

## Research Article

# The Synergy between City Human Resources and City Economy Development Based on the City Marketing: The Case of Chengdu

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City human resources and the city economic development have a synergistic effect to attract high-quality talent and to encourage the sustainable development of the urban economy in the city marketing. Based on synergetics, we find out the evaluation indexes between the city human resources subsystem and urban economic development subsystem and constructed the evaluation system and model, and then used the yearbook data of Chengdu human resources and economic development from 2002 to 2012 and carried on empirical research. The results show that the level of coordinated development is weak between city human resources and city economic development at Chengdu, but it keeps rising slowly. The strong policy support shall be provided to Chengdu human resources and economic development by Chengdu government.

## 1. Introduction

The city is an important node and fulcrum of economic activities, political life, and cultural development. With the economic globalization, talents have been attracted by the city to expand its human resources and to promote the development of economy, so talent is critical to economic and social progress of the city. As a platform of the talent and economic development, the city should implement city marketing, in order to meet the demands of city human resources and economic growth. Therefore, it has a crucial practical significance for promoting the city economic growth and the city sustainability development to measure and test the synergy degree between city human resources and city economic development.

China is facing the pressure of urbanization; how to improve city branding, to attract high-quality talent, and to stimulate and promote economic sustainable development are an essential problem now. Chengdu is an important economic center in the West; the status of city human resources and economic development directly impact on urbanization

level, and will affect the process of Chengdu's dream about "Construction of World Modern Garden City." Especially regarding the Wenchuan earthquake in 2008, whether it had impact on Chengdu human resources and economic development is just an interesting question. Talent, as a major competition in the world, has a huge promoting and pushing effect on the economic development. Under the background of city marketing, talent aggregation effect promotes the development of an urban economy effectively. Evaluation of city human resources and economic development has important practical significance for making talent introduction policy of the city and opening the municipal fiscal place. Accordingly, the research technique route was described about the synergy degree between city human resources and city economic development, as shown in Figure 1.

## 2. Literature Review

*2.1. Synergy and Synergetics.* As early as 1984, Haken had claimed that synergetics is a rather field of interdisciplinary research and can be of assistance to the management subject

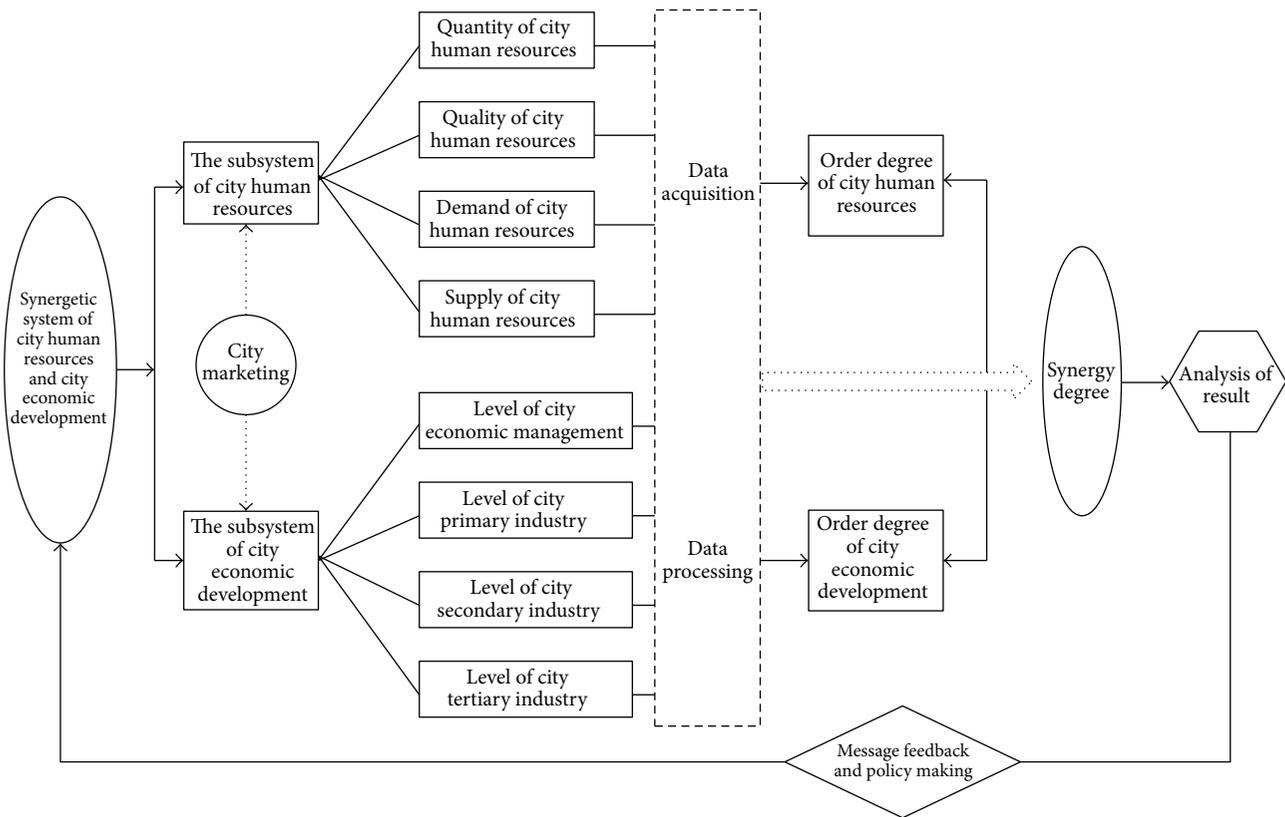


FIGURE 1: The research technique route.

[1]. Later, Knyazeva advocated that synergetics will go for a wide application field [2]. Today integration concept and synergetic theory are largely followed in modern management [3], such as a synergetic model for implementing an environmental management, occupational health, and safety management systems [4]. Some researchers paid great attention to the synergy development among the industry, scientific innovation, energy resources, and self-organization. For example, Rofiqul Islam et al., Varga, and Kuehr studied the synergy on the recovery and renewable resources [5, 6]; di Vita and Eliasson and Turnovsky focused on the synergy development of renewable resources and the technical substitution [7, 8]. To sum up, these studies try to use synergetics in management research but have yet to be further applied in technology and economy, business, and management studies.

**2.2. City Marketing.** City marketing began in the 1930s, including three stages roughly, such as “Fragmented Promotional Activities,” “City Marketing Mix,” and “Towards City Branding” [9–11], and several academic schools came into being on the city marketing. For instance, in the school of political orientation, Ashworth and Voogd claimed that “essentially city marketing involves the establishment of a particular relationship between producers and consumers, that is both close and permanent. This in turn necessitates the study of both the spatial and organizational structures of the city as a product as well as the characteristics, market behavior, and needs of the identified users as consumers” [12].

In the school of economics, economic development as the ultimate goal of city marketing aimed at promoting urban growth in wealth [13, 14]. Specifically, Kotler mainly focused on two aspects between the economy (citizens, companies, and communities) and society (tourists and investors), analyzed the city marketing customers—the city human resources, such as local residents, employees, and investors. Meanwhile, Brotchie et al. scholars focused on city marketing to enhance city competitiveness and to promote the development of city economy [15]. So the city marketing is the means to achieve a city policy; city managers break through the bottleneck of urban development through the use of various marketing strategies, to enhance competitiveness [16, 17]. In addition, Kavaratzis is interested in the theory of city brand [18], Zenker et al. researched the city marketing citizen satisfaction [19], and so on. According to these studies, some subjects attract the attention of the scholars, such as the concept and scope of city marketing, the relationship between city marketing and economic development, the relationship between city marketing and human resources, city branding, and the means and motive of city marketing.

**2.3. Human Resources and Economic Development.** There exists a strong connection between economic growth and human development [20, 21]. Importance of human resource development can be undeniable irrespective of developed and underdeveloped economies [22]. So the ultimate goal of economic progress is the sustainable development of human

beings, and talent can effectively promote the development of economy. The relationship between human resource and economic development has been attracted by scholars from the perspective of macro. What is the relationship of it to the city? Manca and Fleisher et al. focus on the human capital and economic growth on region [23, 24]. It is worth noting that Fleisher studied a related question about China and suggested that talent introduction should be undertaken for the development of social economy about the city.

From what has been reviewed above, the existing research focuses on the relationship between human resource and economic development but has not been concerned with what the coordinated development of both does. So, this study uses synergetics theory and analyses the synergy degree of city human resources and city economic development to promote the orderly development of both under the background of city marketing.

### 3. Model Construction

According to the research synergetics [25, 26], the model should include the changing of the associated elements between the subsystem of human resource and the subsystem of economic development, the order degree of order parameter, and the important influential factors between subsystems.

**3.1. Order Parameters.** Some indexes of the level of human resources development have been selected on the order parameters of the city human resources subsystem, such as quantity of city human resources, quality of city human resources, the demand of city human resources, and the supply of city human resources. Meanwhile, Some indexes of the level of city economic development have been found out about the order parameters of the city economic development subsystem, such as the management level of city economics, the level of city primary industry, the level of city secondary industry, and the level of city tertiary industry. Precise quantitative system is shown in Table 1.

**3.2. Subsystem Order Degree.** The composite system is an organic whole of city human resources and city economic development within the jurisdiction area of a city. In this system, the subsystem of city human resources and the subsystem of the city economy interacted with each other. Therefore, the composite system on city human resources and economic development is expressed as  $s = f(x_1, x_2)$ , where  $x_1$  represents the subsystem of city human resources,  $x_2$  is on behalf of the subsystem of city economic development, and  $f$  is a composite function.

The order parameter of the subsystem of city human resources and city economic development is  $x_{ij} = (x_{ij1}, x_{ij2}, \dots, x_{ijk}), i \in [1, l], j \in [1, m], l \geq 1, m \geq 1$ ; it can describe the running state of the second subsystem ( $ij$ ) about city human resources and economic development, where  $\alpha_{ijk}$  is upper limit and  $\beta_{ijk}$  is lower limit. There are  $\beta_{ijk} \leq x_{ijk} \leq \alpha_{ijk}, k \in [1, n]$  and  $n \geq 2$ .

In addition, the indicator has two kinds: one is positive index. The order degree is better when the parameter values

are higher; conversely, it is the lower. The other is negative index; the order degree is better when the parameter values are lower. Order degree of order parameter ( $x_{ijk}$ ) can be defined

$$Y_{ij}(x_{ij}) = \begin{cases} \frac{x_{ijk} - \beta_{ijk}}{\alpha_{ijk} - \beta_{ijk}} & (i \in [1, 2], j \in [1, 4], k \in [1, t]) \\ & \text{when order degree} \\ & \text{increases with } x_{ijk}, \\ \frac{\alpha_{ijk} - x_{ijk}}{\alpha_{ijk} - \beta_{ijk}} & (i \in [1, 2], j \in [1, 4], k \in [t + 1, n]) \\ & \text{when order degree} \\ & \text{decreases with } x_{ijk}, \end{cases} \quad (1)$$

where  $y_{ij}(x_{ij}) \in [0, 1]$ ; its value is greater and its contribution is higher in systematic order degree.

Overall, the contribution of order parameter ( $y_i$ ) can be shown by  $y_{ij}(x_{ij})$ . For using different forms of data, it is necessary to use the linear weighted sum method for data processing. The order degree model of subsystem is followed:

$$Y_i(x_i) = \sum_{k=1}^n w_k Y_{ij}(x_{ij}), \quad w_k \geq 0, \quad \sum_{k=1}^n w_k = 1. \quad (2)$$

**3.3. Index Weight.** At present, common methods include subjective values and objective method. The former has expert scoring method and Delphi method; the later include entropy value method, the standard deviation method, and CRITIC method [27]. This study selected CRITIC method to weigh the index.

Firstly, confirming the effect of indexes

$$C_k = \delta_k \sum_{j=1}^n (1 - r_{jk}), \quad k = 1, \dots, n. \quad (3)$$

Among them,  $C_k$  represents the impact of the index ( $k$ ) on the subsystem,  $\delta_k$  is half on the standard deviation of the index ( $k$ ), and  $r_{jk}$  represents the correlation coefficient between the index ( $j$ ) and the index ( $k$ ). The greater the  $C_k$  value, the more important it is to the subsystem.

Secondly, confirming the weight of index

$$w_k = \frac{C_k}{\sum_{k=1}^n C_k}, \quad k = 1, \dots, n, \quad (4)$$

where  $w_k$  is the objective weight of the index ( $k$ ); then the weight coefficient was gained.

**3.4. Synergy Degree Model.** Synergy degree model is suitable for the quantitative description of the system development and is a function of the independent variable of the order parameter. So the function value is the system synergy degree (SD).

The subsystem order degree is  $Y_i^j(x_i)$  when the system is at a given initial moment; after a period of time or at the next

TABLE 1: The evaluation index of city human resources and city economic development.

Total system	subsystem	Order parameters of the second system	The Order parameters index of the second system	units	
The system of city human resource and city economic development (s)	Subsystem of city human resource ( $x_1$ )	Quantity of human resources ( $x_{11}$ )	Size of urban population ( $x_{111}$ )	Ten thousand people	
			Size of urban labor ( $x_{112}$ )	Ten thousand people	
			The annual growth rate of urban employment ( $x_{113}$ )	%	
		Quality of human resources ( $x_{12}$ )	Cultural quality of human resources ( $x_{121}$ ): proportion of employment got Junior high school	%	
			Rate of professional and technical labor ( $x_{122}$ ): proportion of professional and technical personnel	%	
			Rate of Innovative business labor ( $x_{123}$ ): proportion of private persons	%	
		Demand of human resources ( $x_{13}$ )	Consumer demand of human resources ( $x_{131}$ ): annual discretionary income per capita about urban residents household	¥ (Yuan)	
			Investment demand of human resources ( $x_{132}$ ): urban residents' deposit balance	¥ (Billion Yuan)	
			Growing demand of human resources ( $x_{133}$ ): annual per capita wage	¥ (Yuan)	
		Supply of human resources ( $x_{14}$ )	Education size ( $x_{141}$ ): The total number of students	Ten thousand people	
			Education investment ( $x_{142}$ ): education from fiscal spending every year	¥ (Billion Yuan)	
			Learning resources ( $x_{143}$ ): per capita amount of books	A book	
	The level of city economic management ( $x_{21}$ )		Output effect per km <sup>2</sup> ( $x_{211}$ ): GDP per square kilometers	Billion Yuan GDP per square kilometers	
			Output effect per person ( $x_{212}$ ): GDP per ten thousand people	Billion Yuan GDP per ten thousand people	
			Water consumption of GDP ( $x_{213}$ ): water consumption per ten thousand Yuan GDP	hundred million tons of water per ten thousand Yuan of GDP	
	Subsystem of city economic development ( $x_2$ )	The level of city primary industry ( $x_{22}$ )	Power consumption of GDP ( $x_{214}$ ): power consumption per ten thousand Yuan GDP	hundred million kwh per ten thousand Yuan of GDP	
			The annual growth rate of primary industrial production ( $x_{221}$ )	%	
		The level of city secondary industry ( $x_{23}$ )	The annual growth rate of primary industrial practitioners ( $x_{222}$ )	%	
			The annual growth rate of secondary industrial production ( $x_{231}$ )	%	
		The level of city tertiary Industry ( $x_{24}$ )	The annual growth rate of secondary industrial practitioners ( $x_{232}$ )	%	
			The annual growth rate of tertiary industrial production ( $x_{241}$ )	%	
				The annual growth rate of tertiary industrial practitioners ( $x_{242}$ )	%

TABLE 2: The city marketing events of Chengdu from 2002 to 2012.

Year	Events of city marketing	Effect
2002	The Western China Investment Forum	Attracted the investment
2003	Chengdu Real Estate Industry Expo, The 68th China Food and Drinks Fair	Showed habitable environment
2004	Chengdu Big Temple Fair, The 70th China Food and Drinks Fair, The 1st International Food and Tour Festival of China	Embodied the Chengdu culture
2005	Chengdu Image Ads “Chengdu: enjoy your life,” Sichuan International Friendship Cities Cooperation and Development Week, Chengdu Real Estate Industry Expo, The 72nd China Food and Drinks Fair, The 2nd International Food and Tour Festival of China	Showed the new image
2006	China First Rural Tourism Festival, The 74th China Food and Drinks Fair, The 3rd International Food and Tour Festival of China	Opened the international market on tourism
2007	The Reform Pilot Area of National Urban and Rural Development, Chengdu Gourmet Festival, The Urban Forest Forum in China, The 4th International Food and Tour Festival of China	Gained the policy support, won the honor “the best tourism city of China”
2008	The Activity “Thanks Supports, Enjoy New Life,” The 78th China Food and Drinks Fair, The 5th International Food and Tour Festival of China	Showed the new image of Dujiangyan
2009	The “Gold Panda Card” for Visiting 11 Chengdu Attractions Freely, The 80th China Food and Drinks Fair, The 6th International Food and Tour Festival of China	Recalled the visitors’ confidence
2010	The 82nd China Food and Drinks Fair, The 7th International Food and Tour Festival of China	Gained the name “World Food City”
2011	The 84th China Food and Drinks Fair, The 8th International Food and Tour Festival of China	Won the honor “the most famous cultural city in China” and “the people’s livelihood model city in China”
2012	The 86th China Food and Drinks Fair, The 9th International Food and Tour Festival of China	Won the honor “the best leisure city of China” and “the fourth happiest cities in China”

moment ( $t_{j+1}$ ), the subsystem order degree will be changed  $Y_i^{j+1}(x_i)$ :

$$SD = \sqrt{\prod_{i=1}^2 \left[ Y_i^{j+1}(x_i) - Y_i^j(x_i) \right]}, \quad (5)$$

where  $SD \in [0, 1]$ ; it embodies the synergy development between subsystems. When its value is close to 1, the level of synergy is very good between city human resources and city economic development. When its value is close to 0, the level is very terrible. It is noticed that the synergy degree is 0 when  $Y_i^{j+1}(x_i)$  or  $Y_i^j(x_i)$  have some questions.

#### 4. Empirical Study on Chengdu City

4.1. *Sampling and Data.* Marketing campaigns are great weapon for city marketing, such as the cultural events [28],

sports events [29], the World EXPO [30, 31], and conferences [32]. Through careful planning, these one-time and serial marketing campaigns bristle with innovative themes capable of great effect. Not only it is newsworthy, but also it is an applicable standard in the city marketing.

In this respect, Chengdu has gathered a wealth of experience in its promotion (Table 2). Many marketing campaigns have gotten the attention of tourists and investors, such as China Food and Drinks Fair every year, International Food & Tour Festival of China every year, Fortune Global Forum in 2013, and Olympic Games in 2015. Details are shown in Table 1.

In addition, correlated data of human resources and economic development were collected about Chengdu city. Index data came from Chengdu statistical yearbook (2002–2012), Sichuan statistics yearbook (2002–2012), and Chinese city statistics yearbook (2002–2012). The specific data are given in Tables 3 and 4, respectively.

TABLE 3: Raw data of human resources subsystem of Chengdu.

Year	$x_{111}$	$x_{112}$	$x_{113}$	$x_{121}$	$x_{122}$	$x_{123}$	$x_{131}$	$x_{132}$	$x_{133}$	$x_{141}$	$x_{142}$	$x_{143}$
2002	1024.480	562.260	0.013	0.158	0.616	0.074	8972.000	6665800.000	12493.420	153.020	54627.000	0.738
2003	1044.310	571.740	0.017	0.189	0.613	0.090	9641.000	9203959.000	13712.000	161.700	81356.000	0.743
2004	1059.700	579.300	0.013	0.232	0.636	0.124	10394.000	14944197.000	15274.500	173.500	101661.000	0.735
2005	1082.030	619.040	0.069	0.258	0.677	0.201	11359.000	17264382.000	17556.000	183.600	175200.000	0.750
2006	1103.400	640.140	0.034	0.333	0.705	0.223	12789.000	20740894.000	19962.000	202.500	211555.000	0.751
2007	1112.280	687.130	0.073	0.325	0.739	0.271	14849.000	24114509.000	22562.000	205.900	275138.000	0.838
2008	1124.960	704.490	0.025	0.362	0.754	0.268	16943.000	24663985.000	26606.680	212.960	494837.000	0.823
2009	1339.630	729.520	0.036	0.406	0.777	0.452	18659.000	32647872.000	27272.000	224.110	687000.000	1.838
2010	1149.070	752.780	0.032	0.387	0.797	0.447	20835.000	42337109.000	30515.000	214.970	796866.000	1.027
2011	1163.280	768.870	0.021	0.404	0.813	0.452	23932.000	51394256.000	34008.000	218.670	977300.000	1.055
2012	1173.350	793.750	0.032	0.416	0.821	0.456	27194.000	59447689.000	38221.000	222.150	702849.000	1.323

TABLE 4: Raw data of economic development subsystem of Chengdu.

Year	$x_{211}$	$x_{212}$	$x_{213}$	$x_{214}$	$x_{221}$	$x_{222}$	$x_{231}$	$x_{232}$	$x_{241}$	$x_{242}$
2002	0.134	1.623	25.616	0.059	140.200	0.384	758.100	0.264	764.900	0.352
2003	0.151	1.791	25.590	0.063	153.200	0.388	859.100	0.274	858.500	0.338
2004	0.176	2.063	22.378	0.060	168.000	0.364	922.000	0.282	995.700	0.354
2005	0.191	2.191	22.471	0.062	182.300	0.323	1007.700	0.308	1181.000	0.369
2006	0.222	2.493	18.608	0.061	195.100	0.295	1211.600	0.307	1343.700	0.398
2007	0.268	2.989	16.760	0.057	235.500	0.261	1504.000	0.306	1584.900	0.433
2008	0.315	3.468	15.253	0.067	270.150	0.246	1816.660	0.305	1814.170	0.449
2009	0.363	3.361	13.570	0.066	267.770	0.223	2001.800	0.319	2233.040	0.458
2010	0.448	4.831	11.853	0.061	285.090	0.203	2480.900	0.332	2785.340	0.465
2011	0.561	5.975	10.186	0.056	327.820	0.187	2610.800	0.346	3479.420	0.467
2012	0.657	6.936	9.338	0.051	348.000	0.179	3765.620	0.347	4025.220	0.474

4.2. *Data Processing.* Firstly, the original data of the index were standardized by the statistical software (SPSS21). The result was presented in Tables 5 and 6.

Secondly, confirming the weight. According to the data from Tables 5 and 6, the standard deviation ( $\delta$ ) and coefficient of correlation ( $r$ ) of the subsystem were found out. Then the related data were used in formula (3) and formula (4); it was not difficult to get the weight coefficient ( $w$ ) of the second subsystem. The weight of the second subsystem of city human resources is  $w_1 = 0.099, w_2 = 0.051, w_3 = 0.269, w_4 = 0.055, w_5 = 0.051, w_6 = 0.049, w_7 = 0.064, w_8 = 0.069, w_9 = 0.059, w_{10} = 0.059, w_{11} = 0.055, w_{12} = 0.121$ . The weight of the second subsystem of city economic development is  $w_1 = 0.059, w_2 = 0.063, w_3 = 0.072, w_4 = 0.349, w_5 = 0.064, w_6 = 0.080, w_7 = 0.067, w_8 = 0.084, w_9 = 0.060, w_{10} = 0.102$ .

Thirdly, confirming the synergy degree. Using the data Tables 5 and 6, the weight, and formula (2), the order parameter was drawn up. Specific data are shown in Tables 7 and 8 about an order parameter.

Finally, using the order parameter and formula (5), the synergy degree was calculated, respectively. Specific data are shown in Table 9.

4.3. *Data Analysis.* Order degree of Chengdu human resources subsystem presented a rising trend since 2002, but there was a sharp decline in 2006, 2008, and 2010. Figure 2

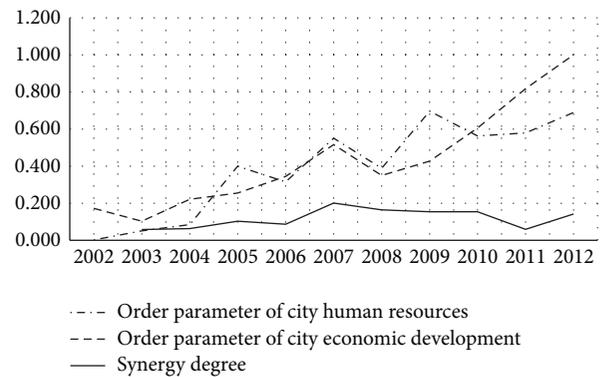


FIGURE 2: Synergy degree of human resources and economic development of Chengdu.

demonstrates that the human resources of Chengdu have been developing orderly direction. Just it was slowly and halfway down. It is notable that the order degree of subsystem was decreased in 2008; because of the earthquake, Chengdu was mistaken as “unsafe” city. With the policy support of brain gain and national disaster relief, the order degree presented a tendency of increasing in 2009.

Order degree of Chengdu economic development subsystem showed a good upward trend since 2002, but there

TABLE 5: Standardized data of human resources subsystem of Chengdu.

Year	$x_{111}$	$x_{112}$	$x_{113}$	$x_{121}$	$x_{122}$	$x_{123}$	$x_{131}$	$x_{132}$	$x_{133}$	$x_{141}$	$x_{142}$	$x_{143}$
2002	-1.172	-1.332	-0.974	-1.707	-1.366	-1.343	-1.143	-1.221	-1.282	-1.756	-1.093	-0.662
2003	-0.941	-1.219	-0.807	-1.371	-1.404	-1.238	-1.033	-1.073	-1.139	-1.414	-1.012	-0.646
2004	-0.762	-1.128	-0.986	-0.911	-1.109	-1.014	-0.910	-0.738	-0.957	-0.948	-0.950	-0.669
2005	-0.502	-0.652	1.737	-0.624	-0.584	-0.507	-0.752	-0.602	-0.691	-0.550	-0.727	-0.626
2006	-0.253	-0.400	0.040	0.187	-0.225	-0.362	-0.519	-0.399	-0.410	0.195	-0.616	-0.624
2007	-0.150	0.163	1.973	0.106	0.211	-0.046	-0.182	-0.203	-0.106	0.329	-0.423	-0.370
2008	-0.002	0.370	-0.394	0.508	0.403	-0.066	0.161	-0.170	0.366	0.607	0.244	-0.415
2009	2.497	0.670	0.111	0.984	0.698	1.146	0.441	0.296	0.444	1.047	0.828	2.535
2010	0.279	0.948	-0.069	0.776	0.954	1.113	0.797	0.861	0.822	0.687	1.162	0.178
2011	0.444	1.141	-0.585	0.961	1.159	1.146	1.304	1.390	1.230	0.833	1.710	0.261
2012	0.561	1.439	-0.045	1.090	1.262	1.172	1.837	1.860	1.722	0.970	0.876	1.039

TABLE 6: Standardized data of economic development subsystem of Chengdu.

Year	$x_{211}$	$x_{212}$	$x_{213}$	$x_{214}$	$x_{221}$	$x_{222}$	$x_{231}$	$x_{232}$	$x_{241}$	$x_{242}$
2002	-1.051	-1.023	1.377	-0.163	-1.316	1.362	-1.029	-1.619	-1.049	-1.176
2003	-0.955	-0.928	1.373	0.632	-1.133	1.413	-0.922	-1.253	-0.963	-1.441
2004	-0.809	-0.774	0.833	0.022	-0.926	1.106	-0.854	-0.960	-0.838	-1.138
2005	-0.723	-0.701	0.849	0.345	-0.725	0.582	-0.763	-0.007	-0.669	-0.855
2006	-0.547	-0.530	0.200	0.120	-0.545	0.223	-0.545	-0.043	-0.521	-0.307
2007	-0.280	-0.249	-0.111	-0.787	0.022	-0.212	-0.233	-0.080	-0.301	0.354
2008	-0.013	0.022	-0.364	1.439	0.509	-0.404	0.101	-0.117	-0.092	0.656
2009	0.267	-0.039	-0.647	1.190	0.475	-0.698	0.299	0.397	0.290	0.826
2010	0.753	0.794	-0.936	0.272	0.718	-0.954	0.811	0.873	0.794	0.958
2011	1.403	1.442	-1.216	-1.008	1.318	-1.158	0.950	1.386	1.426	0.996
2012	1.955	1.987	-1.358	-2.061	1.602	-1.261	2.184	1.423	1.924	1.128

TABLE 7: Order parameter of human resources subsystem of Chengdu.

Year	$x_{111}$	$x_{112}$	$x_{113}$	$x_{121}$	$x_{122}$	$x_{123}$	$x_{131}$	$x_{132}$	$x_{133}$	$x_{141}$	$x_{142}$	$x_{143}$
2002	0.000	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2003	0.006	0.002	0.016	0.007	0.000	0.002	0.002	0.003	0.003	0.007	0.002	0.001
2004	0.011	0.004	0.000	0.016	0.006	0.006	0.005	0.011	0.006	0.017	0.003	0.000
2005	0.018	0.013	0.248	0.021	0.016	0.016	0.008	0.014	0.012	0.025	0.007	0.002
2006	0.025	0.017	0.093	0.037	0.022	0.019	0.013	0.018	0.017	0.041	0.009	0.002
2007	0.028	0.028	0.269	0.036	0.031	0.025	0.021	0.023	0.023	0.044	0.013	0.011
2008	0.032	0.031	0.054	0.043	0.034	0.025	0.028	0.023	0.032	0.049	0.026	0.010
2009	0.099	0.037	0.100	0.053	0.040	0.049	0.034	0.034	0.034	0.059	0.038	0.121
2010	0.039	0.042	0.084	0.049	0.045	0.048	0.041	0.047	0.041	0.051	0.044	0.032
2011	0.044	0.046	0.036	0.052	0.049	0.049	0.052	0.058	0.049	0.054	0.055	0.035
2012	0.047	0.051	0.086	0.055	0.051	0.049	0.064	0.069	0.059	0.057	0.038	0.065

was downgrading in 2003 and 2008. The order degree was affected by the SARS in 2003 and the earthquake in 2008. Some city image Ads were created under the city marketing, such as “Chengdu, enjoy your life” in 2004 and “I love my city” in 2008. The advertising video especially showed the safety of city after an earthquake and helped recovery ability of economic development. After the Wenchuan earthquake, the economic development was not only attributed to the city marketing strategy, but also attributed to the financial support of the national strategy of Chengdu. Such as the reform pilot

area of national urban and rural development, the policy on the development of the western region of China, and the postdisaster rebuilding work.

Synergy degree of human resources and economic development of Chengdu is not stable, to some extent that is obviously low. The synergy degree presented a slowly rise from 2002 to 2007, but its absolute value is very slight and has great potential to increase. The synergy degree showed a gradual decline slightly from 2008 to 2011. Here, the economic development of Chengdu was rapid; the talent also has

TABLE 8: Order parameter of economic development subsystem of Chengdu.

Year	$x_{211}$	$x_{212}$	$x_{213}$	$x_{214}$	$x_{221}$	$x_{222}$	$x_{231}$	$x_{232}$	$x_{241}$	$x_{242}$
2002	0.000	0.000	0.000	0.160	0.000	0.002	0.000	0.000	0.000	0.010
2003	0.002	0.002	0.000	0.081	0.004	0.000	0.002	0.010	0.002	0.000
2004	0.005	0.005	0.014	0.141	0.009	0.009	0.004	0.018	0.004	0.012
2005	0.006	0.007	0.014	0.109	0.013	0.025	0.006	0.044	0.008	0.023
2006	0.010	0.010	0.031	0.132	0.017	0.036	0.010	0.043	0.011	0.045
2007	0.015	0.016	0.039	0.222	0.029	0.049	0.017	0.042	0.015	0.071
2008	0.021	0.022	0.046	0.000	0.040	0.054	0.024	0.041	0.019	0.083
2009	0.026	0.021	0.053	0.025	0.039	0.063	0.028	0.055	0.027	0.090
2010	0.036	0.038	0.061	0.116	0.044	0.071	0.039	0.069	0.037	0.095
2011	0.048	0.052	0.069	0.244	0.057	0.077	0.041	0.083	0.050	0.096
2012	0.059	0.063	0.072	0.349	0.064	0.080	0.067	0.084	0.060	0.102

TABLE 9: Synergy degree about city human resources and city economic development.

Year	Order parameter of human resources	Order parameter of economic development	Synergy degree
2002	0.002	0.172	
2003	0.051	0.103	0.058
2004	0.084	0.222	0.063
2005	0.399	0.255	0.103
2006	0.315	0.344	0.087
2007	0.550	0.516	0.201
2008	0.388	0.350	0.164
2009	0.696	0.427	0.154
2010	0.562	0.605	0.154
2011	0.579	0.818	0.059
2012	0.689	1.000	0.142

been progressing, but there were no consistent development, which is affected by the earthquake and aftershocks. In 2012, the order degree of both Chengdu human resources and Chengdu economic progress demonstrated a good upward trend. Overall, human resources and economic development of Chengdu are not completely synchronous, but it is at the low-level stage, so it is necessary to strengthen the city marketing strategy for promoting the development of the city.

### 5. Conclusions and Implications

Using the idea and method of synergetics, the model of synergy degree about city human resources and city economic development was established and the advance state of them was evaluated. These are a basement of urban-rural integration progress with the human resources policy and economic development strategy. At the same time, this study has its limitations; for example, the data are only from yearbook, the research is not covered with the social progress, and the index has yet to be further perfect.

In order to promote synergy and sustainable development of human resources and economic development of Chengdu,

some work should be carried out by the government. Firstly, deepen the talent introduction policy, attract a large number of excellent talents, format talent accumulation effect, and safeguard the rights and interests of the people living standards, for promoting the sustainable development of human resources. Secondly, open the investment policy, attract the world high-tech enterprise, make the industry chain and industrial cluster, and create a sound ecological environment for investment. Finally, strengthen the synergy development of human resources and economy and promote the common development of both.

### Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

### Authors' Contribution

Bo Pu conceived and designed the study, collected and analyzed the data, and wrote the paper. Yanjun Qiu jointly designed the study, assisted in analysis, and cowrote the paper. Bo Pu and Yanjun Qiu contributed equally to this work.

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