Satisfaction Evaluation of Strategic Cost Management of Real Estate Enterprises Based on Fuzzy Comprehensive Evaluation Method

CHEN Zhijun[a],*

[a]School of Economics and Management, Nanjing University of Science and Technology, Nanjing, China.
*Corresponding author.

Abstract

The quality of strategic cost management on real estate development enterprise, related to long-term development of the company, needs to be evaluated properly. The article is based on fuzzy theory, analyzing theoretically and building the satisfaction evaluation index system on strategy cost management on real estate development enterprise based on commercial ecological system, an objective, quantitative evaluation on satisfaction on strategy cost management work on real estate development enterprise by building fuzzy integrated evaluation method model, solved the fuzziness and uncertainty in the past evaluation, researching on satisfaction degrees on strategy cost management work on a real estate development enterprise in the city of YZ by this method empirically, verifying that the method is scientific and practical.

Key words: Fuzzy comprehensive evaluation; Real estate development enterprise; Strategic cost management; Satisfaction evaluation

INTRODUCTION

The strategic cost management on real estate development enterprises is the hot issue in real estate management, the quality of strategic cost management on real estate development enterprise, related to long-term development of the company, needs to be evaluated properly. Therefore, it is necessary to establish a scientific satisfaction index on strategic cost management on real estate enterprise, and evaluating the work by relevant departments or personnel objectively and fair, the evaluation will have a certain value (Zhang, Lu, & Zhao, 2014). To sum up, it is imperative to build a satisfaction degree evaluation system on strategic cost management on real estate development enterprise; in this paper, we analysis theoretically and build the satisfaction evaluation index system on strategy cost management on real estate development enterprise based on commercial ecological system and apply the fuzzy comprehensive evaluation model to the satisfaction evaluation.

1. FUZZYEVALUATIONMODELCONSTRUCTIONOFTHESATISFICATIONDEGREEONREALESTATADEVELOPMENTENTERPRISESTRATEGYCOSTMANAGEMENT

Fuzzy integrated evaluation method is based on fuzzy mathematics, applying the principle of fuzzy relationship synthesis, quantizing some unclear, uneasily quantitative factors, to develop an objective, right, actual, critical evaluation method, the method can solve problems on more factors, fuzzy and subjective judge, a better method to evaluating for variety property, and multiple related factors Thoughtfully. It is multi-level and uncertain for satisfaction degree on strategy cost management on real estate development enterprise based on commercial ecological system of real estate development enterprise, so it is more appropriate to evaluate satisfaction degrees on strategy cost management on real estate development enterprise by fuzzy integrated evaluation method; so in this paper, it is decided to use II level fuzzy integrated evaluation method to evaluate the factors on strategy cost

effect associated degrees based on commercial ecological system in real estate development enterprise, main steps following:

1.1 Evaluation Index System

To build a set of evaluation index $U = (U_1, U_2, U_3, \cdots U_n)$ depending on the target; and, each subset U_i can be continued up to its level of evaluation index U_{ij} to evaluate $U_{ij} = (U_{i1}, U_{i2}, U_{i3}, \cdots U_{im})$, index levels may continue to the next as needed (Han, Li, & Chen, 2014).

Through the literature research and interviews with experts, set evaluation indicators by characteristics of the real estate industry business ecosystem, developing the following evaluation index system based on the four components in a system (see Table 1).

Table 1
Satisfaction Evaluation Index System on Strategic Cost Management on Real Estate Development Enterprise

Evaluation objectives	Level evaluation	Secondary index
Dynamic strategy cost management of real estate development enterprisesatisfaction	System environment U_1	Government U_{11}
		Industry association U_{12}
		Financial institutions U_{13}
	System extension U_2	Upstream suppliers U_{21}
		Direct customers U_{22}
		Customer U_{23}
		Product supplement U_{24}
	System core U_3	Land U_{31}
		Engineering development U_{32}
		Financial situation U_{33}
		Management U_{34}
		Marketing U_{35}

1.2 Determine the Weight of Each Indicator

Adjacent indicators compare the method to determine the weight, select 12 experts he listens to on the basis of evaluation of importance, then adjacent important indicator ratios by simple weighted average calculated importance level evaluation $U_3 > U_2 > U_1$, weighting the results in Table 2.

Table 2 level target weight can be recorded as:
$$W = (0.17, 0.33, 0.50).$$

Similarly, by 10 experts he listens to determine secondary index weights separately for:
$$W1 = (0.45, 0.20, 0.35),$$
$$W2 = (0.30, 0.35, 0.15, 0.20),$$
$$W3 = (0.25, 0.18, 0.22, 0.17).$$

Table 2
The First Level Evaluation Index Weight

Serial number	Compared to target	Relative importance than	Weights	Normalized weights
0	$U_1 : U_1$	1	$W_1 = 1.0$	$W_1 = 0.17$
1	$U_2 : U_1$	2.0	$W_2 = 2.0, W_1 = 1.0$	$W_2 = 0.33$
2	$U_3 : U_2$	1.5	$W_3 = 3.0, W_2 = 2.0$	$W_3 = 0.50$
			$\sum W = 6.0$	$\sum W = 1$

1.3 Establish a Set of Ratings

According to the actual situation of strategic cost management, combined with expert advice, the evaluation at all levels was identified as 5 ratings Establish Reviews (Liu, Dong, & Li, 2013).

$$V = (V_k) = \begin{pmatrix} \text{Very Satisfied, Satisfaction,} \\ \text{Satisfactory, in General, Dissatisfied} \end{pmatrix} (k=1\text{-}5).$$

Evaluation experts from industry-related parties (Governments, banks, partners, owners, etc), the top decision-making levels (President, General Manager and Deputy General Manager, Chief Engineer, Chief Accountant), middle-level leadership (Finance Manager, project manager, Marketing Manager, General Manager, etc.).

1.4 Established Reporting Lines and Fuzzy Matrix B_i ($i = 1,2,3$)

According to strategic cost management of real estate development enterprise's actual, General $U_i (i = 1,2,3)$ index U_{ij} under evaluation the extent it belongs to the k-th reviews rank r_{ijk}, available U_i of fuzzy judgement matrix R_i as follows (Li, 2011):

$$R_i = \begin{bmatrix} r_{i11} & r_{i12} \cdots r_{i1m} \\ r_{i21} & r_{i21} \cdots r_{i2m} \\ \vdots & \vdots & \vdots & \vdots \\ r_{in1} & r_{in2} \cdots r_{inm} \end{bmatrix}.$$

This paper presents the following algorithm:
$$B_i = W_i * R_i.$$
The fuzzy appraisal matrix
$$B_i = (b_{i1}, b_{i2}, \cdots, b_{im}).$$

Which $b_{it} = \sum_{j=1}^{n} w_{ij} r_{ijk}$. Similarly, through B_i ($i = 1,2,3$) known in the B layer fuzzy evaluation of matrix $R = (B_1, B_2, B_3)^T$.

1.5 Fuzzy Comprehensive Evaluation

On strategic cost management of real estate development enterprise satisfaction U evaluate U evaluation of results obtained from:

$$B = W * R = (b_1, b_2, \cdots, b_m).$$

According to the maximum subordination principle, maximum B_k corresponding comment V_k is the best evaluation results (Li, 2011).

2. MODELAPPLICATION

This research to YZ city a real estate development enterprise strategy cost management work satisfaction degrees, for cases, it used has experts scoring of way on effect satisfaction degrees of index for actual survey, this times research respectively organization has company senior management who and the sector head, and invited system in the cooperation partners, and competent sector, engaged in strategy cost management of experts total 12 people composition experts group (see Table 3) for has evaluation. Experts found 12 expert marks after scoring and finishing results are valid. Earlier in this article to build model of fuzzy comprehensive evaluation method of indicator and data based on actual statistics, main steps and results of the evaluation are as follows (Wang, Ou, & Zheng, 2011).

2.1 The Composition of the Evaluation Expert

12 evaluation experts, as shown in Table 3.

Table 3
Composition of Fuzzy Evaluation Expert List

Serial number	Expert sources	Expert professional	Quantity
1	Government authorities	Real estate	1
2	Industry association	Real estate	1
3	Company executives	General manager	1
4	Company executives	The chief engineer	1
5	Company executives	Chief economist	1
6	Company executives	The chief accountant	1
7	Company executives	Financial department manager	1
8	Company executives	Marketing manager	1
9	Cooperative construction enterprises	Construction	1
10	Cooperative financial institutions	Financial	1
11	Owner		2
Total			12

2.2 Data Statistics

Effective evaluation tables of statistical data, as shown in Table 4.

Table 4
Statistical of Strategic Cost Management (12)

Level evaluation	Two-level evaluation index	Evaluation grade				
		Very-satisfied	Satisfaction	More-satisfactory	General-satisfaction	Dis-satisfaction
System environment $U1$	Government $U11$	4	7	1	0	0
	Industry association $U12$	3	7	1	1	0
	Financial institutions $U13$	0	3	6	3	0
System extension $U2$	Upstream suppliers $U21$	2	8	2	0	0
	Direct customers $U22$	0	6	3	3	0
	Customer of customer $U23$	0	6	1	5	0
	Product supplement $U24$	1	5	5	1	0
System core $U3$	Land $U31$	3	7	2	0	0
	Engineering development $U32$	2	8	2	0	0
	Financial situation $U33$	2	7	1	2	0
	Management $U34$	0	7	3	2	0
	Marketing $U35$	0	8	4	0	0

2.3 According to the Formula $B_i = W_i * R_i$ to Calculate Much B_i ($i = 1,2,3$)

The results appear as shown below:

$B_1 = W_1 * R_1 = (0.2000, 0.4667, 0.2991, 0.1042, 0)$,
$B_2 = W_2 * R_2 = (0.0667, 0.5333, 0.2333, 0.1667, 0)$,
$B_3 = W_3 * R_3 = (0.1291, 0.6125, 0.1917, 0.0667, 0)$.

2.4 Put B_i Together Constitute a Hierarchy Fuzzy Evaluation Matrix R

$R = (B_1, B_2, B_3)^T$, That is

$$R = \begin{bmatrix} 0.2000 & 0.4667 & 0.2291 & 0.1042 & 0 \\ 0.0667 & 0.5333 & 0.2333 & 0.1667 & 0 \\ 0.1291 & 0.6125 & 0.1917 & 0.0667 & 0 \end{bmatrix}.$$

2.5 Fuzzy Comprehensive Evaluation

On strategic cost management work satisfaction U to make comprehensive evaluation, the comprehensive evaluation results of U is $B = W * R$. That is:

$$B = (0.17, 0.33, 0.50) * \begin{bmatrix} 0.2000 & 0.4667 & 0.2291 & 0.1042 & 0 \\ 0.0667 & 0.5333 & 0.2333 & 0.1667 & 0 \\ 0.1291 & 0.6125 & 0.1917 & 0.0667 & 0 \end{bmatrix}.$$

According to the maximum membership degree principle, and learned from the calculation results can be fuzzy comprehensive evaluation of the second indexes bset 0.5616 is the largest, and the corresponding evaluation level is satisfaction; so, in YZ city some real estate development enterprise strategic cost management satisfaction results belong to the second level, that is satisfaction.

CONCLUSION

Real estate development enterprise strategic cost management satisfaction evaluation from the subjective analysis of real estate development enterprise strategic cost management level, in order to avoid the influence of vulnerability to subjective problem in the analysis, this article mainly from the theoretical analysis and build the real estate development enterprises based on business ecosystem evaluation index system of strategic cost management satisfaction, at the same time, the fuzzy comprehensive evaluation model applied to the evaluation of the degree of satisfaction (Zhang, 2014) the fuzzy comprehensive evaluation method to evaluate real estate development enterprise strategic cost management satisfaction, the method is simple, convenient calculation, Avoided in evaluation in the past a lot of people and uncertainty, for real estate development enterprises and the relevant administrative departments provides a good method and train of thought about real estate strategic cost management job satisfaction assessment .

REFERENCES

Han, L., Li, Y., & Chen, S. (2014). Based on the fuzzy comprehensive evaluation method of Wuhan residential satisfaction research. *Shanxi Architecture,* (2), 16-18.

Li, Q. H. (2011). Mental health education in colleges and universities based on fuzzy comprehensive evaluation method study on performance evaluation. *Journal of Yangzhou University (Higher Education Study Edition),* (6), 29-33.

Liu, Y. C., Dong, S., & Li, Y. (2013). Affordable housing satisfaction based on entropy AHP fuzzy comprehensive evaluation. *Journal of Shenyang Architectural University (Social Science Edition),* (7), 259-263.

Wang, X. W., Ou, W., & Zheng, X. F. (2011). Based on the analytic hierarchy process (AHP) and fuzzy theory of the real estate enterprise customer satisfaction evaluation. *Journal of Hebei University of engineering (Social Science Edition),* (6), 32-34.

Zhang, L. (2014). Urban public transport service satisfaction evaluation based on fuzzy mathematics study. *Traffic and Transport,* (12), 98-101.

Zhang, P., Lu, Y., & Zhao, Y. C. (2014). Based on the fuzzy comprehensive evaluation method of highway passenger satisfaction research. *Traffic Science Technology and Economy,* (6), 21-24.