Teachers' Happiness Index based on AHP Model of Evaluation Index System of Building and Research

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Abstract: For teachers' happiness index evaluation related research at home and abroad, combined with today's society of the special phase, this paper expounds the concept and significance of teachers' happiness index and on the basis of Maslow's hierarchy theory, by means of hierarchical analysis model, build a suitable for the present, happiness index evaluation system of teachers, finally to the evaluation system is applied in practice, the practice results show that the evaluation system has a certain practical significance and reference value.

Keywords: Teachers' happiness, AHP, Reconstruction method, Maslow's hierarchy theory

Introduction

Human life is the pursuit of happiness life. With the development of economy, the continuous improvement of people's living standard, People more and more attention and pay attention to own happiness. So what is happiness? How to measure happiness? Happiness is a subjective measure happiness feeling specific level. Happiness means to reflect the values and its people's well-being in a certain period in another as the standard for comparison period of numerical score. In recent years, some influential researchers in the field of happiness index suggested to be incorporated into the national statistical index system, and provide important basis for policy makers.

Assuming that GDP, designed the GNP is the criterion for measuring national rich and strong, rich, so happiness can become a measure of the people happiness. On the one hand, it is the "barometer" of social status, to monitor economic and social status; On the other hand, it is popular among the "barometer", can understand the people's life satisfaction. Building a harmonious socialist society is not only tough to focus on the economy, more attention to the social public's subjective feeling. There is no denying that GDP in a country's economic life play an important role, but it is a lack of economic index of the quality of life, can't cover the entire contents of the "development". Happiness is a kind of highly personalized index, can make up for the inadequacy of GDP index, can be used to measure social progress and development in an all-round way.

Happiness index can be used to detect the workings of the society, can be used as a measure of an important indicator of a harmonious society. A well-functioning society, must be in economic and social development and the people get a balance between the quality of life of ascension. If a society is only pay attention to the development of economy, the rapid social development, and the people's happiness index is continues to decline, this needs for the development of the society as a whole to the systematic and in-depth reflection.

Today, "happiness" has become one of the social and public policy department achievements appraisal indicators. The concept of happiness index showed that the original blindly pursue GDP government single economic index is turning into a more diverse social evaluation standard, which is reflected the modern government management performance evaluation of a major change in the guiding ideology. In fact, the "happiness" is derived from "the maximum of happiness" theory of western economics, the study of happiness has a long history, both at home and abroad "happiness" and "happiness" has long been viewed as a lifelong pursuit of human value, and is also the basic direction of government or public sector policy. But how to evaluate and measure happiness and work out scientific basis and extensive adaptability evaluation system is not an easy task. Should combine the actual situation to build has universality and prospective happiness index system, is still the important topic in today's public decision-making departments and academic research.

Happiness index refers to the people satisfied with the social and economic development level a measure of the comprehensive measure, it needs by subjective evaluation and objective evaluation together to build a set of index system of science of happiness, happiness index is obtained. Happiness index statistics research involves the multi-index comprehensive evaluation in statistics and survey the aspects of content, also involves interpretation about happiness in psychology, ethics, the statistical study of happiness is an interdisciplinary research project. Happiness is actually a deformation of the quality of life index, but research system into the more evaluation of subjective factors, mainly from subjective aspects to understand the quality of life index, mainly reflect people's life attitude and satisfaction, etc. The current survey of happiness is also in many statistical department, also from past happiness research method of limited to qualitative method is system, the evolvement of the quantitative methods, scientific happiness bright future is just around the corner.

Since the ancient times is a sacred profession. "Teaching" is a social responsibility and historical mission for teachers is the most simple summary. Education teaching, the teacher happiness or not, the school has a close relationship with the quality of the education teaching learning. So, the problem of teachers' happiness, not just the teachers' personal problem, but a matter of education to realize the important meaning itself, is a social problem that nots allow to ignore. Therefore, we focus on teachers' happiness problem is very necessary. To understand the teacher's level of happiness, in order to make society more understanding, focus on teachers' happiness.

1. Happiness concept and the research state of teachers' happiness index

"Happiness" in people's impression is a very abstract concept, sometimes people will think it is very far, sometimes feel that it is near, someone with a sweet as honey to describe" happiness ". The "happy" pieties, deed which has been pursuing a "happy". In real life, different people holds different understanding of happiness, and everyone has their own happiness, such as martial arts novels "love first" happiness, or "money" is the real world of happiness, in short, in a different environment, different people's understanding of "happiness" is different, so to accurately measure "happiness" is a fable [1].

Teacher as an important part of a social group, therefore, the assessment of their well-being and residents' happiness basic similar. Domestic scholars also did a lot of research for this kind of work, such as youth teaching in higher vocational colleges put forward by the Zhou Dong [2] teacher professional happiness research, Ying Zhang days and evaluation system of college teachers[3] , the correlation between teachers' professional happiness research, Cai Lingli proposed the influence factors of university teachers' professional happiness and promote strategy [4]. These studies from different angles to study and explore the teacher happiness, but they all have a common deficiency is that there is no build evaluation system of teachers' sense of happiness is not to measure happiness.

In this paper, by means of AHP model, teachers' happiness index is proposed based on the AHP model of evaluation index system, given a set of reasonable teachers' happiness index evaluation system and teachers' happiness index calculation method of the science, from the perspective of quantitative analysis to evaluate teachers' happiness and measure, the unstructured things into the semi-structured model, so that more conducive to the education management section for the work of education management and expand, and conducive to the development of national education.

2. Significance of teachers' happiness index to construct

The construction of teachers' happiness index of fully reflect the current society advocated people-centered scientific concept of development. Traditional teacher management model based on education management as the main body, the right to administrative command, control, management of human model. The teachers' happiness index management mode is the subjective feeling of teachers as the main body, embodies the thought of democratic management, mainly from the government to the people-oriented, this pattern means that education administration management mode from "constraints and control" to "service and people", which reflects the people's education is the basic idea of the people. This pattern can be prompted the education administrative department of the demand for teachers to make sensitive response, further improve the management level and efficiency of management. The

construction of teachers' happiness index is the inevitable requirement of today's social and economic development.

Education career process has experienced decades of rapid development, teachers also great changes have taken place in economic level, but also brings a series of negative problems, such as interpersonal indifference, education resource allocation imbalance, etc. If not effectively solve these negative problems will affect the stability and development of the undertaking of national education. And the introduction of the happiness index will effectively help education management by seeking social public power to solve the problem of negative, and you can also through the teachers' happiness index measurement and tracking, can effectively help the education management departments in a timely manner to master teachers hot issues of concern in this region, seek reasonable means, methods and processes to solve the problem, thus provided the scientific basis for national education decision-making institutions.

3. Construction of teachers' happiness index system

Teachers' happiness index system established on the basis of the United Nations development program (*UNDP*), the world bank and the Chinese academy of social sciences institute of sociology and other authorities report or article [5-8] as a screening of man's all-round development evaluation index of the typical literatures, according to the "people-oriented, comprehensive, coordinated and sustainable development", to people, people and society harmony, human and the nature harmonious principles to establish evaluation index system of man's all-round development.

3.1 Principle of the construction of teachers' happiness index of scientific statistics methods and evaluation system can help people improve the understanding of the social life, so in the study of the construction of teachers' happiness index and evaluation index system, people should follow the principle of the construction of index and index evaluation system, the summary is as follows:

(1) Principle of universality and not repeatable. Teachers' happiness index and index system of the statistical index for content reflected by the object of study, should do not repeat or omission. Repetitive work can be increased workload statistics, increase social waste, the index of the fuzzy independent significance, serious when still can cause evaluation information distortion.

(2) Measurement principle. Can measurement principle is set up by the indicators to quantify, is measured by the number of as much as possible. The subjective and objective index in the index system of teachers' happiness index can adopt the form of scale to quantify, which considering the availability of data, should be able to quantify the indexes chosen index system, it helps to obtain data for statistical analysis, it is also one of the main purpose of the construction of index system of teachers' happiness index.

(3) Comparability principle. In the construction of teachers' happiness index system to consider when to index of the comparability, the current teachers' happiness index study hard horizontal comparable, that is, every place is design to meet only in teachers' happiness index system in the region, and area between the region and the building of teachers' happiness index can't together. In this paper, the design of happiness index is suitable for most places, have certain comparability.

(4) Gradation principle. Hierarchy principle refers to the happiness index system to build with a clear hierarchy, such as in this paper, the index system of three levels, each level has its own subsystems, each subsystem and contains specific indicators, which show a clear complete index system. All in all, hierarchy principle is to have a distinct level, clear structure.

3.2 The AHP hierarchy model of analytic hierarchy process (AHP) is a famous American operations research home T.L.S aaty in the 1970 s to ask [9]. It will is a man's thinking process of quantification, hierarchical, not only can simplify the system analysis and calculation, also help policy makers to keep consistency of thought. It is tool with mathematics method, and control to provide quantitative basis for the decision-making for the system analysis, is to deal with multi-objective, multi-factor and multi-level complex problems, and decision analysis of a simple and effective method. The AHP modeling can be divided into the following four steps:

Step 1: define problems and establish a model for class time.

Step 2: structure judgement matrix.

Step 3: hierarchical single sorting and consistency check.

Step 4: hierarchy total sorts and consistency check.

3.3 Determine the weights of every index

To determine the weight of comprehensive evaluation is an important step, how to scientific and accord with the actual weights is a critical problem. Weight to determine the appropriate or not, directly affect the final calculation accuracy, and can produce certain influence to issue the final conclusion. So we need to carefully to determine the weight. There are many methods of determining the weight are generally strong experience with a color, usually with expert scoring method, mathematical analysis method and expert scoring method and mathematical analysis method to determine the weights of three kinds of method, expert scoring method, also known as the subjective weighting method, mainly rely on the expert subjective weighting was carried out on the experience of a particular field. Mathematical analysis method is to use mathematical tools, such as structure matrix, computing the variation coefficient, etc., for fixed weight indicators, such as factor analysis weighting method and coefficient of variation of the weighting method. Due to the method based on the mathematical tool, first of all, to avoid the influence of subjective factors, followed by strict mathematical deduction make the calculated the

weight more objective, more credible. Factor analysis method, in particular, under the support of relevant mathematics and statistics theory, and combined with statistical software specific operations, not only greatly reduce the workload, and improve the credibility of the result. Subjective weighting method and the method of mathematical analysis method to determine the weight is the expert's experience and mathematical tools are combined to determine constant weight, such as analytic hierarchy process (AHP).

3.4 Teachers' happiness index evaluation system and construct in this paper, based on the theory of Maslow's hierarchy of needs, build happiness index system, according to the Chinese conditions do some appropriate add and modify the content. The final selection for each level of the main indicators related indicators to construct index system of teachers' happiness index. This article mainly discusses the teachers' happiness index evaluation system is divided into three levels, particular case is shown in figure 1. To try to make them a representative selection of indicators. Quantitative process is mainly of the index weight will be based on the hierarchical analysis model, the concrete implementation steps are as follows:

To calculate weight level, constructs the decision matrix, consistency check; To calculate the secondary weights, constructs the decision matrix, consistency check; Again to calculate weight level 3, constructs the decision matrix, consistency check; Finally calculated the total weight.

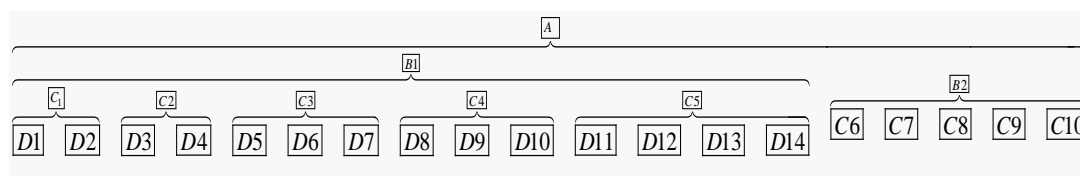Catalogued by other factors, the first step may be shown on a chart the way, as shown in fig. 1.

Fig.1. teachers' happiness index system structure

Symbol explanation：

A---Teachers' happiness

B1---Teachers' happiness index objective conditions

B2---Teachers' happiness index of subjective conditions

C1---The physiological need

C2---Security needs

C3---Social needs

C4--- Esteem needs

C5---Self-actualization needs

C6---Evaluation of self health

C7---Confidence in the future

C8---The stand or fall of mood

C9---Their sense of achievement

C10---Life evaluation

D1---Material needs

D2---Spiritual needs

D3---Environmental safety

D4---Self defense

D5---The family needs

D6---Love needs

D7---Friendship needs

D8---Self esteem needs

D9---Respect others need

D10---Right desire need

D11---Self education evaluation

D12---Self job evaluation

D13---Evaluation of their income

D14---Evaluation of working conditions

The second step structure judgement matrix. To look at, before in constructing judgement matrix judgement matrix quantization table. Table 1 and the mean random consistency index RI value table such as table 2. Conclusion according to maslow's hierarchy of needs and important degree can be built as table 3 lists the happiness of the objective conditions of physiological needs, security needs, social demand, respect demand, self realization needs the weight of each index objective conditions for the happy relationship.

A_i than A_j	Same	A bit better	Strong	Very strong	Absolute strong
a_{ij}	1	3	5	7	9

Tab.1. Comparative scale aij cross-references

In table 1, 2,4,6,8 and they have a similar meaning, the reciprocal of the values in the middle

N	1	2	3	4	5	6	7	8	9	10	11
RI	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51

Tab. 2 RI values mean random consistency index

Judgement matrix B1 - Ci shows that single weight calculation

B1	C1	C2	C3	C4	C5	B1 weight
C1	1	3	5	7	9	0.5091
C2	1/3	1	3	5	7	0.2652
C3	1/5	1/3	1	2	4	0.1166
C4	1/7	1/5	1/2	1	3	0.0728
C5	1/9	1/7	1/4	1/3	1	0.0364

Tab. 3 Matrix B1 - Ci

Step 3 consistency check the greatest feature of the judgement matrix $\lambda max= 5.1708$, calculate the consistency index CI= $(\lambda max - n)/(n-1)$ =0.043, random consistency index calculation CR=CI/RI=0.0381<0.1, visible discriminant matrix satisfies the requirement of consistency. On the basis of the above method, to calculate all the weight and total weight as shown in table 4.

Level 1 weight	Level 2 weight	Level 3 weights	The total weight
Teachers' happiness index objective Conditions B_1=0.7500	The physiological needs C1=0.5091	Material needs D1=0.7500	0.2864
		Spiritual needs D2=0.2500	0.0955
	Security needs C2=0.2652	Environmental safety D3=0.7500	0.1492
		Self defense D4=0.2500	0.0497
	Social needs C3=0.1166	The family needs D5=0.6333	0.0554
		Love needsD6=0.2605	0.0228
		Friendship needs D7=0.1062	0.0092
	esteem needs C4=0.0728	Self esteem needs D8=0.6333	0.0346
		Respect others need D9=0.2605	0.0141
		Right desire need D10=0.1062	0.0059
	Self-actualization needs C5=0.0364	Self education evaluation D11=0.5634	0.0154
		Self iob evaluation D12=0.1248	0.0034
		Evaluation of their incomeD13=0.2513	0.0069
		Evaluation of working conditions D14=0.0605	0.0017
Teachers' happiness index of subjective conditions B2=0.2500		Evaluation of self health C6=0.5366	0.1342
		Confidence in the future C7=0.2063	0.0516
		The stand or fall of mood C8=0.0716	0.0178
		Their sense of achievement C9=0.1381	0.0346
		Life evaluation C10=0.0474	0.0118

Tab. 4 Weight experienced at all levels

Calculated from the above university teachers' happiness index weighted average of the theoretical value of 0.608. Now, with 95% of the confidence probability of college teachers' happiness index weighted average of the theoretical value of 0.608 for hypothesis testing.

In the Pearl river delta region of Guangdong province of China, a total of 17 colleges and universities teachers for sample frame, conduct research, questionnaires, 730 recycling effective questionnaire 625. After calculated sample index is 0.5718, the standard deviation is 0.4948. Hypothesis testing is as follows:

The original assumption: $H_0 : p = 0.6080$.

The alternative hypothesis: $H_1 : p \neq 0.6080$.

$$\because |z| = \frac{|p - p_0|}{\sigma_p / \sqrt{n}} = \frac{|0.5718 - 0.608|}{0.4948 / \sqrt{625}} = 1.8291$$

And as well：$F(z) = 95\%$

Look-up table: $z_{0.025} = 1.96$

$$\therefore |z| < z_{0.025}$$

The null hypothesis is founded. That university teachers' happiness index weighted average of the theoretical value of 0.608 is consistent with actual. Truly reflect the status of university teachers' happiness.

3.5 Build teacher characteristics of quantization table to complete the measurement indicators for effective quantitative, directly in the life of the teachers' happiness by asking or observations to measure is very difficult, so we must use some special methods or means to express it is hard to express the concept of objectively, which requires the introduction of the concept of a scale was, in this system, the influence to take all the indicators of teachers' happiness index feature quantification, this paper quantitative method using the Likert scale method [11,12] .

University teachers' happiness index ranking of quantity	AHP Model data in similar rates
In the top 50	83.26%
The top 100	87.65%

Tab.5 The AHP model happiness index and the country's official statistics index contrast table

4. Statistical analysis

Statistics from the ministry of education website, the evaluation model with Chinese university teachers' happiness index ranking in the top 50 were compared with 100, contrast table as shown in table 5.

Can be seen from the above table, teachers' happiness index based on AHP model and the Chinese university teachers' happiness index ranking of close to, no similar rate were greater than 80%, and with the increase of ranking number similarity, so you can think of this model has a certain practical significance and reference value.

Through the questionnaire survey and research, we made the many important conclusions of modern teachers' subjective living conditions. And found some problem. Therefore, from the Angle of the government and the society macro, meso industry Angle, micro school and teachers personal point of view, a targeted formulate corresponding countermeasures, so as to improve teachers' happiness feeling, increase job satisfaction, improve the career development channel and career goals, eventually improve their happiness, it is very necessary.

Happiness is the ultimate purpose of the only rational human. In philosophy, political science, economics, sociology, ethics and psychology, and many other areas, never stopped thinking about happiness. Happy or not, not only affects the social member's life and work, and with its professional, organization, and even the industry and the whole society are closely related. As members of the social organization is an important part of the contemporary university teachers, their happiness, happiness and happiness, is worthy of the concern of the whole society. I look forward to, with the development of the study, to the harmonious development of the cause of education and the status of education professional rebuild, school has steadily increased and the development scientific decision-making, provides a new perspective and understanding [13，14].

5. Conclusion

This article first expounds the concept and research status quo of teachers' happiness, then puts forward the concept of teachers' happiness index and expounds the significance of the construction of teachers' happiness index, and then on the basis of Maslow's hierarchy of needs theory to build teachers' happiness index, and gives the corresponding mathematical model, and applies the model experiment [15],we made the many important conclusions of modern teachers' subjective living conditions. And found some problem. Therefore, from the Angle of the government and the society macro, meso industry Angle, micro school and teachers personal point of view, a targeted formulate corresponding countermeasures, so as to improve teachers' happiness feeling, increase job satisfaction, improve the career development channel and career goals, eventually improve their happiness, it is very necessary.

The experimental results show that the model has certain rationality, can provide some scientific management basis for education management departments.

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