

# ***Method Optimization Research for Building a Competency Model Library***

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**Abstract:** Building a competency model will effectively help Chinese enterprises to realize the scientific and systematic human resources management, enhance the overall comprehensive strength, and complete the transformation of high-level, high-quality development. However, the current competence model in the domestic application of low efficiency and lack of scientific and reasonable construction standards, to solve this problem, I hope that through the introduction of advanced management scientific knowledge, from the practical application of enterprises, comprehensive consideration of individual competence, job competence, and organizational environment requirements, optimize the competency model research methods and overall structure, achieve the standard of competence model, and then establish a competency model library, for the mainstream industry to provide standard templates for various positions, to achieve the perfection of enterprise employment standards and evaluation training system.

**Keywords:** competence, construction methods, competence model library, human resources

## **1. Introduction**

In the 1960s and 1970s, with the emergence of the third wave of mergers and acquisitions in the United States, large companies around the world adopted mergers and acquisitions to implement diversification strategies. The new orientation of enterprise development puts forward higher requirements for personnel management. So, in the late 1970s, human resource management came into being, and gradually replaced traditional personnel management. The idea of competence was one of the mainstream ideas of human resource management at that time, it has been widely used in enterprise management all over the world, after more than 50 years of use and perfection, has become a mature human resources management thought.

For the first time, the 19th National Congress of the Communist Party of China has put forward a demand for high-quality development, indicating that China's economy will shift from a high-speed growth phase to a high-quality development stage. This requires domestic enterprises to pursue high-level, high-level, high-efficiency economic value and social value creation ability [1], and the introduction of perfect human resources management programs and measures for enterprises is a necessary prerequisite, the construction of a competency model as a mature management method will be conducive to the overall strength of enterprises to enhance the realization of high-quality development.

However, the current domestic research on competence model has not yet formed a scientific, systematic result, the existing mainstream research methods are still in the observation and application of experience accumulation stage [2]. The same industry of different companies to build their competence model, lack of industry scientific demonstration standards and the basis of the repeated construction wasted a lot of resources, construction costs remain high, and no standards without templates to build the competency model is difficult to achieve according to development, factor changes to carry out phased adjustments, the accuracy of the competence model of missing dynamic evaluation will be affected, and its feasibility cannot be guaranteed. Most small and medium-sized enterprises in China are more lacking in the application of competence model, the selection of personnel did not import systematic human resources management technology, most enterprises are temporarily short of who to find, no overall concept of talent and recruitment standards, no human resources development planning, do not pay attention to their training and reserve of talent. To solve the existing competence model practical application problem, I hope that through the improvement and optimization of the existing model construction method, quantify the job evaluation factor, put forward different industries of different jobs template solutions, relying on this construction method, and gradually for the main positions in each industry to build an exclusive competency model, combined to form a competency model library, for enterprise reference, to help enterprises scientifically and rationally build a competency model.

## 2. Competence model and its development course

### 2.1. The concept of a competency model

In the early 1970s, Professor McClelland of Harvard University proposed the concept of "competence" to address the U.S. State Department's poor selection of diplomats based on intelligence. The competence model is a combination of the structural representation of competence theory and the competency elements required to complete a job. The job competence model is a competent structure combined with the requirements of excellent performance in a particular position, and it is an important foundation of a series of human resource management and development practices.

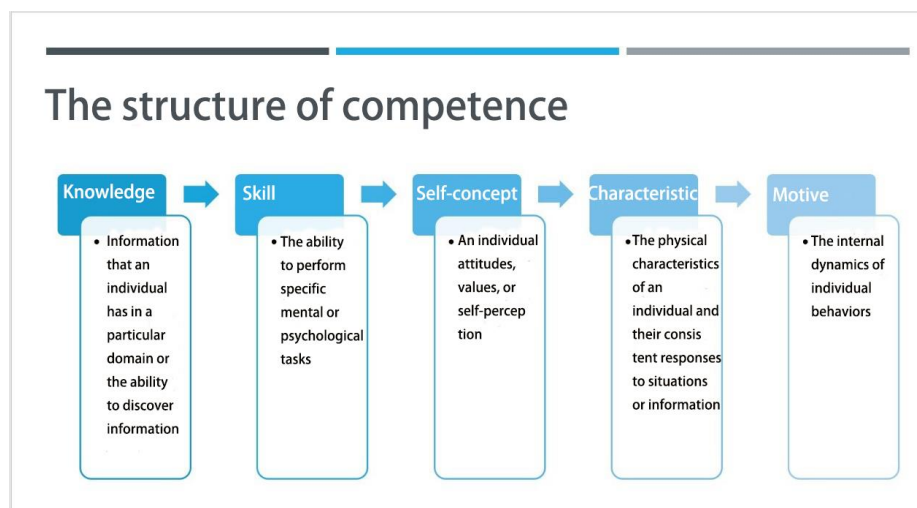


Figure 1. Competency composition diagram.

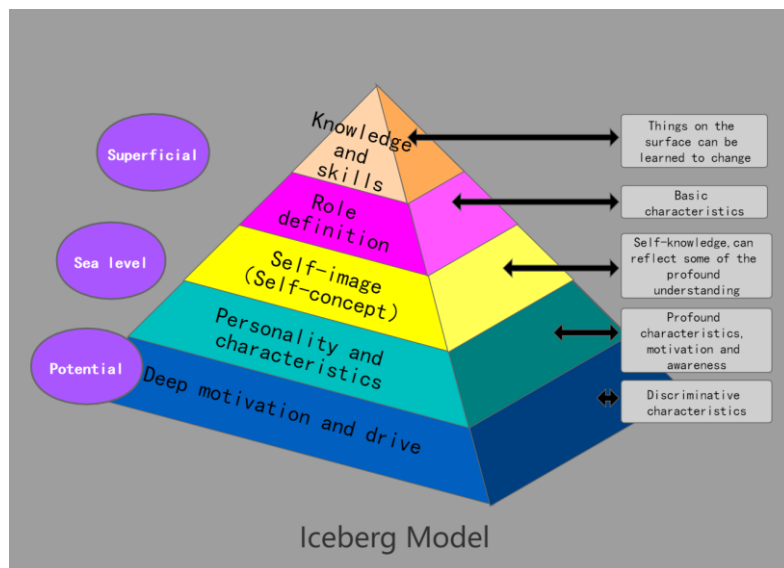
Among them, knowledge and skills (baseline characteristics, which are the basic qualities of competent people, which often do not distinguish the outstanding performers from the flat performers) are visible, relatively superficial human extrinsic features, traits that are more easily hidden, located in the deeper personality structure, and the self-concept lies in between. Surface knowledge

and skills are relatively easy to change and can be developed through training; Self-concepts, such as attitudes, can be changed through training, but this training is more difficult than the training of knowledge and skills; The core motivations and traits (identification characteristics, which are the key factors in distinguishing between the excellent and the ordinary) are in the deepest part of the personality structure and are difficult to train and develop.

The competency model means a centralized representation of the competency support elements required to fulfill this responsibility for a position in an organization or enterprise, based on its responsibilities. Specifically, assuming that n relevant competency factors are required to complete a task, where element i can be represented as  $C_i$ , then the competency model for that task can be used in the set

$$CM=\{C_i\} (i=1, 2, \dots, n) \quad (1)$$

to characterize. The current competency model is mainly divided into the iceberg model and the onion model [3].



**Figure 2.** Competence iceberg model.

## 2.2. The meaning of the competency model

The competence model provides objective standards of behavior of excellent employees, can be achieved in a scientific and reasonable scope to maximize the quantification of employees' ability to work, with a targeted, wide range of application characteristics, can improve the enterprise's human management capacity, improve the traditional, vague evaluation standards of the enterprise management system, reduce the potential conflict between enterprises and employees, so that the promotion space of employees is true and clear, Can stimulate the potential of employees, to ensure the sustainable development of the enterprise [4]. At the same time, the competency model also lets employees customize personalized training program becomes possible, enterprise reference competency model for employees performance appraisal and promotion recruitment, employees reference competency model to carry forward their advantages, find out their shortcomings, targeted improvement of personal situation, complement the shortboard, clear enterprise development, and personal self-realization goals, and achieve unity, promote the virtuous circle of enterprises.

### 2.3. The development course of the competency model

In 1973, American psychologist McClelland systematically and completely proposed the concept of competence and promoted the next series of empirical research on competence, first in the United States set off a wave of research and exploration of competence models. After more than ten years of development and optimization, the application of the competency model gradually matured, in 1986, the British Vocational Qualifications Committee was established [5], the main role is to publish the national nature of professional standards competence, which is the competence model in Europe's first official development signal. France began to study competence in the same period, in the 1990s has been widely used, the French National Employment Agency in 1993 changed the framework of the profession, began to develop competency-based management systems, to build the first competency model library in Europe. The study of the competence model in China started late, and the first research began in the 1990s, mainly for middle and senior managers of enterprises.

## 3. Construction of the competency model

### 3.1. An overview of the build process and optimization

The competence model should be refined and targeted, different positions in different industries and departments have their competence model. To construct the competence model, we need to find the correct competency factor firstly, no matter what kind of construction method is used, to quantify the competency factor to a greater extent and improve the fit of the model with a specific position. The competency model for each position should contain 5 to 10 competency factors, the criteria for job evaluation visits (e.g., competence characteristics such as teamwork, achievement, customer service awareness, etc.), and each factor contains 3 to 5 ratings [6]. The data processing is completed and the competency model is constructed, the model needs to be tested.

To realize the template of the competence model, I will optimize the design from the four aspects of construction method, data collection, sample analysis, and test method, and enhance the practicality and ease of application of the competency model under the premise of ensuring rationality and scientificity.

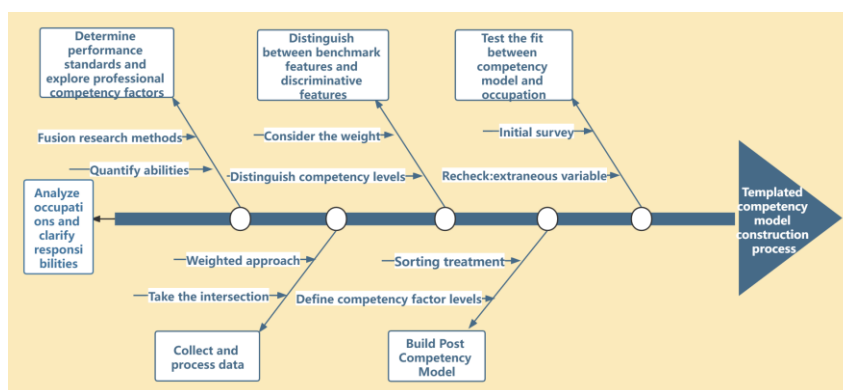
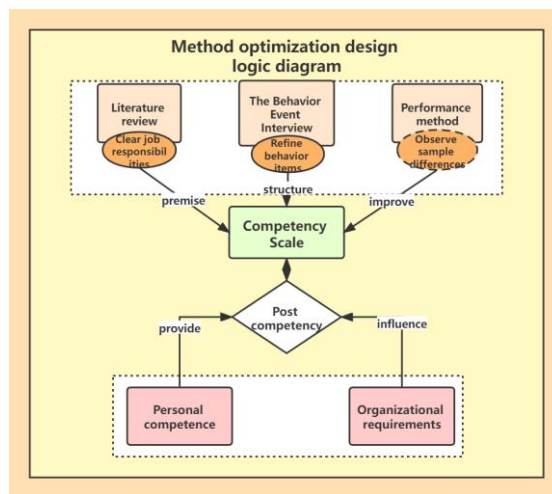


Figure 2. 1 templated process diagram of the competency model.

### 3.2. Optimize the way to build competency models

The behavioral event interview method proposed by David McClelland is the most recognized construction method in the world and the most widely used method in the world. The credibility and effectiveness of this approach Studies have shown that competence models built using behavioral

event interviews can lower the turnover rate of senior management in a sample company from 49percent to 6.3percent [5]. However, this method is a static assessment of the nature of the method, based on past competence to build the current competency model, cannot guarantee the future development of the job applicability. The commonly used method of building the competency model in China also includes the attribution method of judging the competition factor and the performance method of the competent factor by the behavior of the excellent person in the position and paying attention to the effective theory and pushing the job from the performance and the task to the completion. The two methods are similar and easy to build but have more problems than behavioral event interviews. Because the existing method is not fully sound and template, I have optimized and improved the method of building the competency model through the fusion method and making up for each other.



**Figure 3.** The idea diagram of the optimization method of the competency model construction method.

First of all, the use of literature research methods [7], a large number of authoritative job-related information, fully understand the job content and development direction, clear the responsibilities of the job practitioners, to determine the job needs of knowledge and skills, infer the professional direction and main characteristics of the required personnel. Secondly, with the behavior event interview method as the main body, talk with the high-performing excellent people, compare the correlation between the contents they say, consult the relevant elements required, extract the behavioral questions from the key events recorded, allow the same competency factor to recurring, and compile all the content into a competency strength table [8]. Then introduce the performance method, select the work content and line of multiple groups of high performers and flat performers, compare and observe the sample differences, link the work output with the work quality, dig deep into the characteristics of the identification competence, and perfect the competent strength table constructed by the behavioral event interview method [9]. Finally, to make the competency factor have a higher degree of fit and dynamic evaluation ability, the position competency factor and individual competence and organizational environment competence requirements are combined, so that the intersection will have higher accuracy [10].

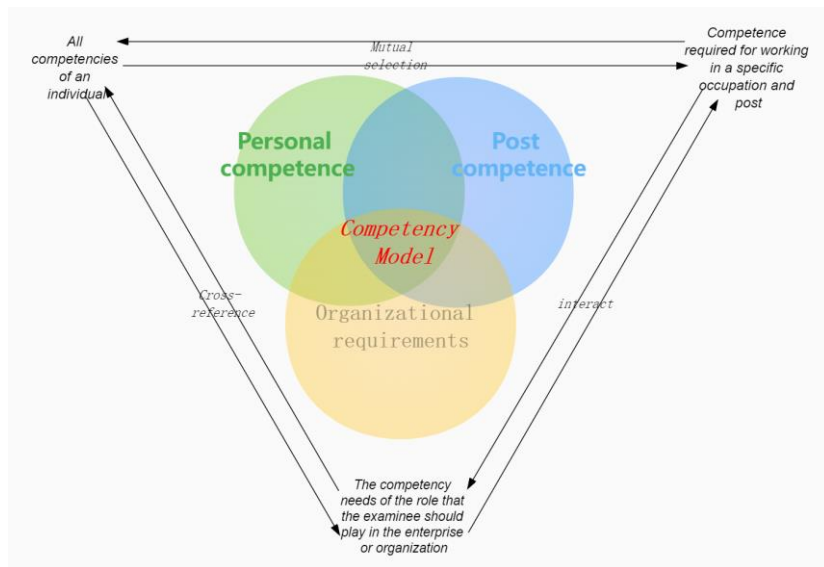


Figure 4. Competence model.

### 3.3. Relevant data collection and method optimization

In terms of data collection, I have introduced more scientific theories to achieve design optimization. The job competency table should be divided into three main contents, namely, past, present, and not, built through 2.2 above is the competency table within the "now" module, and by analyzing the major turning points in the industry's past development and existing success stories, we can find some of the benchmark characteristics such as knowledge and skills necessary for the position, filled in the competency table of the "past" module as a competency factor. By studying the existing policy direction and the strategic orientation of the future of the industry, determine the future direction of the industry, and extract the competency factors that a particular position needs to meet the requirements of the future, and fill them in the "Future" module.

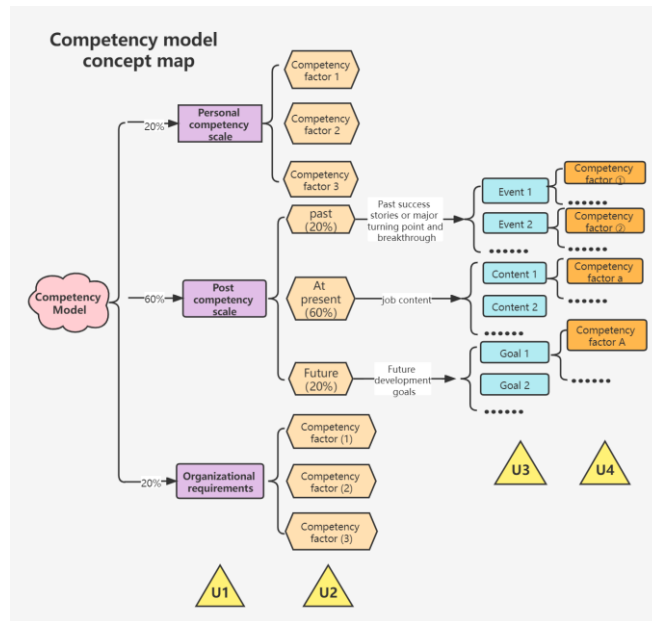
Personal competence module should be composed of self-awareness and scientific basis of two parts of data, first from the employee's understanding of their jobs, self-advantage and disadvantage analysis of the extraction of the problem items, found that some of his superficial ability, and then through the Holland professional interest test analysis of the employee's deep personality and characteristics, these two parts together form a personal competence table.

Enterprises should carry out a SWOT analysis of their own, understand the basic situation of enterprises, from the advantages of refining excellent competency factors, from the analysis of disadvantages to find out can complement the shortboard of the problem, comprehensive consideration of the opportunities, crises and future development plans of enterprises, to determine the current stage from the perspective of the enterprise's needs for employees, from which the extraction of competence constitutes the organizational environment requirements.

### 3.4. Build a competency model

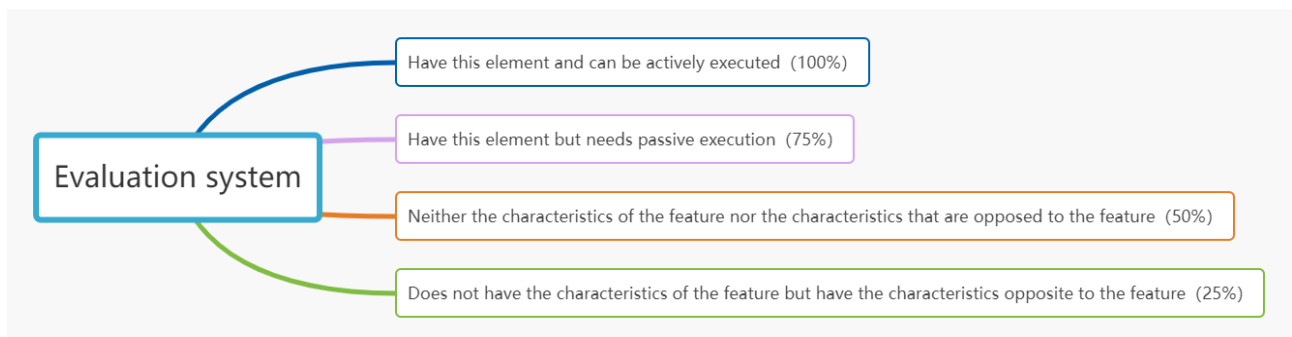
Through the multi-level fuzzy comprehensive evaluation method can be assigned weights to the existing competence [11], the quantified competency table, the integration of multiple modules combining, and then the construction of an optimized templated competency model. The first-level indicator plan of the competency model consists of three directions: individual competence strength table, position competence strength table, and organizational environment requirements, with

weights of 20%,60%and20% respectively, only the position competency table under the jurisdiction of the second-level indicators, respectively, "past", "present" and "future", the internal proportion of 20%,60% and 20%, the "now" module also under the jurisdiction of three levels of indicators, to obtain through the 2.2 optimization method of the work content, the work content under the jurisdiction of four levels of indicators, to complete the work content required elements, each factor proportion is based on the frequency of research in the study of the survey competency factor.



**Figure 5.** Competence model building concept map.

The application of the competency model can not be separated from the convenient and accurate evaluation system: each competency element should have four evaluation levels, the first level is "with this element and can be actively executed", the grade is 100%, the second level is "with this element but needs passive execution", the grade is 75%. The third level is "does not have the characteristics of the feature and does not have the characteristics that are opposed to the feature", the grade is 50%, the fourth level is "does not have the characteristics of the feature opposite to the feature", and the grade is 25%.



**Figure 6.** The competency model is applied to the evaluation system diagram.

### 3.5. Test the competency model

At present, the most commonly used verification method is the validation factor analysis method, that is, re-selecting the comparison samples of multiple groups of excellent performance groups and ordinary performance groups, and bringing them into the already constructed competency model to verify the fit. To improve the accuracy and credibility of the competency model, the competency model should also be re-examined, that is, the temporary addition of external variables, often the post will encounter unexpected situations and potential tasks, by verifying the relationship between the competence model and external variables, the model's structure and application rationality can be verified [2].

## 4. The application of competency model and the limitation of template

### 4.1. Application of competency model

The competence model not only helps enterprises to discover the core motivations and characteristics of the hidden core through the knowledge and skills of the surface but also to recruit employees who fit well with the position and have outstanding abilities. In addition, the quantitative evaluation system of the scientific system has been introduced in the aspects of employee stage job analysis, job performance evaluation, development of individual training plan for employees, and employee incentive policy [12], which is an indispensable integrated solution for human resource management.

### 4.2. Limitations of the templated competency model

- There is no scientific identification of positions in various industries, the distinction and comparison of competence models for different positions are still relatively small, if the model comparison between different positions can be completed, it will be more conducive to the study and optimization of the competence model template.
- There is very little research on the degree of influence of individual competence factors on performance, and the weight ratio can only be judged according to frequency, not the importance of factors, which affects the fit of the competence model.

## 5. Summary

Through the fusion optimization of the competency model research method and the all-round consideration of the data collection of the competent force table, the construction template of the competency model is initially realized, the template is organized and easy to apply, and the integration of the three directions makes the individual, post and enterprise form a close development community and enhances the practicality of the competency model. The method optimization itself also improves the credibility and fit of the competence model, has made a targeted study on the baseline characteristics and the differential features and is not easy to miss the key competence factors, which is helpful to the wide-ranging promotion of the application of the competence model, making it possible to build the competency model library.

If the future can be led by the state to build a competency model library or by the management service enterprises to build a business competence model library, then the application of competence model will become convenient and feasible, can greatly improve the domestic employment standards difficult to systematize, scientific problems, contribute to the efficient and healthy development of enterprises and the overall level of development of national enterprises progress.



## References

- [1] Chen Yanan. (2021) Talk about the impact of human resource management on the high - quality development of manufacturing enterprises and countermeasure research. *Economics (05)*, 77-82. doi:CNKI:SUN:JJSW.0.2021-05-012.
- [2] Li Mingfei, Lu Xiaojun. (2004) The study of the method of constructing the model of competence and competence. *Journal of Dalian University of Technology (Social Science Edition) (01)*, 28-32. doi:10.19525/j.issn1008-407x.2004.01.006.
- [3] Zhang ming. (2020) Big data talent training research based on competency model. *Computer Education (07)*, 102-105. doi:10.16512/j.cnki.jsjy.2020.07.023.
- [4] Wang Yanfei. (2017) Human Resources Performance Management System Construction: Competence Model Perspective. *Economist (05)*, 237 plus 239. doi:CNKI:SUN:JJSS.0.2017-05-121.
- [5] Feng Ming and Yu Mingxin. (2007) Overview of the method of building the competence model. *Research on Science and Technology Management (09)*, 229-230 plus 233. doi:CNKI:SUN:KJGL.0.2007-09-081.
- [6] Hao Hong, Korean Guard. (2005) Build an evaluation center based on competency model. *Science and Science and Technology Management (10)*, 110-113. doi:CNKI:SUN:KXXG.0.2005-10-022.
- [7] Liu Fengying and Li Xiaomin. (2012) A review of the method of building a competency model. *China Business (07)*, 117-118. doi:CNKI:SUN:ZGSM.0.2012-07-057.
- [8] Wang Jiaqi, Tang Shujun and Ji Lingkai. (2009) A review of competency model research. *Hunan Social Sciences (05)*, 118-119. doi:CNKI:SUN:FLSH.0.2009-05-027.
- [9] Hu Yanxuan and Official Zhihua. (2008) A summary of the research on competence models at home and abroad. *Mall Modernization (31)*, 248-250. doi:CNKI:SUN:SCXH.0.2008-31-162.
- [10] Ye Long, Zhang Wenjie and Jiang Wensheng. (2006) The application of competence model in logistics enterprises. *Logistics Technology (03)*, 17-19. doi:CNKI:SUN:WLJS.0.2006-03-005.
- [11] Han Jing and Yang Li. (2009) Research on talent evaluation methods based on competency models. *Journal of Anhui University of Technology (Social Science Edition) (02)*, 25-28. doi:CNKI:SUN:HNGS.0.2009-02-008.
- [12] Wang Nianjun. (2008) The application of competence model in enterprise human resource management. *Statistics and Decision-Making (12)*, 184-185. doi:CNKI:SUN:TJJC.0.2008-12-068.