Analysis of the Current Situation and Enhancement Path of Huaihai Campaign Spirit Dissemination

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Abstract. Red culture, as social memory, has an important influence in national development and social progress, carrying the lofty ideals of the great rejuvenation of the Chinese nation, embodying the great spirit of the times, and demonstrating the glorious history and fine traditions of the Communist Party of China. The revolutionary spirit embedded in the Huaihai Campaign is an indispensable part of the spiritual genealogy of the CPC. The sites and cultural relics and historical materials remaining from this historic battle bear witness to the heroic struggle of the revolutionary forefathers in a difficult environment, and these traces inspire the people to move forward with perseverance. This study explores the current dissemination status of the spirit of the Huaihai Campaign, in addition to analysing dissemination enhancement strategies using clustering, principal component analysis and random forest model. This study not only enriches the theoretical research on the spirit of Huaihai Campaign in the academic circles, but also helps to further condense the connotation and contemporary value of the spirit of Huaihai Campaign, so as to promote the dissemination of the spirit of Huaihai Campaign.

Keywords: Huaihai Campaign Spirit; Cluster Analysis; Principal Component Analysis;Random Forest Model.

1. Introduction

The spirit of Huaihai Campaign is a precious spiritual wealth left by the Party and the People's Army for future generations. In the journey of the new era, we should continue to carry forward the spirit of the Huaihai Campaign, pass on the red revolutionary genes, and keep moving towards a greater goal, from one victory to another. The revolutionary martyrs in the Huaihai Campaign were undaunted in the face of battle, demonstrating a firm will to fight and noble qualities, and these actions and spirits converged into the great spirit of the Huaihai Campaign. Inheriting and promoting the revolutionary spirit of the Huaihai Campaign is also an important way to establish correct ideal beliefs and life values for contemporary youth. The pioneers of the Huaihai Campaign fought for their ideals, held fast to their beginnings, remembered their mission, and fought tirelessly for the cause of the Party and the people, and these qualities are an important inspiration for contemporary youth.

2. Organization of the Text

2.1. Analysis of the cognitive and communication characteristics of the spirit of Huaihai Campaign based on cluster analysis

2.1.1. Participants

The survey targets the general public across the country. In order to have a better sampling, we take the latest official announcement of first-tier, second-tier, third-tier, fourth-tier and other cities as the benchmark. In view of the fact that some users may give up filling out the questionnaire in the middle of the survey or fail to fill out the questionnaire, we assume that the invalidity rate is 25%, so the actual sample size is 1,200.

Table 1. Sampling frame

City Classification	Average Resident Population per 10,000 People	Average Population Percentage (%)	Sample Size (Number of Responses)
First-tier Cities	1626	46.98%	235
Second-tier Cities	644	18.85%	94
Fourth-tier Cities	122	3.57%	18
Other Cities	59	2.35%	12

2.1.2. Model construction

Firstly, questions 18-25 in the questionnaire were divided into three dimensions of cognitive information, willingness to promote, and evaluation system based on their characteristics, and the specific classification is shown in Table 2.

Table 2. Classification Table

Cognitive Information	I believe that the spirit of the Huaihai Campaign still holds contemporary significance for the current societal development.
	I believe that learning about and promoting the Huaihai Campaign contributes to strengthening national pride and cohesion.
	I believe that the stories and heroic deeds of the Huaihai Campaign are inspirational and motivating.
Promotion Willingness	I am willing to share the history and spirit of the Huaihai Campaign with the people around me.
	The spirit of the Huaihai Campaign is worth widespread inheritance and promotion.
	I am willing to learn about the relevant knowledge of the Huaihai Campaign through various means.
Evaluation System	The spirit of the Huaihai Campaign has a positive impact on my personal growth and development.
	I believe that the spirit of the Huaihai Campaign holds significant historical value.

Then K-Means clustering algorithm is used to cluster for the above three dimensions, if the distance between the samples is close, they are grouped into one category, and the scatter plot obtained is shown in Figure 1:

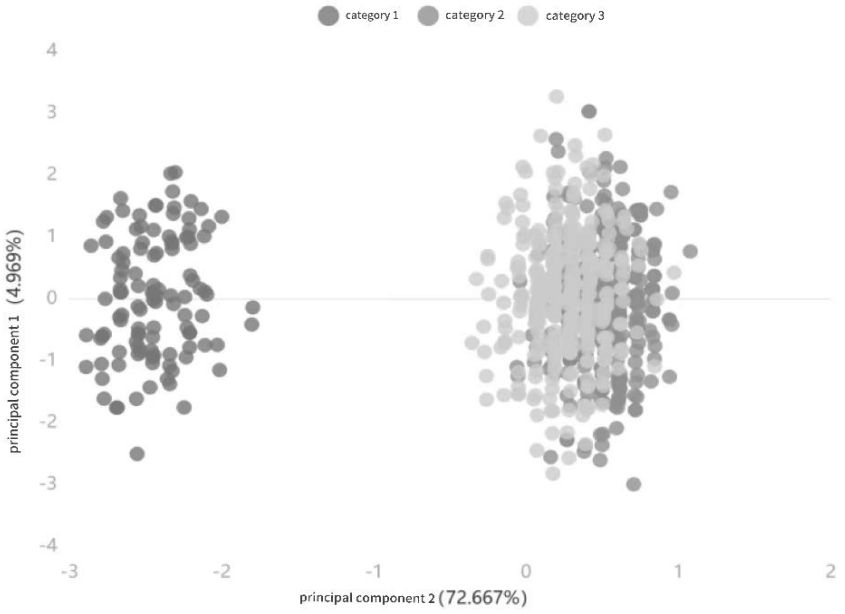


Figure 1. Cluster Scatter Plot

2.1.3. Result Analysis

Class A users: this type of users have sufficient knowledge about the Huaihai Campaign, they know that the Campaign has a good positive effect on the development of the nation and the improvement of their own quality, they are willing to promote the spirit of the Huaihai Campaign, and they have a very high evaluation of this type of red spirit.

Class B Users: Class B users have an average knowledge of the Huaihai Campaign, they are aware that the spirit and stories of the Huaihai Campaign have certain positive effects, but they do not know the specifics, and they have reservations about promoting the spirit of the Huaihai Campaign. For this type of users, it is also necessary to strengthen the explanation of the red spirit and stories.

Class C Users: Class C users are completely ignorant of the basic situation of the Huaihai Campaign and do not agree with the impact of the spirit of the Huaihai Campaign on their own and the country's development; they are less willing to promote the spirit of the Huaihai Campaign. For this type of people, organizations at all levels should increase the promotion of patriotic education to guarantee their basic understanding of the Red Spirit.

2.2. Comprehensive Evaluation of Factors Influencing Differences in the Current Status of Spiritual Cognition of the Huaihai Campaign Based on Principal Component Analysis

2.2.1. Construction of an evaluation indicator system

After the preliminary collation of the original collection data, using IBM-SPSS statistical software and the basic principles of the principal component factor analysis method for statistical correlation analysis of 10 types of evaluation variables, through the eigenvectors, eigenvalues and cumulative contribution rate of the sampled data to find out the five principal component factors affecting the willingness to inheritance, and based on the summary of Huaihai Battle Spiritual Cognition Status Quo Differences in Influence Factor Variables to arrive at the following evaluation indexes of the influencing factors at all levels as shown in Figure 2:

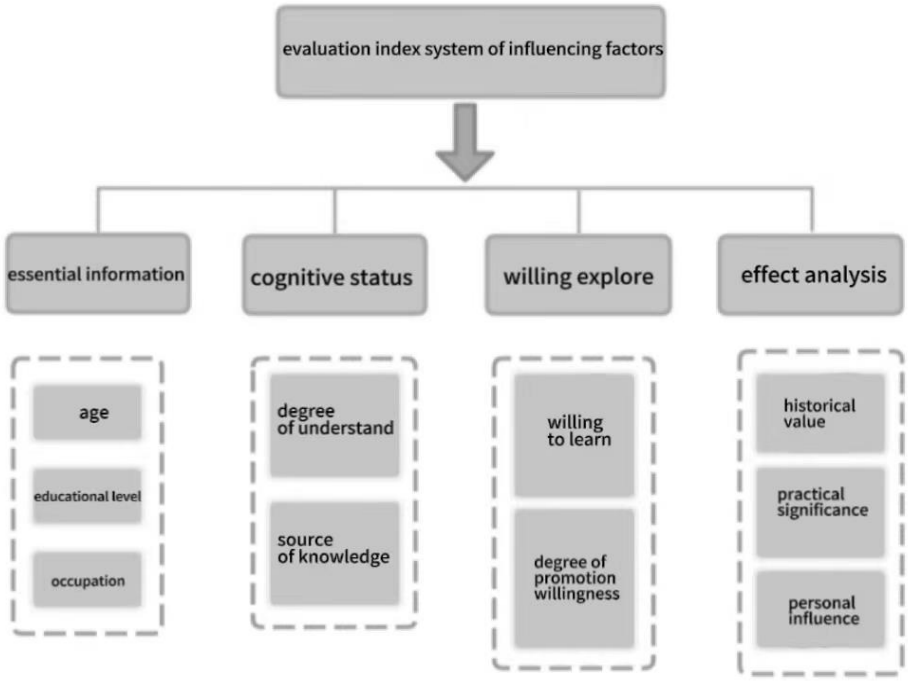


Figure 2. Evaluation Index System

2.2.2. KMO and Bartlett test

The KMO test can be used to verify whether the sample data of the indicators we chose can be applied to the principal component factor analysis method, and the method can be applied only if the KMO value is more than or close to 0.6. In our statistical table of this sample data, the result of KMO is 0.722, which indicates that the sampled data can be applied to the principal component factor

analysis method. Also the significance value of Bartlett's test of sphericity is less than 0.05, which indicates that the statistical significance of our sample data is strong.

Table 3. KMO Test and Bartlett's Test

Bartlett's Sphericity Test	Approximate Chi-Square	1205.334
	df	45
	P	0.000***

2.2.3. Analysis of results

Based on the above quantified evaluation indicators of the 10 influencing factors, using SPSS factor analysis and principal component analysis, and setting the eigenvalue greater than 1 to derive the contribution rate, variance explained rate, and cumulative variance explained rate of each principal component are shown in Table 4.

Table 4. Total Variance Explained Table

Total Variance Explained			
Components	Eigenvalues		
	Eigenvalues	Variance Explained (%)	Cumulative Variance Explained (%)
1	2.372	23.719	23.719
2	1.13	11.298	35.016
3	1.059	10.589	45.606
4	1.034	10.339	55.945
5	0.992	9.921	65.866
6	0.956	9.562	75.427
7	0.922	9.218	84.645
8	0.911	9.105	93.751
9	0.323	3.228	96.979
10	0.302	3.021	100

We also output the results of principal component weights, which are shown in Table 5. From Table 5, the principal component analysis selects five principal components, whose weights are 36.01% for the first principal component, 17.153% for the second principal component, 16.077% for the third principal component, 15.698% for the fourth principal component and 15.062% for the fifth principal component, with a cumulative contribution rate of 65.866%, i.e., the five principal components cover more than 65.866% of the 10 impact assessment indicators of the data information.

Table 5. Principal Component Weight Results

Name	Variance Explained (%)	Cumulative Variance Explained (%)	Weight (%)
Principal Component1	0.237	23.719	36.01
Principal Component2	0.113	35.016	17.153
Principal Component3	0.106	45.606	16.077
Principal Component4	0.103	55.945	15.698
Principal Component5	0.099	65.866	15.062

The eigenvector matrix is able to reflect the loadings of the indicators on each principal component, and as can be seen in Table x, the first principal component is mainly determined by the relevance factor. The variables belonging to the dimension of effect analysis have high loadings on the second principal component, i.e., the second principal component mainly represents the influence of the cognitive status factor. Variables belonging to the dimension of basic information perspective have high loadings on the third principal component, i.e., the third principal component mainly represents the basic information perspective factor, as well as the fourth principal component, which is also a

basic information perspective factor, and in the fifth principal component, which belongs to the degree of willingness perspective.

Table 6. Component Matrix

Name	Component				
	Component1	Component2	Component3	Component4	Component5
Age	0.03	-0.432	0.179	-0.184	0.597
Educational Level	0.027	0.459	0.325	0.203	-0.318
Occupation	0.008	-0.17	0.587	0.422	0.189
Level of Understanding	0.017	0.139	-0.55	0.274	0.201
Source of Knowledge	0.021	0.446	-0.117	-0.286	0.527
Willingness to Learn	-0.015	0.451	0.213	0.27	0.429
Degree of Promotion Willingness	-0.003	0.19	0.317	-0.691	-0.103
Personal Influence	0.374	-0.001	0.004	-0.007	-0.004
Practical Significance	0.375	0.013	0.004	-0.059	-0.053
Historical Value	0.372	-0.018	-0.016	0.065	0.006

2.2.4. Integrated evaluation of impact factors

Let the investigator's age, education, occupation, degree of understanding, understanding channels, degree of willingness to learn, degree of willingness to promote, personal influence, practical significance, historical value in the current period of the proportion of 10 variables after standardisation of the data in the order of X1 ~ X10, then according to the table to get the principal component expression.

After using the quantified variable values to calculate the above five principal components, combined with the weights of each principal component, the comprehensive evaluation index of the factors influencing the differences in the current state of knowledge of the spirit of the Huaihai Campaign is constructed as follows.

$$F = 0.3601x_1 + 0.1715x_2 + 0.1608x_3 + 0.1575x_4 + 0.1506x_5$$

2.2.5. Result Analysis

Through the above principal component analysis, we can conclude that the main factors influencing the differences in the current cognitive status of the spirit of the Huaihai Campaign are the people's awareness of the significance of the spirit of the Huaihai Campaign, the individual's level of education, the industry they are in contact with, and the degree of willingness to study and publicise and promote the campaign at a later stage, etc. Therefore, the state propaganda of the spirit of the Huaihai Campaign and the improvement of the citizens' level of education are conducive to the reduction of the current cognitive status of citizens' awareness of the spirit of the Huaihai Campaign. Differences.

2.3. Empirical Analysis of Random Forest Model on the Influential Factors of Spiritual Development in Huaihai Campaign

2.3.1. Construction of an evaluation indicator system

The paper constructs a random forest model using the willingness to share the history and spirit of the Huaihai Campaign to people in the neighbourhood as the dependent variable and others as independent variables to analyse the degree of influence of different characteristics on the development of the spirit of the Huaihai Campaign.

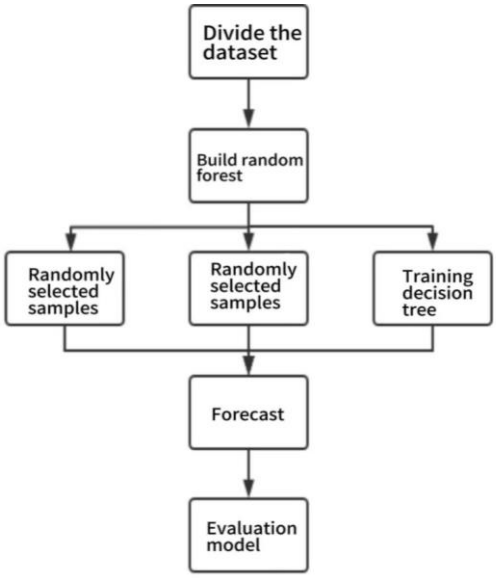


Figure 3. Flowchart of Random Forest Model Construction

2.3.2. Random Forest Prediction Process

The random forest prediction model calculates the average of the predictions of all trees by making predictions independently for each decision tree alone data and then aggregating these predictions. Its formula is shown in 1.

$$Y = 1/n \sum f(xi) \tag{1}$$

where Y is the prediction of the random forest, n is the number of decision trees, and $f(xi)$ is the prediction of each decision tree.

Each decision tree is trained on a subset of the data, which is obtained by random sampling with put-back. In addition, only a subset of the input features is considered for each split, and this subset is obtained by random sampling without put-back.

2.3.3. Dynamic forecasting process

If the existing time series dataset is denoted as $\{x_1, x_2, x_3, ..., x_t, ..., x_n\}$, x_i for time step i, where n represents the total number of time steps in the dataset, and the initial time is p, you can use $\{x_1, x_2, ..., x_p\}$ as the training dataset to train the model and obtain the prediction, denoted as $x_{(p+1)^{hat}}$. Then, you add the actual observed value $x_{(p+1)}$ to the training dataset, creating a new training dataset $\{x_1, x_2, ..., x_p, x_{(p+1)}\}$. You repeat this process, using the updated training dataset to predict the next time step $x_{(p+2)}$, and continue until you predict the last time step in the dataset. This is a dynamic forecasting process where you update the model and training data step by step as new observations x_n become available.

2.3.4. Data training process

The data is divided into dataset, validation set and test set in the ratio of 8:1:1 and then the data is trained by bringing customised parameters into the dynamic random forest prediction model.

2.3.5. Model Testing

Table 7. Evaluation Metrics for the Training Set and Test Set

	MSE	RMSE	MAE	R^2
Training Set	0.444	0.666	0.541	0.761
Test Set	0.684	0.827	0.659	0.741

The values of MSE, RMSE and MAE in Table 7 are all less than 1, which indicates that the error between the predicted value and the real value is small, meanwhile, R2>0.7, which indicates that the prediction result of the model has a certain degree of reliability.

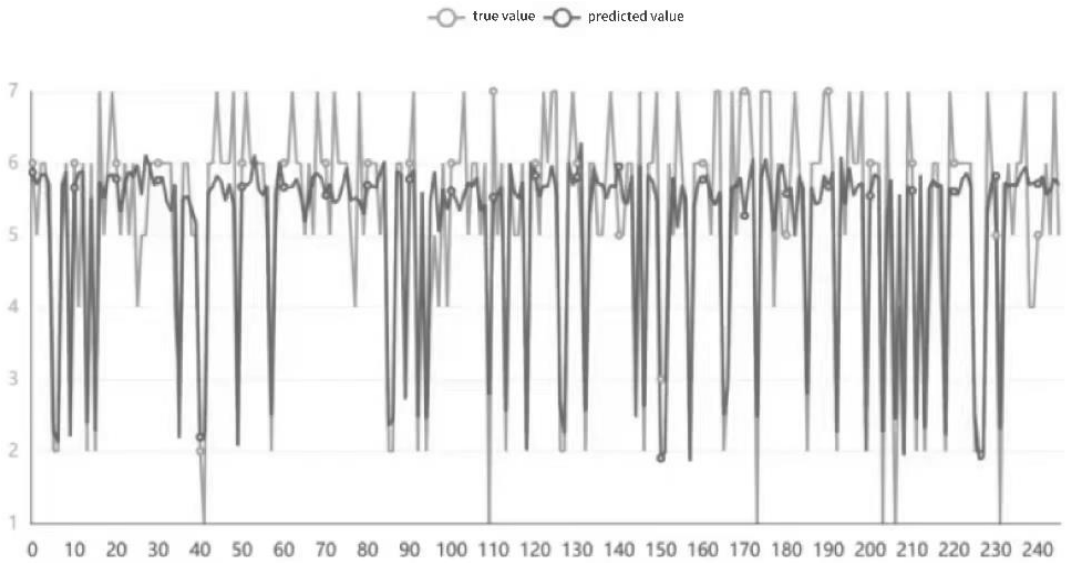


Figure 4. Comparison Chart of Predicted Values and Actual Values

Figure 4 shows the comparison between the predicted and true values of the model, where the two discounts are highly overlapping, proving the accuracy of the model's predictions.

2.3.6. Result Analysis

The autonomy of the people in learning the knowledge related to the Huaihai Campaign has a great influence on the development of the spirit of the Huaihai Campaign, and the extent to which the public's knowledge of the stories of the Huaihai Campaign influences its development is relatively small.

3. Literature References

Many scholars have summarised and interpreted the connotation of the spirit of the Huaihai Campaign according to different research perspectives, among which, Hu Huaili (2022), "perpetuating the spirit of the Huaihai Campaign in the new era--interpreting the spirit of the Huaihai Campaign in "sixteen words"", distils the revolutionary spirit of the Huaihai Campaign as "listening to the Party's command, relying on the people, unity and coordination, and decisive battle" from historical facts and interprets them one by one. The revolutionary spirit of the Battle of Huaihai is "listening to the party's command, relying on the people, unity and coordination, and decisive battle", and interprets it one by one. Wang Weiliang (2019), "On the Connotation of the Spirit of the Huaihai Campaign and Its Significance in the Era," points out that the spirit of the Huaihai Campaign is the spirit of adhering to the unified leadership of the Party, unity and collaboration, and taking the overall situation into account; the spirit of not forgetting the original heart, adhering to the ideals and beliefs, and fighting for the independence of the nation and the liberation of the people; the spirit of fearlessness of not being afraid of the strongest enemies and difficulties, and the fearlessness of challenging and defeating all the strongest enemies; and the spirit of "people-centred". people-centred" spirit. Song Xiaoho (2019), "Inheriting the Spirit of the Huaihai Campaign and Gathering the Strength to Advance in the New Era," argues that the spirit of the Huaihai Campaign is the spirit of decisive battle and victory of the Huaihai Campaign, which is hard to eat "sandwich rice," as well as the spirit of unity and collaboration, and the spirit of the "cart spirit" of relying on the people to win battles. Wen Ruimao (2018), "The Historical Significance of the Huaihai Campaign and the Contemporary Implications of the Spirit of the Huaihai Campaign", points out from the level of the Central Military Commission, the level of campaign coordination, the level of the grassroots

commanders, and the level of the people's support for the front line, that the revolutionary spirit of the Huaihai Campaign is the spirit of "scientific decision-making, unity and cooperation, heroic fighting, and relying on the masses".

At present, there are fewer studies on the value of the spirit of the Huaihai Campaign, among which Xin Qin (2021), "An Analysis of the Spirit of the Huaihai Campaign and Its Era Value", summarises the significance of the Huaihai Campaign and the connotation of the three revolutionary spirits, and then discusses the contemporary value of the spirit of the Huaihai Campaign and its inspiration from the aspects of the Party's leadership of the great cause, and the people being the creators of history. Lou Zhigang (2022), "The Spiritual Connotation of the Huaihai Campaign and Its Contemporary Value", points out that the spirit of the Huaihai Campaign is a valuable spiritual wealth of the people of the whole country, and it has a contemporary value for the realisation of the Chinese dream of the great rejuvenation of the Chinese nation, and argues that obeying the Party's command and being bold in decisive battles are the fundamental followers in the face of danger and obstruction, adhering to the people's line is the eternal value pursuit of the Communist Party, and being courageous in assuming responsibility is the spiritual temperament that the young people should have. Li Haijian (2019), "Social Memory and Awakening Path of Huaihai Campaign Red Culture," argues that the revolutionary spirit of the Huaihai Campaign is of great significance to the deepening of the reform of the times, and that by combining the watching of film and television works with practical visits to the Huaihai Campaign Memorial Hall, the promotion of the revolutionary spirit of the Huaihai Campaign can awaken and build up a firm social memory of the red culture of the Huaihai Campaign. Jiang Yuling and Li Guoqin (2018), "An Analysis of the Contemporary Value and Promotion Mechanism of the Huaihai Campaign Spirit," outlines three aspects of the contemporary value of the spirit of the Huaihai Campaign, namely, providing value leadership for the realisation of the Chinese Dream, stimulating the sense of mission and the concept of the overall situation, and promoting the practice of the concept of putting the people at the centre of everything, and argues that the current problems among party members and cadres need to be solved by the supply of spiritual food such as the spirit of the Huaihai Campaign.

4. Summary

To collect the basic personal information of the surveyed residents nationwide, including gender, age, time of questionnaire completion, highest education level, occupation, monthly income and place of residence, etc., and to fully explore the differences in the current status of awareness of the spirit of the Huaihai Campaign caused by factors such as gender, age, income, and education level. Collecting the basic cognitive situation of residents in each district nationwide on the spirit of Huaihai Campaign, including the degree of understanding of the Huaihai Campaign and the current situation and path of promotion and dissemination, and analyzing and researching the current cognition of the people on the spirit of Huaihai Campaign by exploring the influencing factors of the mass acceptance behaviours to find out the differences caused by the current cognitive situation of the spirit of the Huaihai Campaign. It is found that people with different cognitive situations learn differently about the spirit of the Huaihai Campaign (Study 1), the people's awareness of the significance of the spirit of the Huaihai Campaign, the individual's level of education, the industry they are in contact with, as well as the degree of willingness to learn and publicise and promote the spirit of the Huaihai Campaign in later stages of the study (Study 2), and the people's autonomy to learn the knowledge related to the Huaihai Campaign has a great impact on the development of the spirit of the Huaihai Campaign (Study 3), so the government can strengthen the Therefore, the government can strengthen the policy guarantee, encourage and support the dissemination of the spirit of the Huaihai Campaign; comprehensively strengthen the ideological education and promote the construction of human resources; at the social level, it can make use of diversified media to talk about the "spirit of the Huaihai Campaign"; and individuals can promote self-confidence and be the "disseminators" of the

spirit of the Huaihai Campaign. The individual can promote self-confidence and be a "disseminator" of the spirit of the Huaihai Campaign.

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