

Application Research of Capability Model in Software Personnel Management

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Abstract: With the situation of software localization in China and the iterative updating of computer technology, software practitioners are also facing unprecedented pressures and challenges. How to effectively carry out the introduction, training and performance management of software personnel is related to the ability development and future fate of a computer work unit. The recent popular competency model explores the sources of individual performance differences, sorts out the factors affecting job performance, identifies job requirements in different categories and levels, and is widely used in central management enterprises such as State Grid and China Mobile. This paper analyzes the software work status and capacity requirements, and proposes a software personnel management program based on the competency model, which can be applied to the training, selection and performance appraisal of software personnel to effectively improve management efficiency.

1. Introduction

With the rapid development of China's space measurement and control industry and the localization reform, the demand for computer software positions has also been continuously improved. However, limited to the actual situation, it is not necessary for a unit to train all software personnel in a short period of time into a comprehensive talent with strong management planning ability, comprehensive professional knowledge, effective communication and coordination, and strong ability to innovate and apply. How to make full use of the existing resources, through the direction training of software personnel, to achieve the ability of the post personnel ability, the ability to perform tasks is complete, the innovation drive is appropriate and effective, and the overall strength is steadily improved, which is an urgent problem to be solved in deepening reform.

The competency model originated in the United States. With the deepening of economic globalization, in order to face the impact of the tide of economic globalization, and gain a dominant position in the human resources competition, and then expand the global market, some Western modern enterprises have proposed various shortcomings in human resource management. The concept of a competency model. It is generally believed that quality ability refers to the key behavioral habits that distinguish high performance from general performance, and is a concentrated reflection of employees' comprehensive professional ability. It divides human ability into multiple levels, from high to low, divided into knowledge and skills, social roles and values, self-image, work style and personality characteristics and personal motivation [1]. Different from the traditional way of dividing the ability, these individual abilities are not taken out for evaluation or inspection. Instead, they are unified into a human resource management system for comprehensive consideration. This is the so-called ability model. It can be said that the ability and quality model reflects the latest direction of the development of human resources management in modern enterprises. Its emergence not only effectively compensates for some inherent defects in traditional human resource management, but also forms a new human resource management model based on the concept of modern human resource management. Promoted to a whole new level. In addition to being able to find talents well, the competency model can also point out a clear direction for existing staff to professionalize and unitize talents.

2. Application scenario analysis based on competency model

2.1 Talent recruitment and selection based on competency model

Under the traditional human resource management model, talent recruitment and selection pay more attention to the individual's knowledge and skill level, but there is no core motivation and characteristics to select employees. Although this selection mode can be selected for high-quality talents. However, as the saying goes, "the best is not necessarily the most appropriate." In other words, although the selected talents are more personal, this skill is not what the company needs. The result of this selection model is to weaken the unit's development potential.

Based on the competency model, the selection help unit finds employees with core motivations and traits, which avoids the impact of personnel selection based on subjective ideas, and reduces the additional pre-employment training expenses of new recruits [2].

2.2 Staff training based on competency model

The society is constantly developing, and the unit needs are constantly changing. In order to enhance the adaptability of employees to adapt to changes in units, it is necessary to train employees in a timely manner. The pursuit of training is to get the most benefit with minimal investment. The training method based on the quality ability model can well analyze the weaknesses of employees and provide training programs in a targeted manner so that employees can effectively improve their skills in the shortest training time.

2.3 Performance appraisal based on competency model

Performance appraisal is an important part of human resource management and an important means to improve employee responsibility. The traditional performance appraisal model often only focuses on the ability of employees to complete work. It does not compare the employees horizontally and vertically, and it is difficult to point out the shortcomings in the work or provide targeted correction methods. Although this kind of assessment mode can improve the work skills of employees to a certain extent, it can not promote the development of employees as a whole, nor can it improve the fit of employees and jobs.

The premise of the competency model is to find the indicators that distinguish between excellent and ordinary. The performance appraisal index based on it is a scientifically demonstrated and systematic appraisal system, which reflects the essence of performance appraisal and truly reflects the employees. Comprehensive performance.

3. Software personnel management steps based on competency model

Different from the traditional ability and quality model to build and then consider the application, in order to improve efficiency and shorten the cycle, we choose the application-oriented competency model [3], starting from the actual needs of the unit, will solve the specific problem as the model construction. Premise, the model is built to solve the unit problem as the measurement standard, and follows the idea of finding the problem to constructing the model and further solving the problem, and finally forming a set of standard system, evaluation system and development system.

3.1 Building a competency model

The methods of constructing the competency model include strategic core competencies, behavioral event interviews, corporate culture element refinement, expert methods, modeling brainstorming sessions, reference to best practice standards, and information coding techniques. The main modes are mainly two categories: The class is a traditional model from scratch. This method collects and analyzes the behavior cases of high-performance employees within the unit through inductive and deductive methods, and fine-processes the compilation to form a successful model of competency and quality. The second category is already a simple model for transformation and adjustment based on the model. Based on the validated model, this model is modified and improved

on the basis of the original model. In comparison, the first type of model has higher pertinence and unit characteristics, and the derivative value is greater in the application process. The second type of model is efficient and low in the construction process of the model, and the derivative of the single post application. The value is lower. Here, a combination of the two is used to build a competency model by combining representative interviews, data collection and coding statistics with existing model indicators.

According to the division of software personnel in the general unit, the corresponding indicators are selected from the dictionary of competency and quality models, and the required capacity indicators are mainly included as shown in Table 1.

Table 1 Capacity requirements for existing positions

Job	indicator requirements
Bottom support positions	Teamwork; courage; programming skills; project management; professional skills; active learning; attention to detail
Key technical positions	Teamwork; courage; programming ability; project management; professional technology; active learning; innovative ability; inductive thinking
Interface R&D position	Teamwork; courage; programming ability; project management; professional technology; customer orientation; flexibility
Software evaluation position	teamwork; courage; programming ability; professional technology; information collection; proactive; skepticism

Refer to the competency dictionary. The indicators in the above table mainly include personal traits, thinking ability, attitude and quality, and most of the overlapping areas, but necessary for the actual work of team management leadership, organizational coordination and management skills. The indicators are still not effectively decomposed; there is a lack of guidance on the division of professional posts, rotation training, etc; it is difficult to conduct targeted training for the research and application of new technologies. At the same time, the software personnel of the same professional needs belong to the same administrative group, which can effectively improve the efficiency of personnel management and technical exchange. However, this simple division method also has difficulties such as in effectively distinguishing the level of personnel, obvious communication gap between majors, and poor innovation guidance. In actual work, it is often necessary to re-distribute the responsibilities according to the professional skills of the personnel and the actual situation of the task. In some cases, this is already the actual use of the competency model [4].

Based on the analysis of the competency model, the employees with excellent work performance are highlighted, and the characteristics and behaviors associated with excellent performance are highlighted. Based on the research results, combined with the actual work needs and actual work results, the positions and positions are set. content. This job design model has greater performance predictability. In order to form a conformable and inheritable norm, the competency model and the postal division profile constructed in conjunction with the actual requirements of the software work are shown in Table 2.

The expertise in the competency elements can be divided into the underlying support, key technologies, interface development and software evaluation and other professional technologies. Different from the traditional professional division of labor, for the professional business, the overall staff of the software with high-level professional technical ability completes communication and coordination, technical research and organizational planning, and then has high-level programming ability, execution ability and medium Software developers at the level of technical expertise complete R&D.

Table 2 Job division based on ability and quality model

Job		indicator requirements		
Type	Name	Capacity Name	Capability Element	Level
Management	Room leader	Leadership competence	Team building, strategic decision making, leadership influence, talent development, etc.	H
		Management competence	Analysis and judgment, conflict management, crisis management, organizational planning, etc.	H
		Professional management ability	Effective authorization, innovation, professional skills, communication skills	M
	Project Manager	Leadership competence	Team building, system thinking, etc.	L
		Management competence	Analysis and judgment, conflict management, crisis management, organizational planning, etc.	H
		Professional management ability	Project management, execution capabilities, communication skills, professional skills, etc.	H
Technical	Overall staff	Professional management ability	Communication and coordination, organizational planning, professional skills, attention to detail, customer orientation, information collection	H
			Programming ability, innovation ability	M
	Software developer		Programming skills, active learning, execution skills, attention to detail	H
			Communication and coordination, professional skills, innovative ability	M
	Software evaluation		Programming skills, professional skills, skepticism, inductive thinking, communication and coordination	H
			Innovation capacity	M
	New technology application		Innovation ability, communication coordination, inductive thinking	H
			Programming skills, expertise	M

3.2 Software personnel training based on competency model

After constructing the competency model, conduct behavior analysis, interviews and competency evaluations of existing software personnel, compare the actual situation with the target job requirements, and form the competent personnel competence distribution of each position as shown in the following figure.

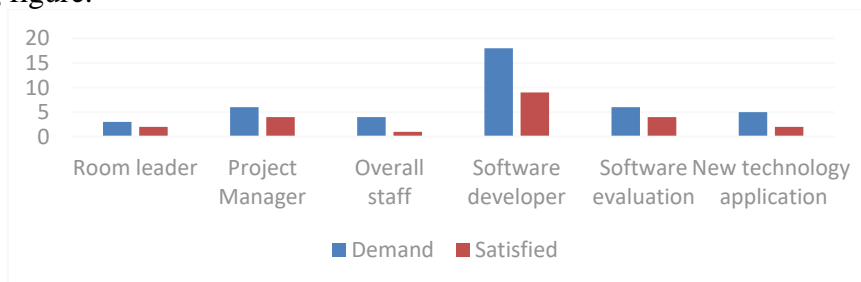


Fig. 1 Software personnel ability to compete for status

As can be seen from the figure, there is a large gap in the overall software position. For example, follow the steps below to conduct training planning:

(1) Refine the overall job capability model of the software and refine the training elements

The high-level key behavior descriptions in the table are the requirements for the overall position of the software. The key behavior description at the middle level is the basic needs of the overall position of the software.

(2) Software overall position competent training

Corresponding to the job division in Table 2, according to the competency requirements, select the personnel who meet the middle-level key behavior description from the software R&D and software evaluation, and carry out the training required by the senior level; if there is no qualified condition, Training is carried out at two levels: medium and high. For the individual software personnel, the individual long-term goals can be planned against the unit's job ability model, and the positions with growth and inheritance are selected as the advanced direction.

3.3 Software personnel performance evaluation based on competency model

American scholar Brumbrach is defined as: "Performance refers to behavior and results. Behavior is expressed by the person who works, and the task is put into practice. The behavior is not only the tool of the result, but the behavior itself is also the result, which is paid for the completion of the task. The result of mental and physical strength, and can be judged separately from the result." Performance evaluation is a kind of management behavior that runs through the whole process of work, and is a dynamic process of communication between managers and human resources. On the one hand, it requires managers to make a scientific evaluation of the performance of human resources; on the other hand, it requires managers to motivate, constrain, feedback, guide and educate professional and technical personnel based on the evaluation results and their causes. In the process of continuous improvement of resource performance, individuals and organizations can be continuously developed and upgraded. The focus of performance appraisal is not only to explain the past, but also to use the appraisal results as the basis and basis for the future planning of units and individuals, and to focus on the improvement of future performance.

At present, there are two problems in general performance evaluation. One is to focus on the evaluation of the results of scientific and technological activities, and ignore the activity process itself. The other is the contradiction between performance evaluation and activities. The performance indicators are quantitatively quantified, but the activities are Extremely complex and cannot be measured by quantity. However, the result of the activity is achieved by an activity that is constantly improving. By evaluating the improvement and deficiency of the ability and quality of the activity, the ability and quality as the target of performance evaluation can achieve the purpose of stimulating advanced and insufficient discovery, and then realize the effective use of resources.

According to the post competency requirements determined in Table 2, taking the overall software position as an example, the evaluation indicators formulated are shown in Table 3.

Table 3 Software overall job evaluation indicator

Indicator classification	High-level competence					
	Communication and coordination	Organizational plan	Professional technology	Attention to detail	Customer orientation	Information collection
Proportion	6%	5%	6%	5%	5%	5%
Indicator classification	Middle level competence		Performance			
	Programming ability	Innovation ability	Work volume	Work efficiency		
Proportion	4%	4%	30%	30%		

The performance steps are:

(1) Conducting assessment scores with corresponding assessment indicators, statistical sorting, and obtaining statistical tables of posts;

(2) The average score of each post, the total score of the individual and the standard deviation of each indicator are calculated by weighting.

The evaluation steps are:

(1) Horizontally compare the individual's total score with the average score, and evaluate the overall competency of the assessee in the post. If it is greater than the average value, it means that the examinee's competency is strong; otherwise, it is insufficient in competency;

(2) Horizontally compare the scores of all indicators of the examinee and evaluate the overall ability balance of the assessee. If there is a situation with a low score, it can be listed as an intensive training program as an indicator of the insufficiency of the assessee.

The assessment strategy is:

(1) Conduct an independent statistical analysis of each indicator score of the person being assessed to evaluate the recognition of the specific indicators of the person being assessed. If the deviation of the score is large, it indicates that the recognized consistency of the specific indicators of the examinee is poor, indicating that the assessed person has different opinions on the evaluation of the indicator, and needs to focus on it;

(2) Vertically compare the performance results of the assessee and evaluate the progress of the assessee. If the ability of the assessee (B) is not good, it is necessary to re-analyze the training ability of the assessee's ability or position; if the assessee (A) overall progress is obvious, and has reached the higher level of job requirements, you can consider post adjustment to improve the efficiency of talent use.

4. Conclusion

This paper analyzes the basic principles of the competency model and summarizes its role in human resource management. A brief model construction plan and application scenarios are proposed for the status quo of the unit. By analyzing different job characteristics, reasonable selection of competence and quality factors as individual training objectives and assessment indicators can be applied to talent introduction, education and training, auxiliary selection and self-evaluation.

2. However, the application effect of the competency model is closely related to the actual situation of the unit. In order to construct and apply the competency model, it is necessary to go through theoretical research, empirical research, model construction, questionnaire verification, application promotion and feedback improvement to determine the specific and correct. The division of posts and the indicators of competency and grading, and the formation of a good mass base and management support atmosphere for the use of the competency model, with long cycle and high cost before the final results.

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