

Research on Employment Direction of China's Certified Public Accountant Based on Network Analytic Hierarchy Process

Yuxia Dong

School of Management, Langfang Teachers Education University, Langfang, China

d_ongyuxia@126.com

Keywords: network analytic hierarchy process; target system; optimum system; hierarchical structure; network application

Abstract. With the development of Chinese economic, political, cultural and social changes, the national treasury will be certified public accountants, certified public valuer and registered tax accountants to combine, and to carry out unified management for certified public accountants. In order to obtain employment direction, graduates have a more pragmatic and rational understanding, based on the analytic network process (AHP), to carry out the qualitative and quantitative description for the industry employment direction of certified public accountants, through the initial establishment of the target system, the analysis of importance evaluation and planning brief between the target, which can provide rational and efficient planning and decision making for an inauguration of the certified public accountants' employment prospects.

Introduction

With the rapid development of market economy, our country registered accountants continue to increase. The scope of their work is constantly expanded with the market update, accounting tasks are from the past simple statements audit extended to the enterprise profit forecast and internal control audit, accounting advisory and accounting services and other new areas, service object is from the original 3 endowment enterprise to the Limited by Share Ltd, the state-owned enterprises and organs institutions. Along with the financial and investment of a series of market economy environment, enterprise reform and other measures, the improvement of market functionality system, each enterprise organization and the organization need to an independent professional [1,2], high quality financial talents carry out audit for the authenticity of financial report of enterprises and units. In the process training of certified public accountants, professional ability, the culture of comprehensive quality and international perspective are very important, so a good CPA is very rare. In China, CPA has become the major domestic enterprises and financial institutions securities competing object, according to this trend, the registered accountant will also further increase. Even so, the occupation competition remains fierce in the talent market financial management, and general and primary accounting personnel number are supply exceeding demand, and high-end talent is the daughter that is hard to find [3,4]. In a future ten years, accountants occupy the top spot in the shortage of talent resources manager questionnaire, and are especially familiar with the professional knowledge and international affairs' accounting personnel that are more scarce, so no doubt the CPA will become future talent market' rare talent. From the obtained data, the employment prospects of CPA specialty orientation students are most optimistic. In 1994, CPA professional orientation had been set up in the institutions of higher learning, the co culture of CPA was about 9534 people, and there were 9534 students that were successful completion employment. In the 9534 students, more than 2700 candidates entered in our country international accounting firm and large medium-sized CPA firm [5,6].

Analysis of our country certified public accountant employment direction

The characteristic factors of government agencies and institutions have organizational environment, salary level, welfare pay, exercise training, development prospects and team cooperation. In organizational environment, the certified public accountant mainly appears the identity of the auditor in our country government agencies and institutions that are responsibility for audit and verification, to provide the basic of accounting information clearing and bill for the

operation management of the government and the institutions [7], at the same time to play an role of certain manager for the institutions of the financial supervision and management, and audit object and content are relatively small, the environment atmosphere is also relaxed. In salary level, the probation period average of country different regions in China is about 2000 Yuan per month, and enjoys the service, the preparation treatment, improving social security and insurance. In welfare pay, the nature work is high stability, welfare and treatment are also relatively generous, units provide a perfect security system that are not relatively high, and are lack of further education opportunities [8]. In exercise training, there is more occupation training and the exercise opportunity, to carry out regularly accounting basic quality, occupation ethics, and business accounting method update training. In development prospects, to foster the comprehensive ability of practical and useful treatment scheme, people has many kinds of role. In team cooperation, team level is poorer and fewer personnel, at the same time the mechanism is not perfect, it is difficult to manage [9].

The target system establishment of development direction

After the development of goal setting is intended, to determine target whether accords with actual conditions or not, whether to compliance with the planning needs, whether to have the system sex, levels, advanced and the possibility of implementation, it is necessary to evaluate the target, and it can pass evaluation optimum selection. Evaluation is the fusion process of qualitative and quantitative analysis. Evaluation of basic procedures is as shown in Figure 1 [10].

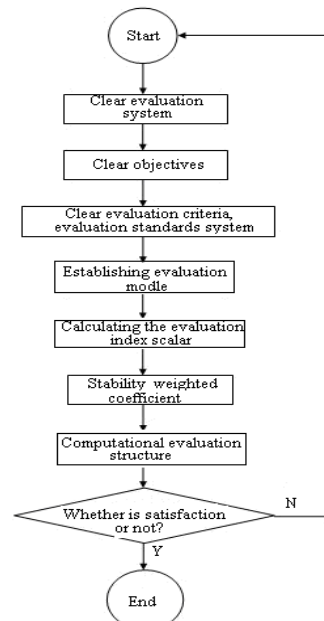


Figure 1. Target evaluation program

A. The development direction of certified public accountants target scenario

The target scenario refers to focus special issues, concepts and themes in the appropriate environment, social, political, military, economic, technical and other factors to given. That is to say, a compelling scenario analysis must be a considerable in-depth consideration of its radiation or influencing factors, as well as all relative state description under the possible conditions. The target scenario is divided into two types: one is to explore scenario, another is to expect scenario. The exploration of scenario is often used to attract policymakers about particular topic attention skills, and the expectation of scenario is the feasibility and expectations conceptualization of the comprehensive results. The process of exploration scenario is from the present to the future, and on the contrary the expectation of scenario is from the future to the present, planning reaches the ideal expectation that must develop programs and action.

B. Conflict analysis

When making choices, people often find that many key factors have project conflict place that is referred the goal conflict. Goal conflict usually occur three situations: the target without dependency, goal conflict and the target complementary. Commonly used method carries out the different interests' factors that are assigned weights, to make the weight balance in the interest factor and total

target. Another method is the factor of interest according to the profit' loss evaluation to option the concentration target system, such as rating method rank gets the optimum system [11].

The importance of evaluation between the objectives

After the employment development target system of registered accountants is established, critical points of its development goals carry out evaluation for the importance of the development target, which have many methods. However, AHP provides an ideal tool for a sequence of multi objective decision making problem

A. The use of AHP on the development target sequencing

By using AHP method, to carry out pros and cons evaluation for users' existing development situation evaluation, it is commonly a hierarchical layer structure, in order to achieve the high precision reliability of comprehensive evaluation.

B. The development of direction target system

The first step is to determine the future possible target that can use brief language to describe, including the discussed issues.

Second step carries out structure hierarchical structure analysis on the factor, its main approach is to identify the target, and the associated constraint factor conducts orderly hierarchical structure as shown in Figure 2.

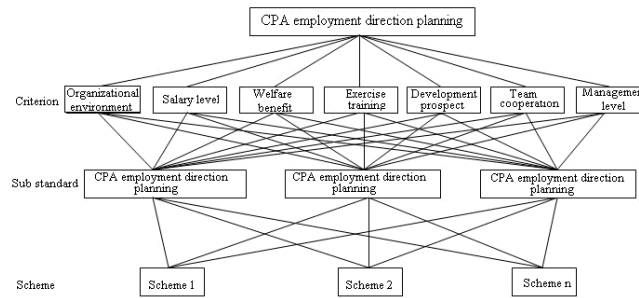


Figure 2. The hierarchy structure of CPA employment direction planning

Third step builds mathematical model, the CPA development direction employment planning is a multi-objective decision problem, which can build mathematical model according to the multi objective principle, using the method of multi objective weighted sum, i.e.

$$\max Z = \sum_{i=1}^n W_i X_i \quad (1)$$

Where Z is a total maximum target value; W_i is the target weight; X_i is each subject target value.

Fourth step carries out quantity value calculation, which the target volume can use dimensionless value, proportion method, expert scoring method to determine the quantity value, whatever to use the method that must use the uniform dimension and the same ratio measure.

Step fifth is expert selection, weight coefficient is determined by the AHP method, and selecting expert carries out two-two comparative judgment. Choice experts must be many experts, such as employment experts, management experts, personnel training experts, entrepreneurship experts, accounting experts and so on. Each expert can construct hierarchical structure to carry out independent judgment and the judgment matrix, according to the AHP criteria.

The sixth step is decision-making process of group decision that is multiple experts comprehensive results, which is a AHP group decision-making process, integrated specific approach is through the AHP group decision making method, which is used to judge elements of the geometric mean, ordering weight geometric mean, sorting weight arithmetic average and other methods carry out integration.

The seventh step is exponential scale method, Professor Sadi once had put forward "1-9" AHP scaling method that can decompose a complex problem orderly, qualitative problem carries out quantitative analysis. The scale of a whole vector is often only order significance and no amount meaning, which is used to determine the priority of things that are very convenient, the use of index scale method can calculate weight that has the number sense. Exponential scale method is combined the psychophysical law with AHP theory y, according to Webb - Fechner's law:

$$S = k \lg R \quad (2)$$

In formula (2), S is expressed as subjective feeling quantity; R is expressed as objective stimulus quantity; k is the Webb constant.

When the objective difference is geometric increments, subjective feeling will raise increment. In accordance with this law, the isometric classification of AHP comparative judgments is geometric assignment, namely the policymakers C_i is more important degree than C_j that is divided into several grades, which is respectively by $C_{ij}=0,1,2, I$ and $j=1,2, \dots, n$ ($C_{ij}=i$ (namely $i=0,1,2, \dots$)), at the same time to show that the ratio of C_i is high or low i level than C_j .

The objective value ratio of C_i and C_j is $W_i/W_j = a^{C_{ij}}$ ($i, j=1,2, \dots, n$); a_{ij} is C_i objective difference judgment for C_j .

Objective judgment matrix is $A = (a^{C_{ij}})_{n \times n}$ ($i, j=1,2, \dots, n$); A is equivalent to AHP judgment matrix that is still positive reciprocal matrix. When using, it only needs to fill out the sensory judgment matrix, its characteristic is main diagonal elements that are all 0, for example:

$$\begin{matrix} & C_1 & C_2 & C_3 & C_4 \\ \begin{matrix} C_1 \\ C_2 \\ C_3 \\ C_4 \end{matrix} & \begin{bmatrix} 0 & 2 & 4 & 1 \\ -2 & 0 & 2 & -1 \\ -4 & -2 & 0 & -2 \\ -1 & 1 & 2 & 0 \end{bmatrix} \end{matrix} \quad (3)$$

In formula (3), it can be converted into the corresponding objective judgment matrix:

$$\begin{matrix} & C_1 & C_2 & C_3 & C_4 \\ \begin{matrix} C_1 \\ C_2 \\ C_3 \\ C_4 \end{matrix} & \begin{bmatrix} 1 & a^2 & a^4 & a^1 \\ a^{-2} & 1 & a^2 & a^{-1} \\ a^{-4} & a^{-2} & 1 & a^{-2} \\ a^{-1} & a^1 & a^1 & 1 \end{bmatrix} \end{matrix} \quad (4)$$

C. CPA employment direction planning

Planning is a dynamic activity, which will address the problem as a system. The user describes his goal forming system, and the estimation of future possible is called forward planning process. On the possible future changes, to clear the way disorder that is called reverse planning process.

According to the development trend of CPA on employment demand forecasting, the concerned expert gives employment seven scenarios. Seven characteristic factors of scale value are given in Table 1, which are the expert group research results.

TABLE I. The seven characteristic factors of scale value

Weight	0.096	0.259	0.191	0.174
Characteristic factor	Organizational environment	Salary level	Welfare benefit	Exercise training
Weight	0.122	0.068	0.081	
Characteristic factor	Team cooperation	Management level	Development prospect	

The establishment of a judgment matrix can find the relative importance of various factors. In order to draw scenario weight, it can get the weight vector of each target through the matrix of the scenario eigenvector, and this product is to set the synthetic weight.

To obtain synthetic scenario, each feature element can obtain synthesis scaling value. According to the scenario weight and the factors scaling value, it will obtain the results through the product sum. According to the development direction of scenario effect, the planning objectives carry out comparison between two in different judgment matrix, the matrix multiplies obtain the synthetic weight of target effects with the feature vector solution weight, which can obtain feature vector, and then through the objective weighting, it can reach each a measure of the total impact in the future. The priority weight of characteristic factors is shown in Table 2.

TABLE II. The priority weight of characteristic factors (%)

Characteristic factor	Organizational environment	Salary level	Welfare benefit	Exercise training
Priority weight	3.14	6.55	5.37	1.7
Characteristic factor	Team cooperation	Management level	Development prospect	
Priority weight	9.39	5.25	12.41	

The final is goal and project sequence' alignment process and results as shown in Figure 3.

Based on a desired scenario to pursue continuously changes, employment options will reach a desired scenario. In Figure 3, the forward planning process is displayed. The reverse process of the strategy is the same with the setting of anterior process, it is slightly changed, the final result is to set

scenario four as the highest scheme, namely accounting firms is the ideal employment, while the minimum scheme is to set one that is organs institutions.

Through the employment direction of our country registered accountant, to carry out forward and reverse joint planning analysis, it can make correct decision when the employees achieve their desired development. If people want results clearly, it can repeat several times for the analysis process of forward reverse joint planning.

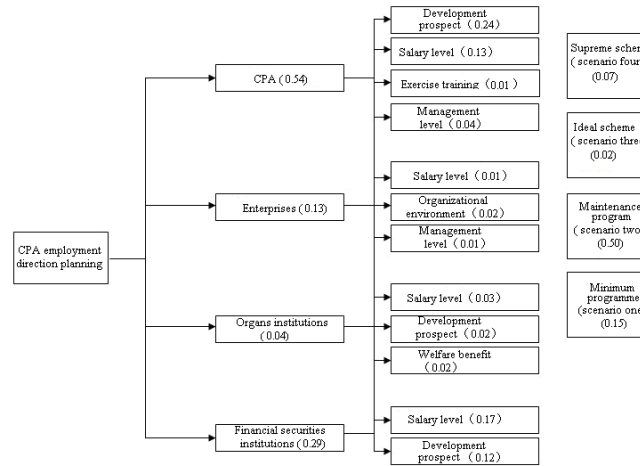


Figure 3. Flow chart of forward planning process

Conclusions

In recent years, our country emerges a large number of economic categories workers, and the CPA is very popular occupation in the financial management occupation. In the increasingly fierce competition, the employment of active choice their development space has become the industry problems. China registered accountant's main employment channel is respectively corporate, accounting firms, institutions and financial institutions securities, graduates require new opportunities and the development of challenges weighing. In this paper, through the forward reverse joint planning method of analytic network process, to make an in-depth analysis of the CPA employment prospects, and a brief summary and analysis of China CPA employment direction' priority weight and compare, which can provide accurate and efficient decision making basis for registered accountants.

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