Strategic Analysis of Circular Economy on "Integration of Two Networks": Take the Tobacco Industry in C City as an Example

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Objectives: Reducing garbage sorting and renewable resources recovery increment is an important content of promoting circulation economy development of China, based on the C city tobacco industry as an example, first the present situation of "two network convergence" in C city tobacco industry and results were analyzed, and then using accident tree analysis it is concluded that the tobacco industry "two nets fusion" are faced with the problem, and then establish orthogonalization discrete Hopfield neural network capability evaluation model, "two network convergence" By using Matlab to conduct network learning and training, simulation experiments and data analysis, the quantitative evaluation of the tobacco industry "two-network integration" ability of five cities including C city is objectively obtained. On this basis, the countermeasures for improving the tobacco industry "two-network integration" ability of China are given.

Key words: circular economy; accident tree; discrete Hopfield neural network; two networks fusion ability in tobacco industry
Tob Regul Sci.™ 2021;7(6): 6153-6166
DOI: doi.org/10.18001/TRS.7.6.93

CONCEPT OF CIRCULAR ECONOMY

In the 1960 s, the world's environmental protection consciousness to promote circular economy idea, at the same time, an American economist, k. spaulding, puts forward the concept of circular economy refers to the natural resources, material resources and ecological system consisting of science and technology, by changing the resource consumption, commodity consumption, waste disposal, such as the traditional "single program" economic growth mode, To build a green, conservation, environmental protection and ecological resource regeneration "recycling" reserve economy.[1] As circular economy shows advantages of low consumption, reduction, low pollution, high efficiency and reuse, it is very suitable for innovative economic growth mode of sustainable development. Therefore, in the 1990s, China began to study and apply circular economy.[2] The material circulation of tobacco industry belongs to one of the major types of circular economic development. The recycling of tobacco waste and renewable resources is of great significance.

THE NEW DEVELOPMENT TREND OF TOBACCO INDUSTRY "INTEGRATION OF TWO NETWORKS" UNDER THE BACKGROUND OF CIRCULAR ECONOMY

In July 2021, the National Development and Reform Commission issued no. (2021) 969 "14th Five-year" Circular Economy Development Plan,

which fully reflects China's high attention to the development of circular economy. The sustainable development of circular economy plays an important role in national resource security, waste classification reduction, recycling increment of renewable resources and ecological civilization construction. Has become the breakthrough of China's new economic growth and the key point.[3] Therefore, Tobacco waste classification treatment and tobacco renewable resources utilization can produce great social and economic benefits, based on the concept of circular economy, tobacco industry "integration of the two networks" in China presents three new development trends: one is to improve the "hematopoietic" function of waste classification industry and enterprises, and develop healthily and orderly under the government support and market guidance mechanism; Second, the conscious awareness of waste classification and innovative operation mode of renewable resource recycling can effectively improve the ability of "integration of two networks". The support of intelligent technology can solve the problems of fine recycling at recycling stations, sorting centers, industrial parks and processing bases. Third, speed up the construction of "waste free city" with green development and lifestyle, form an integrated garbage sorting system and renewable resources system, and build a complete industrial chain.

STATUS QUO AND EFFECTIVENESS OF "INTEGRATION OF TWO NETWORKS" DEVELOPMENT IN C CITY

Taking C City, one of the first pilot cities of garbage classification and construction of renewable resource recycling system, as an example, C city attaches great importance to garbage classification and construction of renewable resource recycling system, and has been continuously promoting the development of circular economy. At the present stage, the construction of "integration of two networks" in C City has achieved certain results.[4]

A Network of Urban Garbage Classification and Renewable Resources Recovery has been Basically Formed

Under the combined guidance of government departments and the role of market mechanism, C city has basically formed a garbage classification system at the municipal, district, town and street, community, community and township levels.[5] Recycling stations, sorting centers, distribution markets, industrial parks, bases and other renewable resource recovery networks have also been basically established. Intelligent and big data will be adopted to promote waste classification, delivery, collection, transportation and treatment, and fully explore the social benefits and economic value of waste materials and renewable resources recycling and utilization.

Carry out Various Forms of Garbage Classification Education and Propaganda into the Brain and Heart

In the information age to take the combination of online education propaganda pattern they sort the garbage, mainly through the importance and common sense, the interpretation of garbage sorting garbage classification small program promotion, garbage classification methods such as knowledge into the classroom of primary and secondary schools and community formed the dominant force in education propaganda, make full use of the Internet, television, WeChat, APP, newspapers such as the carrier, Let the professional knowledge of garbage classification benefit the masses, enhance the awareness of garbage classification and green environmental protection of the masses, cleaning and transportation personnel.

The Expansion of the Scale of Renewable Resources Industry Forms the Driving Effect of Leading Enterprises

Renewable resources industry has basically formed the scale, waste plastics, waste paper, scrap, waste glass, the comprehensive recovery of waste electronic products has reached more than 80%, renewable resources recovery has steadily in the direction of industrial and professional development, emerged a large number of leading enterprises of renewable resources at the same time, these companies have repeatedly entered the Chinese top renewable resources enterprise, The

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leading role of leading enterprises in the industry was given full play to promote the transformation from extensive to intensive waste reduction and resource increment in C City.

STRATEGY ANALYSIS OF "INTEGRATION OF TWO NETWORKS" IN C CITY

Identification of Key Factors of "Integration of Two Networks" in C City

Concept of accident tree analysis

Fault Tree Analysis comes from Fault Tree Analysis (FTA).[6] it using logic and reasoning to the harm of various system for identification and evaluation, which can analyze the direct cause of the accident, but also profound suggest the potential causes of the accident, describes the causation of the accident, straightforward, in the field of risk management, are often used to identify and measure of waste resources and the risk of waste material recycling and processing industries.

Use the accident tree for analysis purposes

According to the information provided by the accidents that may occur or have occurred in the "integration of the two networks" in C City, the key factors of similar accidents are found and analyzed, so as to take effective preventive measures to prevent similar accidents from happening again.

Description of accident tree

The accident tree takes some prescribed logic gate symbols for the events at the top, the events in the middle and the events at the bottom, and connects them according to certain logical relations.[7]

Steps of accident tree analysis

The flow analysis of the accident tree is shown in Figure 1.

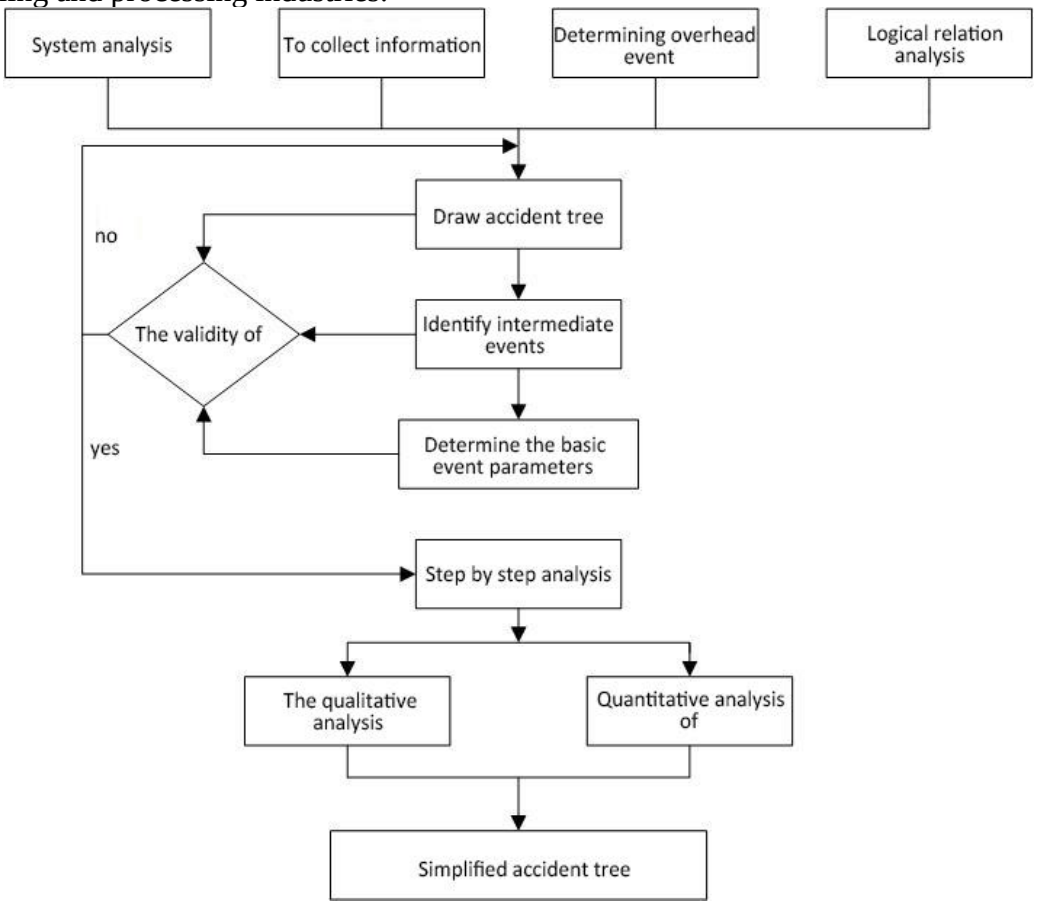

Fig.1 Process analysis of accident tree

Step 1: Familiarize yourself with the system being analyzed.

Step 2: Investigate all kinds of accidents that occur in the system.

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Step 3: Determine the overhead event.

Step 4: Investigate all cause events related to overhead events.

Step 5: Draw the accident tree.

Step 6: Qualitative analysis of accident tree.

Step 7: Quantitative analysis of the accident tree.

Step 8: Simplify the accident tree.

Accident tree construction of key factors of "Two-network fusion"

The failure of the fusion of the two networks in C city was assumed to be the top event by using the accident tree analysis method, and the possible causes were deduced backwards, and the most direct and fundamental reasons were repeatedly pushed down until the most direct and fundamental reasons were found, that is, the factors affecting the fusion of the two networks in C city were found.[8] This time, FreeFta software is used for tree construction drawing, simplification of accident tree, and solving the minimum cut set, structural importance, probability of overhead event and probability importance.

Step 1: Determine the top event: C city and network fusion failure

Step 2: Build the accident tree.

Step 3: Simplification of the accident tree, as shown in Figure 2.

Step 4: The symbol meaning of the accident tree is shown in Table 1.

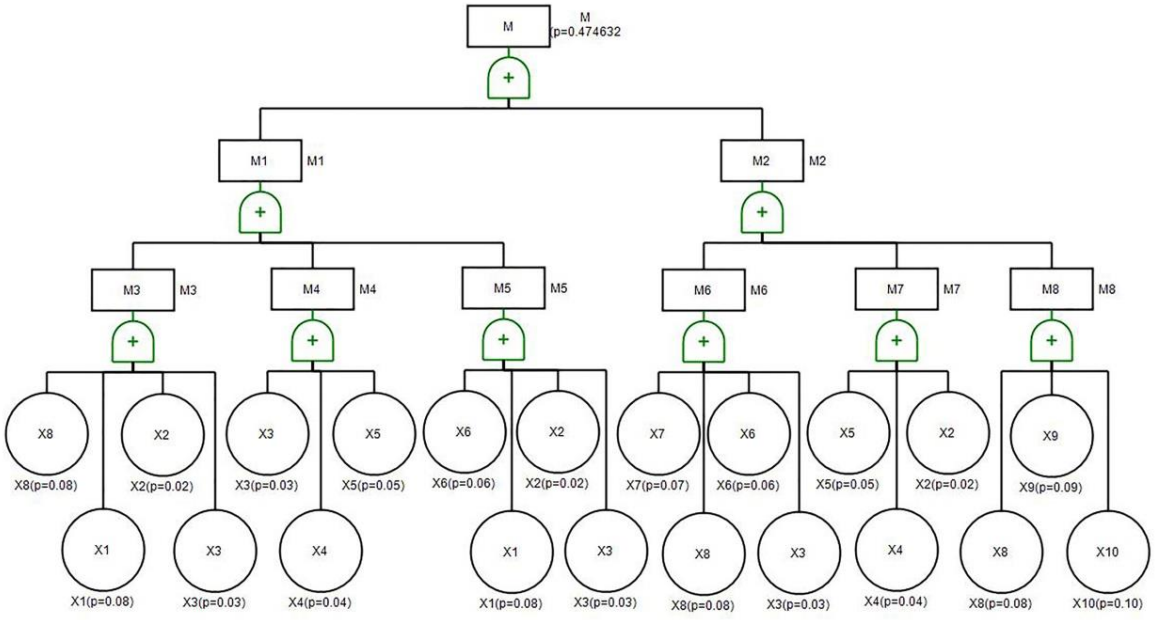

Fig.2 Accident tree of fusion key factors of two networks in C city

Table 1
Symbol Meaning of Accident Tree

Symbol	Event means
M	C The fusion of the two networks fails
M1	Garbage sorting failure
M2	The construction of renewable resources system failed
M3	The mixed loading and transportation of household garbage is serious
M4	Waste classification policies and regulations are missing
M5	Popularize the knowledge of garbage classification
M6	Renovation of renewable resources industry
M7	Lack of policies and regulations on renewable resources
M8	The industrial chain of renewable resources is fragile
X1	Waste classification budget is insufficient

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X2	Inadequate incentives for participation
X3	Relevant laws and regulations need to be improved
X4	Tax policy support is not in place
X5	The management system is not smooth enough
X6	The recognition of garbage classification is inconsistent
X7	Sporadic disorder is common
X8	Weak site, facilities and technology
X9	Big blind spots in regulatory statistics
X10	The industrial system is incomplete

The fifth step: excavate the relationship between the key factors of the story in depth, and solve the minimum cut set, structural importance, probability of the top event and probability importance as follows.[9]

a. Solve the minimum cut set of the accident tree of key factors of "two networks fusion" in C city, and get:

(1) (X1), X1: Waste classification budget is insufficient.

(2) (X10), X10: The industrial system is incomplete.

(3) (X2), X2: Insufficient incentive mechanism for participation.

(4) (X3), X3: Relevant laws and regulations need to be improved.

(5) (X4), X4: Tax policy support is not in place.

(6)(X5), X5: The management system is not smooth enough.

(7)(X6), X6: Inconsistent understanding of garbage classification.

(8)(X7), X7: Scattered small disorder is common.

(9)(X8), X8: Weak site, facilities and technology.

(10)(X9), X9: Big blind spot of regulatory statistics.

As can be seen from the solution of the minimum cut set above, all the 10 solutions are low-order cut sets. As long as any one of them is satisfied, the fusion failure of the two networks in C city can be caused.

b. To solve the structural importance of the accident tree of the key factors of the fusion of the two networks in C, the following equation can be obtained:

I(X10)=I(X9)=I(X8)=I(X7)=I(X6)=I(X5)=I(X4)=I(X3)=I(X2)=I(X1)

It can be seen from the above solution of structural importance that the influence degree of the 10 basic events in the accident tree on the occurrence of the top event is equal only from the structural analysis.

c. Determine the occurrence probability of the 10 basic causes of the accident, and then solve the occurrence probability of the top event of the accident tree of the key factors of the fusion of the two networks in CITY C, which is 0.474633 (keeping 6 decimal places).

d. The probability importance degree of the accident tree of the key factors of the fusion of the two networks in C city is obtained (6 decimal places are reserved respectively):

(1)X10(0.583741)

(2)X9(0.577327)

(3)X1(0.571051)

(4)X8(0.571051)

(5)X7(0.564911)

(6)X6(0.558901)

(7)X5(0.553012)

(8)X4(0.547258)

(9)X3(0.541616)

(10)X2(0.536089)

As can be seen from the above solution of probability importance, reducing the occurrence probability of one of the 10 basic events can make the occurrence probability of the top event drop rapidly.

PROBLEMS OF "TWO NETWORKS INTEGRATION" IN C CITY

Lack of Guidance from National Laws and Regulations and Policies and Regulations at Local Level

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In recent years, pilot cities in China have led other provinces and cities to gradually reduce the amount of garbage classification and increase the recycling of renewable resources. City C has also actively responded to the call of the country, and the household garbage classification system and renewable resources recycling network have basically formed, but the effect is far from the government propaganda and public expectations.[10,11] The reason lies in the imperfect policies and regulations on the integration of garbage classification and renewable resource recycling networks at the national and local levels and the absence of legal standards. Three main reasons appear in the practice of policies and regulations are deeply explored: First, the legislative system of waste classification and recycling of renewable resources is not sound and the enforcement force is not strong. There is a lack of legal standards, comprehensive laws and supporting regulations, and the clarity of legal responsibility is not enough. Tax policy support is not in place, which reduces the enforcement force of policies. Second, there are still no specific laws and regulations on the integration of the two networks at the national and local levels. Relevant standards, guidelines, regulations and rules should be promoted based on the idea of sustainable development of circular economy. Third, unbalanced regional development and overly general local laws and regulations in C city still make it difficult to implement garbage classification and recycle renewable resources. Specific garbage classification facilities are not complete, recyclables are not classified, and distribution centers of renewable resources industrial park are lacking.

Industry Consolidation and the Fragility of the Industrial Chain are Factors Restricting the Development of "Integration of the Two Networks"

At present, many cities in China have entered the "mandatory era" of garbage sorting.[12,13] the measure is not only beneficial to improve the human living environment, but also is beneficial to the effective recovery of renewable resources, but lack of garbage sorting facilities, garbage classification insufficient budget and incentive to participate in the mechanism cause C garbage during charge, make the specification of renewable resources from enterprises in the source, only the link to join in the center of the sorting, This increases the cost and reflects the fragility of the renewable resource industry chain, which has weak capacity in processing and utilization, many isolated and broken rings, incomplete industrial system, and large blind spots in the supervision and statistics of non-scale renewable resource enterprises.[14] Therefore, it is urgent for relevant departments in C city to jointly carry out renovation work of renewable resource industry, effectively improve the scattered disorder, weak site facilities and technology, and commercial-oriented concept of the renewable resource industry, and enhance the driving force of renewable resource incremental with the help of the joint efforts of individuals, families, enterprises, communities, neighborhood committees, property management and government. In the garbage classification, collection, transportation, treatment, recycling and regeneration of each link to achieve fine, coordinated and promote the guidance of garbage source classification, give full play to the multi-party linkage supervision and statistics mechanism.

Facing the Bottleneck of Management Operation Mechanism and Classified Disposal Capability

C from the bottom of the main component of renewable resources recovery system scavengers, residents and community pipe cleaners and sanitation personnel, through these personnel will be able to produce the economic value of recycled materials sold to flow or fixed collection points, again by mobile or fixed collection points collected sent to the renewable resources distribution center, and renewable resources distributing center sorting to renewable resources recycling processing enterprise, At the front end of the recycling process of renewable resources, only floating people enter communities, communities and dense residential areas, and renewable resource enterprises cannot enter communities. Such recycling forms are small, scattered and disorderly, with low recovery rate,

which affects the appearance of the city, which fully reflects the unsmooth and uncoordinated management and operation mechanism.[15,16] In addition, although the propaganda coverage rate of garbage classification is high in C city at the present stage, the green environmental protection concept of garbage classification is not popular enough, residents have not mastered the appropriate and effective garbage classification method, garbage classification and disposal has shortcomings, and the incentive mechanism for participation is insufficient to mobilize the enthusiasm of all parties. Renewable resources enterprises should actively participate in garbage sorting processing into the industry pioneer, follow the principle of reduction, harmless and recycling, incineration and landfill, composting disposal technical barriers that exist in the problem, gradually improve the state of C city garbage sorting disposal ability, encourage more people to pay attention to and understand the effectiveness of renewable resources, processing and utilizing.

"TWO NETWORKS INTEGRATION" ABILITY EVALUATION CASE

Background of the Case of "Two-Network Convergence"

Learning rules for orthogonalization of discrete Hopfield neural network

In 1982, The American physicist J. Hopfield proposed the Discrete Hopfield Neural Network (DHNN), in which the output of the binary neuron is only activated state 1 and inhibited state -1. Therefore, it is also known as the Discrete Hopfield Neural Network.[17] Make full use of the simulated memory mechanism of biological neural network, and adopt the dynamic working mode of multi-input and multi-threshold value to carry out full connection of neural network, and the network has good stability.

This paper adopts the design method of discrete Hopfield neural network orthotopic method to evaluate the ability of "fusion of two networks", and uses newhop ( ) function to correct the weight in the weight matrix in the MATLAB environment.[18,19] The algorithm steps of the orthogonalization method are shown in Algorithm 1:

[1] Enter N input modes $t=\{t^2,t^2,...,t^{N-1},t^N\}$, parameter τ, parameter h;

[2] To calculate $A=\{t^2-t^N,t^2-t^N,...,t^{N-1}-t^N\}$;

[3] Factor the singular value of a $A=USV^T$, And then you solve for the rank of A $K=rank(A)$;

[4] through $U^p=\{U^1,U^2,...,U^k\}$, and $u^m=\{u^{k+1},u^{k+2},...,u^N\}$ Respectively to solve $T^p=\sum_{i=1}^{K}u^i(u^i)^T$ and $T^m=\sum_{i=K+1}^{N}u^i(u^i)^T$;

[5] To solve the $W^t=T^p-\tau\times T^m$ and $b^t=t^N-W^t\times t^N$;

[6] To solve the $W=\exp(h\times W^t)$;

[7] To solve the $b=U\times\begin{bmatrix}C_1\times I(K) & 0(K,N-K)\\ 0(N-K,K) & C_2\times I(N-K)\end{bmatrix}\times U^T\times b^t$, among them $C_1=\exp(h)-1$, $C_2=-[\exp(-\tau\times h)-1]/\tau$

Overview of "integration of two networks" capability evaluation

The ability of "two networks integration" is the core ability of China's circular economy development, and its level has become an important index to measure the construction of a city's circular economy. The level of "two networks integration" ability not only affects China's own development, but also has a huge impact on the development of the city's circular economy.[20] How to accurately evaluate the ability of urban "two-network integration" has attracted more and more attention from the government, enterprises and residents. However, there are many and complex factors that affect the ability of "two-network integration",

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which cannot be verified by a certain mathematical model. At present, there are many methods to evaluate the ability of "two-network integration", but the shortcomings such as tedious work, time lag and human-centered factors generally exist, which greatly affect the evaluation results. Thus, how to quickly, efficiently, accurately, objectively and fairly evaluate the "two networks integration" ability of many cities? This is an urgent problem that needs to be solved.

Problem description

There are many factors that affect the ability of Chinese cities to integrate the two networks. This paper takes 10 key factors found out by story analysis as evaluation indicators: Waste classification budget (X1), incentive mechanism for participation (X2), relevant laws and regulations (X3), tax policy (X4), management system (X5), waste classification understanding (X6), scattered small disorder state (X7), site, Facilities and Technology (X8), supervision statistics (X9), industrial system (X10).The ability of "two networks fusion" is usually divided into five grades: very strong (I), very strong (II), average (III), poor (IV) and very poor (V).The "two-network integration" ability of 26 cities has been investigated and evaluated in the early stage. 10 evaluation index data after investigation and sorting are selected to identify 10 key factors in combination with the associative memory function of discrete Hopfield neural network. By constructing the "two-network integration" ability evaluation model of discrete Hopfield city, Improve the convergence rate and evaluation effect.

Model Building

Modeling ideas

The learning process of Hopfield neural network is described as follows: To incorporate the "two nets" ability of five typical classification and the corresponding evaluation index, based on the determine the balance point of discrete Hopfield neural network, and then input to classification of the urban evaluation index, "two network convergence" after learning for a typical classification evaluation index gradually reaching the balance point of discrete Hopfield neural network, after the learning state stability, The equilibrium point is the classification level that needs to be found.

Modeling steps

Based on the idea of model establishment, the modeling steps of "two-network convergence" capability evaluation are as follows:

Step 1: Ideal grade evaluation index design

Table 2 shows the relationship between "two-network integration" capability level and 10 evaluation indexes in 26 cities investigated and studied in this paper.

Table 2
"Two Networks Integration" Capability Level and Corresponding Evaluation Index of 26 Cities

Indicators The serial number	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	level
A	96	90	84	93	90	95	91	94	90	93	I
B	90	94	92	86	93	91	88	93	95	97	I
C	72	85	83	66	88	75	87	81	93	80	II
D	76	71	74	90	83	88	81	77	65	76	II
E	88	95	92	95	93	90	96	92	91	90	I
F	66	70	62	65	68	62	68	72	76	63	III
G	60	62	63	58	68	69	73	62	64	70	III
H	37	42	50	61	47	56	52	45	48	49	IV
I	52	45	46	57	56	35	38	47	50	51	IV
J	92	95	90	95	86	92	97	90	85	93	I
K	26	35	46	30	17	28	32	12	23	37	V
L	83	80	72	77	74	84	75	66	83	87	II
M	43	57	56	46	63	55	47	61	53	45	IV
N	36	22	15	26	37	23	28	29	37	22	V
O	18	43	34	39	25	36	20	36	35	32	V

P	64	67	69	62	61	57	62	68	65	61	III
Q	57	64	60	66	70	68	63	66	69	73	III
R	72	83	94	77	83	85	78	86	89	76	II
S	31	27	34	21	27	28	45	31	43	46	V
T	90	89	92	93	91	93	88	93	94	95	I
U	40	55	51	42	61	53	46	60	52	46	IV
V	63	61	66	56	65	68	75	61	63	71	III
W	71	83	81	68	84	71	85	82	91	81	II
X	90	91	94	91	87	91	95	89	82	91	I
Y	35	41	51	63	46	55	51	46	47	48	IV
Z	19	42	32	38	23	37	21	38	36	30	V

The equilibrium point of Hopfield neural network was found according to Table 2, and the ideal evaluation index method of five grades was adopted to calculate the average value of each evaluation index corresponding to the samples of five grades, as shown in Table 3.

Table 3
Ideal Evaluation Indexes of Five Grades

Indicators level	**X1**	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**X10**
I	91	92	91	92	90	92	93	92	90	93
II	75	80	81	76	82	81	81	78	84	80
III	62	65	64	61	66	65	68	66	67	68
IV	41	48	51	54	55	51	47	52	50	48
V	26	34	32	31	26	30	29	29	35	33

Step 2: the ideal grade evaluation index coding

Next, the ideal grade evaluation index is coded, and the evaluation index is mapped into 1 and -1 states of the neuron of the discrete Hopfield neural network. When the evaluation index value is ≥ a certain level, the corresponding neuronal state "1" is expressed by means of a fixed budget. When < a certain level of evaluation index value, ○ indicates the corresponding neuronal state "-1".See Figure 3.

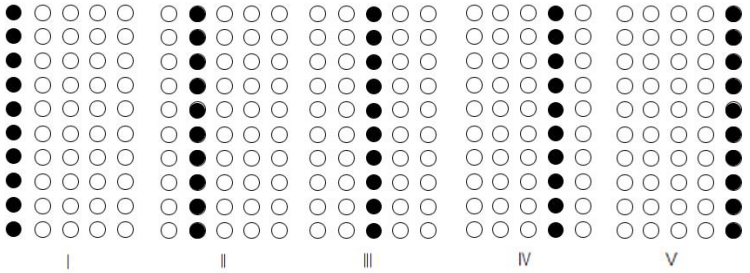

Fig.3 Coding of ideal evaluation index of five grades

Step 3: Coding of grade evaluation indexes to be classified

According to the coding rules described in Step 2, the "two-network integration" ability of the five cities is coded accordingly, as shown in Figure 4. After coding, the grade evaluation indexes of the five cities to be classified are shown in Figure 4 and Table 4.

Table 4
Evaluation Indexes of "Two Networks Integration" Ability Grade of Five Cities to be Classified

Indicators level	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
A	95	92	84	88	92	88	95	77	95	93
B	72	82	76	81	85	95	78	86	81	83
C	61	74	67	66	58	73	75	82	68	74
D	54	58	42	80	57	72	56	47	55	42
E	21	37	41	26	23	36	22	45	36	20

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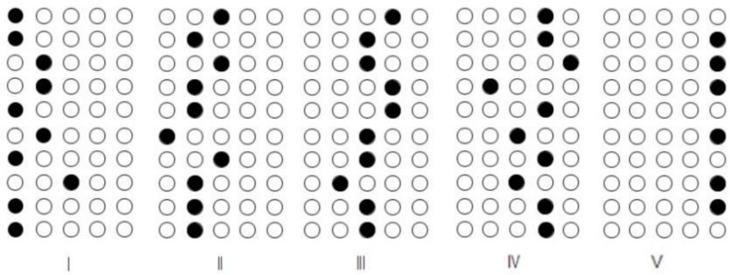

Fig.4 Codes of five city grade evaluation indexes to be classified

Step 4: Establish the discrete Hopfield neural network

Above, five grade evaluation indexes and codes of ideal ability of "two-network fusion" of five cities to be classified have been designed, and then newhop () function of MATLAB is used to create discrete Hopfield neural network combined with this case function.[21,22]

Step 5: Network learning and training, simulation experiment, data analysis

After the establishment of discrete Hopfield neural network, the coding of "two networks integration" ability grade evaluation index of five cities is first input into the Hopfield neural network, and then a certain number of learning and training are carried out in the network. Simulation results are obtained through experiments, and finally the calculated data is analyzed. By comparing the simulation experiment results with the real grade data, we can objectively evaluate the discrete Hopfield neural network model reasonably, and effectively classify the "two-network fusion" ability of five cities.

MATLAB Operation and Test

Establish MATLAB operating environment

To verify the ability of urban "two-network integration", the MATLAB discrete Hopfield neural network operating environment should be established first, and the functions in the MATLAB neural network toolbox should be used for simulation. The steps of setting up the operating environment are as follows:

Step 1: Initialize environment variables. Before running, debugging, and testing the program, clear all variables in the workspace and all commands in the Command window. Initialize environment variables as follows.

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```
%% initializes environment variables
clear all
clc
```

Step 2: Five 10□ and five matrices containing only "1" and "-1" were used to represent the ideal evaluation index codes of five grades. The data of grades I, II, III, IV and V were input to process_1, PROCESS_2, PROCESS_3, PROCESS_4 and PROCESS_5 respectively.It is stored in a process.mat file.The five ideal levels I, II, III, IV and V in Figure 3 are coded as follows.

```
process_1=[ 1 -1 -1 -1 -1    process_2=[- 1 1 -1 -1 -1    process_3=[ -1 -1 1 -1 -1
1 -1 -1 -1 -1    - 1 1 -1 -1 -1    -1 -1 1 -1 -1
1 -1 -1 -1 -1    - 1 1 -1 -1 -1    -1 -1 1 -1 -1
1 -1 -1 -1 -1    - 1 1 -1 -1 -1    -1 -1 1 -1 -1
1 -1 -1 -1 -1    - 1 1 -1 -1 -1    -1 -1 1 -1 -1
1 -1 -1 -1 -1    - 1 1 -1 -1 -1    -1 -1 1 -1 -1
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1 -1 -1 -1 -1    - 1 1 -1 -1 -1    -1 -1 1 -1 -1
1 -1 -1 -1 -1    - 1 1 -1 -1 -1    -1 -1 1 -1 -1
1 -1 -1 -1 -1 ]    - 1 1 -1 -1 -1 ]    -1 -1 1 -1 -1 ]
process_4=[ -1 -1 -1 1 -1    process_5=[ -1 -1 -1 -1 1
-1 -1 -1 1 -1    -1 -1 -1 -1 1
-1 -1 -1 1 -1    -1 -1 -1 -1 1
-1 -1 -1 1 -1    -1 -1 -1 -1 1
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-1 -1 -1 1 -1 -1 -1 -1 -1 1
-1 -1 -1 1 -1 -1 -1 -1 -1 1
-1 -1 -1 1 -1 -1 -1 -1 -1 1
-1 -1 -1 1 -1 -1 -1 -1 -1 1
-1 -1 -1 1 -1 -1 -1 -1 -1 1
-1 -1 -1 1 -1] -1 -1 -1 -1 1]

Then, the codes corresponding to Figure 4 are input into sim_1, sim_2, sim_3, sim_4 and sim_5 respectively, which are uniformly stored in a sim. mat file. Therefore, the grade evaluation index codes of the "two-network convergence" ability of the five cities to be classified are shown as follows:

sim_1=[1 -1 -1 -1 -1 sim _2=[-1 -1 1 -1 -1 sim _3=[-1 -1 -1 1 -1
1 -1 -1 -1 -1 -1 1 -1 -1 -1 -1 -1 1 -1 -1
-1 1 -1 -1 -1 -1 -1 1 -1 -1 -1 -1 1 -1 -1
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-1 1 -1 -1 -1 1 -1 -1 -1 -1 -1 -1 1 -1 -1
1 -1 -1 -1 -1 -1 -1 1 -1 -1 -1 -1 1 -1 -1
-1 -1 1 -1 -1 -1 1 -1 -1 -1 -1 -1 1 -1 -1
-1 -1 -1 1 -1 -1 -1 1 -1 -1 -1 -1 1 -1 -1
1 -1 -1 -1 -1] -1 1 -1 -1 -1] -1 -1 1 -1 -1]

sim _4=[-1 -1 -1 1 -1 sim _5=[-1 -1 -1 -1 -1
-1 -1 -1 1 -1 -1 -1 -1 -1 1
-1 -1 -1 -1 1 -1 -1 -1 -1 1
-1 1 -1 -1 -1 -1 -1 -1 -1 1
-1 -1 -1 1 -1 -1 -1 -1 -1 -1
-1 -1 1 -1 -1 -1 -1 -1 -1 1
-1 -1 -1 1 -1 -1 -1 -1 -1 -1
-1 -1 1 -1 -1 -1 -1 -1 -1 1
-1 -1 -1 1 -1 -1 -1 -1 -1 1
-1 -1 -1 1 -1] -1 -1 -1 -1 -1]

\

%% input five cities to be classified "two networks integration" grade evaluation index coding into the program

load sim. mat

Step 3: Create the target vector of Hopfield neural network, take the coding of the ideal five grade evaluation indexes as the balance point, and input the following codes:

%% Locate the target vector

T= [process_1 process_2 process_3 process_4 process_5]

Step 4: Use newhop function of Matlab toolbox to establish discrete Hopfield neural network, input the following code:

Establish discrete Hopfield neural network

net=newshop(T);

Step 5: Import the "two-network integration" ability grade evaluation index codes of the five cities to be classified into the discrete Hopfield neural network for simulation experiments.

%% discrete Hopfield neural network is simulated by SIM function

```
A = {[sim_1 sim_2 sim_3 sim_4 sim_5]};
Y = sim(net,{25 20},{},A);
Y1 = Y{20}(:,1:5)
Y2 = Y{20}(:,6:10)
Y3 = Y{20}(:,11:15)
Y4 = Y{20}(:,16:20)
Y5 = Y{20}(:,21:25)
```

Step 6: The code of the simulation result of discrete Hopfield neural network is as follows.

```
%% simulation run result code
result = {T;A{1};Y{20}};
figure
for p = 1:3
    for k = 1:5
        subplot(3,5,(p-1)*5+k)
        temp = result{p}(:,(k-1)*5+1:k*5);
        [m, n] = size(temp);
        for i = 1:m
            for j = 1:n
                if temp(i,j)>0
plot(j,m-i,'ko','MarkerFaceColor','k');
```

```
                else
                    plot(j,m-i,'ko');
                end
                hold on
            end
        end
        axis([0 6 0 10])
        axis off
        if p == 1
            title(['process' num2str(k)])
        elseif p == 2
            title(['pre-sim' num2str(k)])
        else
            title(['sim' num2str(k)])
        end
    end
```

end

Step 7: The discrete Hopfield neural network simulation finally presents the results in the form of graphics. The output in the first line of Figure 5 shows the codes of five ideal grade evaluation indexes, the output in the second line shows the codes of five city grade evaluation indexes to be classified, and the output in the third line represents the graphic simulation results of the discrete Hopfield neural network.[23,24] From the analysis of the display situation in Figure 5, it can be concluded that the discrete Hopfield neural network model designed and created can effectively classify the ability level of urban "two-network integration", so as to objectively and fairly evaluate the ability of urban "two-network integration" and provide reference for other solutions of urban "two-network integration".[25]

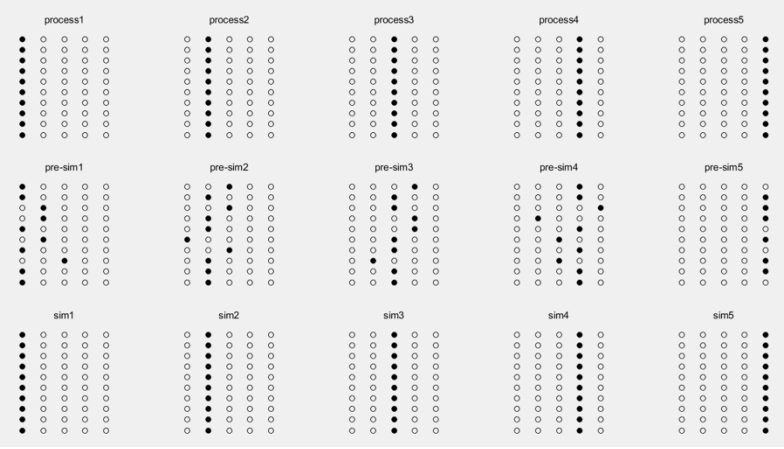

Fig.5 Simulation results of "two-network convergence" capability level in 5 cities to be classified

COUNTERMEASURES TO IMPROVE THE ABILITY OF "TWO NETWORKS INTEGRATION" IN CHINA

Establish the "Integration of the Two Networks" Governance System, Which is "Government-Led, Three-Governance Linkage"

In order to improve the precision of garbage sorting and sustained growth of renewable resources, to strengthen the government's plan as a whole and leading function, perfect the "two nets fusion" at national level and local level in the laws and regulations, the tax policy,[26]gradually establish "government-led, three linkage" cure "two network integration" management system, the combination of urban and rural construction and layout planning, "two network convergence" Build a grid linkage governance platform of "three governance" based on rule of law, autonomy and intelligent governance, and further promote the healthy and orderly development of garbage classification and renewable resources industry.

Give Full Play to the Demonstration and Leading Role of Leading Enterprises in Waste Classification and Renewable Resources

Around the waste plastics, waste paper, scrap and waste tires, waste glass, waste products, waste household appliances recycling, rational layout of recycling network, distribution centers, industrial park, cultivating more garbage sorting and leading enterprises of renewable resources,[27] increased

leading enterprise on the technical equipment and technological process of innovation, make leading enterprises relying on capital markets play a demonstration leading role, From the strategic height of sustainable development to achieve the integration of garbage classification and recycling of renewable resources, further consolidate, expand and improve the quality of circular economy.

Accelerate the Establishment of Standards for Garbage Classification and Recycling of Renewable Resources, and Constantly Improve the Supervision System

Calls for the government, enterprises and individuals three attaches great importance to and participate in the garbage classification and renewable resources recovery standards,[28] from the source segment garbage garbage classification categories and small category, in order to strengthen the management of technology, facilities and three aspects of synergy, actively popularized to the society from all walks of life to follow standardized process specification, effectively reduce the garbage classification and the cost of renewable resources recovery, We will continue to improve the supervision system of local governments, industry associations, third-party community organizations and audit institutions, and strengthen the working ideas, supporting measures and oversight responsibilities.

CONCLUSION

When a city's tobacco industry reduction in garbage sorting and increase in recycling of renewable resources are to achieve international recognition, it shows that the development of circular economy and the construction of ecological civilization have achieved certain results. This paper uses the fault tree analysis method to determine the C city tobacco industry "two network convergence" ability, the key problems to create discrete Hopfield neural network model, including C city selected five to five levels of classification cities belong to the tobacco industry "two nets fusion" ability evaluation, according to the results of model analysis is pointed out that enhance the ability of China's tobacco industry "two network convergence", It is of far-reaching significance to the vigorous development and expansion of circular economy.

Acknowledgement

This work was supported by 2020 "Digital Economy Application development Research Team" project of Chongqing Business Vocational College.

Author Declaration

This research is not funded by any organization related to tobacco production

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