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# Influencing Factors in Rural Cooperative Economic System in Changjitu Area——On the basis of DEMATEL Method

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**Abstract** By using the DEMATEL method, the 20 factors in four types that affect the rural cooperative economic system of Changjitu Area are analyzed. The comprehensive influencing matrix of each factor, and its influencing degree, central degree and reason degree are obtained, which indicates that macro economic system, law and regulations, thought pattern, government concept have great functions on rural cooperative organization. But the system environment is the major factor that affects the development of cooperatives. So the perfection of macro-economic system, laws and regulations, regional developmental strategy, logistics system, land system, households registration system, education system, administration system should be conducted to promote the rural economic development of Changjitu Area.

**Key words** DEMATEL method, Cooperative economy, System, China

Rural cooperative economic organization is to combine individual rural household to enter market as member of the organization to increase farmers' income, reduce transaction fee, overcome the behavior defects of small rural households and to promote the development of rural economy. Therefore, the system is a good system, which should be promoted. By using the DEMATEL method, the major internal and external influencing factors on the construction of rural cooperative economic system in Changjitu area are analyzed. It can provide theoretical evidence for solving the problems of rural cooperative economic organization development.

## 1 Index selection and research method

**1.1 Index selection** According to the materials obtained from on-the-spot investigation, the 20 factors in four types, which directly and indirectly affect the formation and development of rural cooperative organization<sup>[1-3]</sup>: The influencing factors of thought pattern and culture environment: thought pattern ( $F_1$ ), governmental thought pattern ( $F_2$ ), cooperative education view ( $F_3$ ), quality ( $F_4$ ); Influencing factors of system environment: macro-economic system ( $F_5$ ), laws and regulations ( $F_6$ ), the development of cooperative organization ( $F_7$ ), regional developmental strategy ( $F_8$ ), logistics system ( $F_9$ ), land system ( $F_{10}$ ), employment system ( $F_{11}$ ), registration system ( $F_{12}$ ), education system ( $F_{13}$ ), administration system ( $F_{14}$ ); Influencing factors of internal restrictions: property rights ( $F_{15}$ ), management system ( $F_{16}$ ), capital scale ( $F_{17}$ ); Influencing factors of technology environment: technology degree ( $F_{18}$ ), talent situation ( $F_{19}$ ), technology promotion ( $F_{20}$ ).

**1.2 Research method** Through questionnaires and pair analysis, the direct affect matrix among factors is established. In the matrix, the direct influencing matrix describes the possi-

ble direct influence of one factor to other factors. The matrix indicates that the factor  $F_i$  has direct influence on factor  $F_j$ , then the factor in line  $i$  and list  $j$  is 1; which does not have direct influencing relations, then the relevant element is 0. If  $F_1$  directly affects  $F_7$ , then the element in the first line, seventh list is 1.

By using the DEMATEL method<sup>[1]</sup> (method used for analyzing factors by using figures and matrix tools), the logical relations that directly affect the matrix and each factor is analyzed and the influencing degree or influenced degree of each factor to other factors are obtained. Thus, the centrality degree and reason degree of each factor is calculated.

## 2 Results and analysis

**2.1 The establishment and results of the matrix model** The direct influence matrix of 20 factors is established (Table 1).

By using the DEMATEL method, the comprehensive influence matrix of each factor is obtained.

The row sum in the comprehensive influence matrix is the comprehensive influencing degree of the factor and the column sum is the influenced degree of the factor. The sum of row and column is central degree of row and line, which indicates its importance in the system; the sum of row and line is the cause degree of the factor, which indicates the causality logical relations among the factor and other factors. The causality degree  $>0$ , implies that the factor has large influence on other factors, called causality elements; causality degree  $<0$ , implies that the factor has large impact on other factors and it is result element. The influencing degree, central degree and causality degree of each factor can be obtained (Table 2).

Through the cooperative analysis on Table 1 and 2, the comprehensive influence degree of  $F_5$  is 1.128 5, which ranks the first of the 20 factors. The influence degree of  $F_6$ ,  $F_1$  and  $F_2$  is 0.613 1, 0.469 5 and 0.469 5 respectively. The four factors have important functions on rural cooperative organization and have high logical influence degree on other factors. The causality degree of  $F_7$  is the smallest one with the value of  $-1.461 3$ ,

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which is the result element and greatly affected by other factors. The causality degree of  $F_{11}$ ,  $F_{16}$  and  $F_{18}$  is  $-0.5195$ ,  $-0.3499$  and  $-0.3499$  respectively. They are result ele-

ments and greatly affected by other elements. The central degree of  $F_7$ ,  $F_5$ ,  $F_{16}$ ,  $F_6$  and  $F_{11}$  is relatively high, which indicates that these elements have great functions in the system.

**Table 1 Direct influence matrix**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
5	0	0	0	0	0	0	1	1	1	1	1	1	0	0	1	0	0	0	0	0
6	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
16	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

**Table 2 Comprehensive results of each factor**

	Influence degree	Central degree	Reason degree
1	0.469 5	0.469 5	0.469 5
2	0.469 5	0.469 5	0.469 5
3	0.142 9	0.428 7	-0.142 9
4	0.306 2	0.449 1	0.163 3
5	1.128 5	1.271 4	0.985 6
6	0.613 1	0.613 1	0.613 1
7	0	1.461 3	-1.461 3
8	0.285 8	0.449 1	0.122 5
9	0	0.329 5	-0.329 5
10	0.306 2	0.469 5	0.142 9
11	0.142 9	0.472 4	-0.186 6
12	0	0.519 5	-0.519 5
13	0.373 2	0.373 2	0.373 2
14	0	0	0
15	0.163 3	0.469 5	-0.142 9
16	0.142 9	0.635 7	-0.349 9
17	0.142 9	0.142 9	0.142 9
18	0	0.349 9	-0.349 9
19	0.306 2	0.449 1	0.163 3
20	0.142 9	0.449 1	-0.163 3

According to Table 1 and 2, the comprehensive influence degree of the above four elements to  $F_7$  (the development of cooperative organizations), the thought and cultural environment element is 1.388 1, the system environment element is 2.849 7, the internal restriction factor is 0.449 1 and the technology environment factor is 0.449 1, among which the system environment factor is the major reason that affect rural cooperative organization.

### 3 Discussion and conclusion

#### 3.1 Discussions on the major influencing factors<sup>[4-8]</sup>

**3.1.1 Restriction of macro-economic system.** Under the current economic system, a large majority of agricultural products is adjusted by market and adopts the open operation. But the nation adopts planned purchasing and selling system on cotton, food and some other bulk agricultural commodities, which re-

stricts the development of cooperative economic system. The development of productive elements including land, capital and technology is also restricted by macro-economic policy, which hinders the free combination of productive elements to a certain degree and the free development of cooperative economy. The defects of macro-economic system affects the agricultural economic system which is the supporting system of market economic system, for example, rural land system, registration system with dual rural and urban division and employment system, obstructing the innovation of cooperative organization.

**3.1.2 Defects of laws and regulations.** Perfect laws and regulations can provide favorable system environment for rural cooperative economic organization, which not only satisfies the demand of the development of organization, as well as the demands of maintaining the order of rural market economy. The practice proves that the counties with perfect legislation, for example, America, German *et al*, all have sustainable and stable development of cooperative economic organizations. The *Farmers' Cooperative Law* issued by the central government in 2007 stipulated the behaviors of cooperative organization in market economy, which has promoted the normalization and systemization of rural economy. However, the law is still not so perfect, for example, it did not establish the position and feature of cooperative organization. The legal position of the owner of rural cooperative economic organization is conducive to intensifying its competitiveness and promoting the construction of new villages.

**3.1.3 Imperfect internal management system.** The spontaneity of rural cooperative economic organization and restriction of farmers' social awareness and educational degree affects the normalization of management of cooperative organization. For example, the existing substandard regulations, vague aim, blurred responsibility, irrational institution settlement and the lack of democracy, *etc*. The substandard organization directly

affects its social position and the rural households' recognition degree, which restricts the development and perfection of organization. The imperfect internal management system is also reflected on the irrational interest distribution system. As a major influencing factor of the members, the *Farmers' Cooperatives Law* stipulated that "the interests should be returned according to the proportion of the transaction volume of members and farmers' cooperative organization". The single interest distribution mode on the basis of quantity is conducive to modern agricultural technology, system innovation and the development of high-tech ecological agriculture. Therefore, the distribution system should be innovated and the agricultural technology and the contribution of agricultural output should be organically combined to encourage farmers to use new technology and promote the agricultural producers to develop to high level products. Besides, the management personnel in the organization mainly dominated by experience management, who lacks system innovation awareness, encouragement and supervision means, so it is hard for them to keep in pace with the demand of market economy development. The internal management system has determinant significance on rural cooperative economy, so it should be perfected from the strategic perspective.

**3.2 Conclusion** The factors of system environment are the major reasons that affect the development of rural cooperative economic development in Changjitu area. Therefore, the current national developmental strategy and the regional develop-

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the social security system is improved; people will feel that life is secure; there will be no pressure and sense of crisis in future life, so that the sense of happiness is promoted.

**3.4 Endeavor to create a situation in which all rural residents do their best** Happiness does not mean that once the material conditions is met, the happiness comes, but mean that by giving full play to their potential and realizing their own value, people are to achieve the perfect experience. Whether people can experience the happiness depends on the satisfaction of basic needs closely related to people's self-fulfilling of needs. Therefore, the sense of happiness is more expressed as a sense of value, which deeply reflects people's questioning on life purpose and life value. In a nutshell, the significance of conducting the research on the relationship between income level and happiness of rural residents is that we will not only transfer from the focus on the material needs and economic conditions of farmers, to the focus on psychological feelings and spiritual pursuit, but also more importantly, pay attention to the spiritual pursuit and psychological feeling, namely sense of happiness, of farmers, and use new perspective to examine the material needs of rural residents, economic conditions, quality of life, living environment and social environment.

## References

- [1] HUANG XT, SU YJ. *Psychology and Life*[M]. Guangzhou: Jinan University Press, 2010. (in Chinese).
- [2] EASTERLIN RA. Does economic growth improve the human lot? Some empirical evidence[J]. *Nations and households in economic*

mental situation should be combined and the macro-economic system, laws and regulations, regional developmental strategy, logistic system, employment system, registration system, educational system and administrative system as the principal aspects to perfect the problems in the development of rural cooperative economy in Changjitu area.

## References

- [1] YANG YS. *Economic System Quantitative Analysis Method*[M]. Changchun: Jilin Science and Technology Press, 2001: 169 – 183. (in Chinese).
- [2] TANG CS. Analysis of main barriers for the development of rural economic cooperative organization[J]. *Agricultural Economy*, 2005 (5): 23 – 24. (in Chinese).
- [3] FENG DJ. Studies on main barriers for China's new farmers in rural economic cooperative organization[J]. *Agricultural Economy*, 2006 (1): 47 – 49. (in Chinese).
- [4] QIAO ZQ. Studies on development of agriculture logistics in Jilin[J]. *Journal of Changchun University*, 2010(2): 1 – 4. (in Chinese).
- [5] QIAO ZQ. Industry chain and cluster of corn in Jilin[J]. *Enterprise Economy*, 2009(5): 116 – 118. (in Chinese).
- [6] ZHANG XH. A research on institutional innovation methods of rural credit cooperatives in China[J]. *Journal of Changchun University*, 2010(5): 10 – 13. (in Chinese).
- [7] LIU JY. A study of development of Chinese farmers' specialized cooperative economic organization[J]. *Journal of Shandong University: Philosophy and Social Sciences*, 2007(2): 7 – 10. (in Chinese).
- [8] ZHANG XH. The study on Chinese rural cooperative economic system[D]. Changchun: Jilin University, 2009. (in Chinese).
- [9] growth, 1974(11): 89 – 125.
- [3] DIENER E, LUCAS RE, SCOLLON CN. Beyond the hedonic treadmill: revising the adaptation theory of well – being[J]. *American Psychologist*, 2006, 61(4): 305 – 314.
- [4] MENTZAKISA E, MOROB M. The poor, the rich and the happy: Exploring the link between income and subjective well – being[J]. *The Journal of Socio – Economics*, 2009, 38(6): 147 – 158.
- [5] WAN Y, ZHEN X. SWB & PWB: The integration of two well – being research orientation[J]. *Studies of Psychology and Behavior*, 2010, 8(3): 190 – 194. (in Chinese).
- [6] ZHU C. Analysis of satisfaction with income and happiness of rural residents correlation[J]. *Theoretical Economics*, 2008, 7(9): 35 – 37. (in Chinese).
- [7] WANG J, CHEN T. Study on happiness and the related factors[J]. *Research On Development*, 2007(3): 156 – 158. (in Chinese).
- [8] WANG ST. Discussion on the economic strategy to promote balanced growth of income and the happiness index[J]. *Commercial Times*, 2008, 7(33): 9 – 10. (in Chinese).
- [9] ZHANG AL, HUANG XT. From the domestic economic situation of the study to see the impact of individual happiness[J]. *Advances in Psychological Science*, 2010, 18(7): 1068 – 1072. (in Chinese).
- [10] ZHU JF, YANG XL. An empirical study on the relation between happiness and income during transitional times[J]. *Statistical Research*, 2009, 26(4): 7 – 12. (in Chinese).
- [11] LI J, GUO YY. The relationship between income, happiness and its significance[J]. *Advances in Psychological Science*, 2010, 18 (7): 1073 – 1080. (in Chinese).
- [12] Chinese people continued to decline in happiness, they are not happier than 10 years ago[EB/OL]. (2010 – 10 – 18). [http://news.xinhuanet.com/fortune/2010-10/18/c\\_12671704.htm](http://news.xinhuanet.com/fortune/2010-10/18/c_12671704.htm). (in Chinese).
- [13] The world's happiest countries were rated: Top Four were Nordic countries, Denmark is the champion[EB/OL]. (2010 – 07 – 21). [http://news.xinhuanet.com/fortune/2010-07/21/c\\_12355423.htm](http://news.xinhuanet.com/fortune/2010-07/21/c_12355423.htm). (in Chinese).