index in Table 2 as a model, record the output result of the evaluation model, and draw the evaluation result curve as shown in Fig. 2.

The medium-term expected value in Fig. 2 refers to the result value of the scoring standard obtained by setting the standard for each secondary index and substituting the

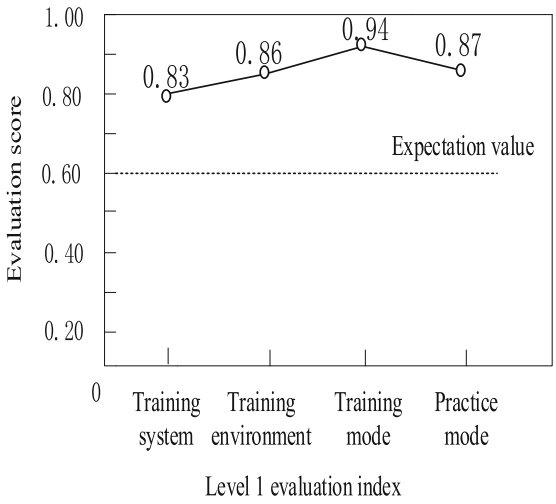

Fig. 2. Graph of evaluation results of high-tech talents training mechanism

corresponding value into the above evaluation model on the premise of meeting the development of the super-large enterprise. From the curve drawn in Fig. 2, it can be seen that the talent training mechanism currently adopted by the enterprise can scientifically train the high-tech talents in the enterprise, and the final training effect is above the expected value. Through the above logical analysis, the closer the evaluation score is to 1, the better the effect of talent training and the more reasonable the talent training mechanism. Therefore, based on the above analysis, the evaluation method of the talent training mechanism designed in this paper can be applied to super-large enterprises. The scientific evaluation of the training mechanism adopted can play a full role in the training of high-tech talents in enterprises, and promote the quality and level of talent training.

6 Conclusion

To meet the needs of training high-tech talents in super-large enterprises, a new evaluation method of high-tech talents training mechanism is proposed. The feasibility of the evaluation method is tested based on a super-large enterprise. High-tech talents, as the typical knowledge workers in enterprises, are the people who appear with the development of the times. There are few studies on the training of this group.

The study hopes to provide a reference for the formulation of future high-tech talent training programs through the above research in this paper. Future researches are to search for better training mechanisms.

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