Competence Set Expansion Decision-making Analysis Based on Important Degree Coefficient[1]

ANALYSE DE LA PRISE DE DÉCISION SUR L'EXPANSION DE L'ENSEMBLE DE COMPÉTENCE BASÉE SUR LE COEFFICIENT DE DEGRÉ IMPORTANT

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Abstract: The talented person competence is cultivated and expanded to the actual requisite competence set that has many competence subsets，then carrying on the arrangement of these many competences subset according to its important degree coefficient for providing powerful basis to get the optimal expansion process of expanding from the obtained competence set Sk(E) to the actual requisite competence set Tr(E). This article uses the fuzzy thought to get various competences subset important degree coefficient in the actual requisite competence set Tr(E).
Key words: Expansion of competence set, Important degree coefficient, Decision analysis

Résumé: La compétence douée de personne est cultivée et étendue à l'ensemble requis réel de compétence qui comprend beaucoup de sous-ensembles. On procède ensuite à la gestion de ces sous-ensembles de compétence selon leur coefficient de degré important pour fournir la base puissante, dans le but d'obtenir le processus d'expansion optimal de l'ensemble obtenu de compétence Sk(E) à l'ensemble requis réel de compétence Tr(E). Le présent article utilise des pensées brouillées pour obtenir le coefficient de degré important de l'ensemble de compétences variées dans l'ensemble requis réel de compétence Tr(E).
Mots-Clés: expansion de l'ensemble de compétence, coefficient de degré important, analyse de décision

1. INTRODUCTION

To each management decision-making question, all has competence set，including achieved the question the satisfactory solution which needs thought, knowledge, information and skill and so on．When decision-maker's already obtained this competence set, or thought oneself already obtained and is skilled in this competence set, facing this decision-making question can fast make the decision-making, otherwise, the decision-maker will need to penetrate method and so on study expands own competence set.

Along with the modern society, the economical and the technical swift and violent development, the society sets higher and higher request to the talented person, also even more pays great attention to the talented person competence the raise and the expansion．The talented person competence is cultivated and expanded to the actual requisite competence set that has many

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competence subsets，then carrying on the arrangement of these many competences subset according to its important degree coefficient for providing powerful basis to get the optimal expansion process of expanding from the obtained competence set Sk(E) to the actual requisite competence set Tr(E). How to get various competences subset important degree coefficient in actual requisite competence set Tr(E), that is a kind of question which is worth exploring in the competence set expansion. This article uses the fuzzy thought to study this kind of question.

2. COMPETENCE SET AND ITS EXPANSION

2.1 Competence set's Boundary

Regarding competence set, Yu and Feng believed that is the knowledge, the information, the skill in order to obtain one key or key set of one or a set of question. Competence set contains four basic concepts (like fig 1):

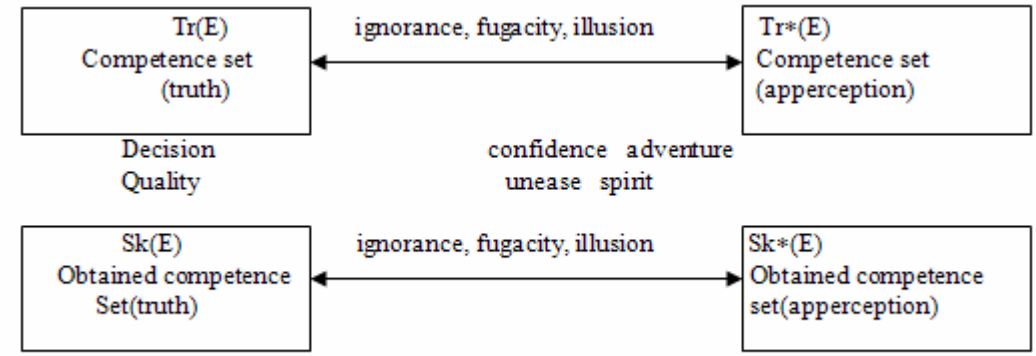

Fig 1 Competence set and the constitution diagram

Among them, E expressed some decision-making question, Tr(E) indicated the actual requisite competence set for resolving the question the actual requisite thought, skill and so on(for resolving question E), Tr* (E) expressed the competence set that should be possessed if decision-maker wants to successfully resolve problem, that is the decision-maker feeling recognizes the competence set, SK (E) expressed the decision-maker already obtained the competence set in fact, SK* (E) expressed the decision-maker feeling recognized the competence set which already obtained.

2.2 Boundary of competence set expansion

The competence set analysis goal lies in defining the actual requisite competence set, and the competence set possessed actually by decision-maker, and helps the decision-maker effectively to expand own competence set favor the decision-making · Here, expansion of competence set refers to decision-makers making decisions from the obtained competence set to the the required one of resolving problem on a particular issue in a limited time.

The research on competence set is a fundamental research extremely active domain in personal habitual domain (PHD), this domain research has provided mathematics method for the PHD quantitative investigation · Like early Yu and Zhang got the competence set smallest cost expansion process with the Next-best method; Li and Yu resolved it using the deduction graph by 0-1 Integer Programming, and discovered the optimal competence set expansion process; Feng's table method and so on, these researches mainly concentrated the competence set expansion aspect, and made qualitative analysis to personal，single objective decision of competence.

Yu and Zhang introduced the conception of competence set expansion based on the smallest cost · If needs only is the cost ，may developing the algorithm using Next-best to find the smallest cost expansion process · But, besides the cost, the income still must be taken into the consideration, so the net income can decide the true optimal expansion process · Yu and the Zhang compared the cost with the income of competence set expansion process ，then decided whether is worth expanding.

If Tr (E) and Sk (E) are regarded as the fuzzy set, then the subordinate function can expresses the relations · Because of uncertainty of actual decision-making question, competence set can be decomposed several stochastic sets to discuss · Yu and Zhang discovered the optimal expansion process using expansion process expectation reward and the union expansion cost way · Shi and Yu promoted Yu and Zhang the early Next-best method the situation in which the asymmetrical cost expanded, and proposed the minimal tree expansion process which still used the Integer Programming method, but greatly enhanced the expansion method serviceability.

3. COMPETENCE SET IMPORTANT DEGREE COEFFICIENT'S DETERMINATION

Regarding decision-making question E, HD is the domain which uses the skill, the knowledge and the experience related with the decision-making question E, also supposed that HD is discrete and limited, the decision-maker has obtained the competence set which is Sk (E), Tr (E) is the actual requisite competence set resolving the question E, Tr(E)={Tr1(E),Tr2(E),…，Trn(E)},Tri(E) ∩Trj(E)=∅(i≠j), corresponding weight of various competences subset of Tr (E) is a1,a2,…,an, namely competence subset importance fuzzy subset $A=\frac{a_1}{Tr_1}+\frac{a_2}{Tr_2}+\cdots+\frac{a_n}{Tr_n}$, ai is the degree of Tri subordination to A, it is the influence size measure of competence subset Tri(E) of Tr (E).

3.1 Determined important sequence value F_i of various competences subset $Tr_i(E)$, F_i value is some integer in 1,2,⋯,n this n integer, namely $F_i \in \{1,2,\cdots,n\}$ · The most important competence subset, its F_i value is 1; The Most unimportant competence subset but still needed to expand, its F_i value is n · The supposition that the number of member who appraised the actual requisite competence set Tr (E) various subsets is m, then F_{i-k} is the importance sequence value which the kth member evaluates according to competence subset $Tr_i(E)$, like table 1 shows.

Table 1 the kth member's value F_i evaluates the table

Competence subset serial number	$Tr_1(E)$	$Tr_2(E)$	…	$Tr_n(E)$
importance sequence value F_{i-k}	F_{1-k}	F_{2-k}	…	F_{n-k}

3.2 Establishment competence subset first score table

Making as follows statistic according to the importance sequence value F_{i-k} of competence subset that the kth member provides:

When $\frac{F_{j-k}}{F_{i-k}}>1$，$A_{ij-k}=1$；when $\frac{F_{j-k}}{F_{i-k}}<1$，$A_{ij-k}=0$；let A_{ii-k} is 0 ·

Accumulating the participation appraisal member's value A_{ij-k}，viz. $A_{ij}=\sum_{k=1}^{m} A_{ij-k}$,i=1,2,⋯,n;j=1,2,⋯,n · The first score value table is composed of n×n statistic value，like table 2.

Table 2 The first score statistic(A_{ij} value)table

Competence subset serial number	$Tr_1(E)$	$Tr_2(E)$	…	$Tr_n(E)$
$Tr_1(E)$	A_{11}	A_{12}	…	A_{1n}
$Tr_2(E)$	A_{21}	A_{22}	…	A_{2n}
⋮	⋮	⋮	⋮	⋮
$Tr_n(E)$	A_{n1}	A_{n2}	…	A_{nn}

3.3 Evaluation

Accumulating each line values A_{ij} in table 2, namely

$$\sum A_i=\sum_{j=1}^{n} A_{ij} \text{ ,i=1,2,}\cdots\text{,n,}$$

Among，$\sum A_i$ expresses the accumulation value of Ith line，again records

$$\sum A_{max}=\max\{\sum A_1, \sum A_2, \cdots, \sum A_n\},$$

$$\sum A_{min}=\min\{\sum A_1, \sum A_2, \cdots, \sum A_n\}.$$

Obviously, the important degree of competence subset which corresponds with $\sum A_{max}$ is highest, but the important degree of competence subset which corresponds with $\sum A_{min}$ is lowest.

3.4 Computation grading d

$a_{max}>a_{min}$，they randomly take value in [0,1], definition grading

$$d=\frac{\sum A_{max}-\sum A_{min}}{a_{max}-a_{min}}.$$

3.5 Computation competence subset important degree coefficient α_i

Computing competence subset important degree coefficient α_i according as follows formula

$$\alpha_i=\frac{\sum A_i-\sum A_{min}}{d}+0.1,\quad i=1,2,\cdots,n$$

Finally, getting the important degree fuzzy subset of various competence subset in the actual requisite competence set Tr (E)

$\tilde{A}=(\alpha_1,\alpha_2,\cdots,\alpha_n)$.

Thus may according to the important degree fuzzy subset of various competence subset in the actual requisite competence set Tr (E)，the optimal expansion process that expanding from the obtained competence set to Tr (E).

4. CONCLUDING REMARK

According to the important degree fuzzy subset of various competence subset in the actual requisite competence set Tr (E)，the optimal expansion process that expanding from the obtained competence set to Tr (E), that is one method which in the expansion of competence set is worth exploring very much · That has provided the better expansion decision-making basis for competence set expansion decision-making analysis method, but this article has not considered in the cost and the benefit during the expansion process, if again simultaneously considering the cost and the benefit to research the important degree coefficient, that also is a question which is worth exploring.

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