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A Hybrid Multiple Criteria Decision-Making Technique to Evaluate Regional Intellectual Capital: Evidence from China

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Abstract: With the dawn of economic globalization and the knowledge economy, intellectual capital has become the most important factor to determine economic growth. However, due to resource endowment, location conditions, policy differences, and other factors, provinces in China show sizeable differences in regional intellectual capital (RIC), which affects the coordinated development of the regional economy. Evaluating RIC is a typical multiple-criteria decision-making (MCDM) problem. Therefore, this study employs a set of MCDM techniques to solve this problem. First, the Delphi method is used to determine the formal decision structure based on a systematic literature review. A novel hybrid method, namely, the Grey-based Decision-Making Trial and Evaluation Laboratory (DEMATEL) and Analytic Network Process (ANP), i.e., GDANP, is employed to obtain the relative weight of each criterion. Finally, based on the data of 31 provinces in China, the Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS) is used to evaluate the RIC. According to the questionnaires filled out by an expert panel, we establish an evaluation index of RIC with 21 criteria. Based on the results of empirical study, the level of RIC in different regions in China is quite different. Furthermore, the RIC ranking is largely consistent with the provincial gross domestic product (GDP) ranking, in line with the current status of development in the regions. Indeed, this paper shows that the proposed hybrid method can effectively measure the level of RIC.

Keywords: regional intellectual capital; MCDM; Grey DANP; Delphi method; TOPSIS

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1. Introduction

Since the 1980s, as the economic development model began to transition away from an investment-driven phase towards an innovation-driven phase, the world economy entered a period of industrial restructuring, and economic development aligned itself with the knowledge economy era. In the modern world, intellectual capital (IC) has become one of the most valuable assets of an organization, region, or country [1]. In this process, IC separated from other factors of production, and became the engine of economic growth and technological progress [2]. IC reveals the important role of knowledge in regional development, and it helps to explore the key knowledge that affects regional innovation capabilities, while identifying new growth points. For example, advanced countries create national value through service innovation, research, and development, or an increase in gross domestic product (GDP) per working hour [3]. The development potential of any organization is embedded in its IC, which is considered to be the basic resource for creating value at regional and national levels [4].

Due to the complex and diverse attributes of IC, proposing a universal definition of IC is a great challenge for contemporary researchers. IC was first proposed by Galbraith [5], and he suggested that IC should be more accurately transformed into an intellectual act, rather than knowledge or pure intelligence. Since then, many scholars have actively engaged in the study of IC. Khalique [6] proposed that IC can be considered as a collection of intangible assets or resources. IC can create organizational value and provide a competitive boundary for organizations. According to the popular view, Stewart [7] defined IC as the most valuable form of capital, and it can be regarded as the sum of personal knowledge and ability, which can bring competitive advantages. These competitive advantages are not only owned by enterprises or organizations but are also owned by the countries. The concept of regional intellectual capital (RIC) was put forward. Stam and Andriessen [8] pointed out that RIC was "the sum of all intangible resources that can be used by countries or regions that can produce comparative advantages and create future benefits through integration". Furthermore, Schiuma and Lerro [9] interpreted RIC as a group of knowledge assets that are attributed to a region, and it significantly promotes innovation momentum and the mechanism underlying the creation of regional value. Measuring RIC is a complex process. IC is a multi-dimensional category that cannot be measured directly, but which can be identified by its attributes [10]. However, there is no widely accepted index at present. In particular, establishing a scientific and systematic index is the first priority. Thus, this paper used the Delphi method to establish a universal index with high consensus. This is the first aim of this paper.

Because many factors will affect RIC together, and the factors have conflicting or competing relations among them, the evaluation of RIC is a typical multiple-criteria decision-making (MCDM) problem. Traditionally, obtaining the relative weights is the first step to evaluation. Calabrese et al. [11] used the Analytic Hierarchy Process (AHP) method to obtain the weight of each factor to effectively analyze how the factors influenced IC of the company. Wang and He [12] calculated the determinants' rankings of the company's IC using the Analytic Network Process (ANP) method. Moreover, some scholars proposed some methods to evaluate RIC. Chen and Chen [13] used the Vlse Kriterijumska Optimizacija I Kompromisno Resenje (VIKOR) to rank five types of universities for innovation development from the IC perspective. Michalczuk et al. [10] constructed a ranking and classification of EU countries based on IC resources using the Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS). However, the AHP method needs to satisfy the assumption that the criteria are independent of each other [14]. The ANP method can solve this problem, but it requires a large number of pairwise comparisons, and it is not easy to achieve consistency [15]. What is more, how to effectively measure the RIC ranking of 31 provinces is also a topic worthy of discussion. Therefore, the key problem is to select a scientific and appropriate evaluation method. This is another aim of this study.

In this paper, we will answer the question of how to effectively measure RIC in China. In order to solve this problem, we use the Delphi method to determine the formal evaluation index by obtaining the consensus by an expert panel. Then, to calculate the relative weights of each criterion, this paper employed a hybrid decision model known as the Grey-Decision Making Trial and Evaluation Laboratory (grey-DEMATEL)-based Analytic Network Process (i.e., GDANP), developed by Jiang [16], to recover the limitations of the aforementioned methods, avoiding the tedious questionnaire of DEMATEL. Furthermore, the RIC ranking of provinces was obtained by TOPSIS.

The remainder of this paper is organized as follows. Section 2 analyzes the influencing dimensions and criteria of IC and establishes the prototype decision structure. Section 3 describes the methodology used in this paper. Section 4 develops the formal evaluating index using the Delphi method based on the experts' opinions, and finds the RIC ranking of each region in China by the proposed hybrid model. Based on the empirical study, Section 5 presents the management implications. Section 6 discusses the various outcomes, and Section 7 provides the conclusions of this study.

2. Literature Review

2.1. Components of Intellectual Capital

Currently, there are many studies on the factors affecting RIC. For example, Rossi et al. [17] proposed that the RIC should be considered from the perspective of human capital, structural capital, and relational capital based on previous theories. Lin [18] divided IC into human, market, process, and innovation capital. Incze and Vasilache [19] assessed the level of IC in Romanian IT MNCs and SMEs from three perspectives: human capital, structural capital, and relational capital. It is not difficult to see that the evaluation index is composed of different dimensions and criteria. However, no consensus has yet emerged. Michalczuk and Fiedorczuk [20] put forward that RIC should include "thinking" and "non-thinking". As the part of "thinking", human capital appears in almost every conceptual model of analysis. The differences in scholars' views are mainly reflected in the "non-thinking" component. In their study, they divided RIC into human capital, social capital, structural capital, developmental capital, and relational capital. This paper refers to the most popular three-level component model: human capital, structural capital, and relational capital [21–42].

The most important component of RIC is human capital, which is generally accepted by scholars [4,9,10,18,43–51]. Measuring and evaluating knowledge in human capital is a very important and interesting area [52]. Human capital represents the knowledge, education, and competencies of individuals in realizing national tasks and goals [53]. It consists of a set of knowledge, skills, and capabilities developed and deployed at the individual level in order to be productive, efficient, and innovative [54]. Human capital reflects a population's total capabilities as reflected in education, knowledge, health, experience, motivation, intuition, entrepreneurship, and expertise [18]. According to the human capital theory developed by American economists Schultz and Becker in the 1960s, improving the quality of the population has become the core of human capital. Human capital provides resources for the development and cultivation of other areas of intellectual assets, such as R&D and training, because the human factor is the most important link in the process of value creation [18]. This paper used the level of regional education development, health care, and employment to measure regional human capital.

Structural capital is another important dimension of RIC [10,47]. The information and digital revolution have established new ways of learning and communication in the world [42], creating enormous opportunities for regional development. In this context, technology and infrastructure have gained considerable attention. Structural capital refers to the "infrastructure" or "knowledge platform" that contributes to the safe, orderly, and efficient functioning of the regional economic and social capital structure, and it can therefore be regarded as a mechanism that transforms human capital into wealth [46]. This type of capital encompasses several types of structures: organizational, communicative, technological, informative, and process-related, as well as other intangible resources, such as intellectual property (e.g., patents, trademarks, scientific achievements), innovations, or R&D activity [55]. This paper divided structural capital into process capital and innovation capital. Process capital is defined as the knowledge stock embedded in the infrastructure of a region [48], which plays a role in cooperation and the flow of knowledge [56]. Innovation capital is defined as a nation's future intellectual wealth, and it refers to the capability for innovation that sustains a nation's competitive advantage [50]. It also reflects a region's investment in future market competitiveness [56].

Similarly, relational capital is one of the key factors to measure RIC [10,46,47]. Relational capital is the value that is inherent in the country's external relations. It represents connections that facilitate cooperation, the attractiveness and competitiveness of the economy, and the country's image in the eyes of its partners, investors, and individuals. In order to survive in a highly competitive environment, it is necessary to maintain good relations with investors, consumers, and suppliers [41]. Relational capital can be assessed in terms of the country's international integration as well as its internal and external activities [20]. Relational capital embodies the knowledge that is generated by the relationship between the region and the environment. It involves the ability to implant and self-generate value, product demand, investment potential, and joint projects [57]. It is not only important to create relationship capital, but a successful organization should also be able to maintain its relationship capital [58]. A region needs to continuously provide attractive and competitive solutions that can satisfy the needs of internal and external users, and it should strive to achieve success in its internal and external relations by focusing on customer loyalty, economic openness, and trade partner satisfaction. This paper measured regional relationship capital from the perspective of internal and external relations.

2.2. Prototype Decision Structure

Based on the literature above, this study selected and integrated the criteria influencing RIC. Next, according to the definitions of selected criteria, the criteria were divided into three dimensions, namely human capital, structural capital, and relational capital, respectively. Then, the prototype decision structure was established, as shown in Table 1.

Table 1. Prototype decision structure.

Regional Human Capital		
Aspects	**Criteria**	**Reference**
Educational development	The amount of local fiscal expenditure on education per capita	[46]
	The number of higher education schools	[4,53]
	The number of years of education per capita	[18]
Medical health level	The number of doctors per 10,000 people	[46]
	The number of medical beds per 10,000 people	[46]
	Total health expenditure	[44]
Employment status	The number of employed persons	[59]
	Unemployment rate	[57,59]
Regional Structural Capital		
Aspects	**Criteria**	**Reference**
Process capital	The number of Internet subscribers	[3]
Innovation capital	The number of persons engaged in science and technology per 10,000 people	[46]
	The number of invention and patent applications	[46]
Regional Relational Capital		
Aspects	**Criteria**	**Reference**
Internal relations	Consumer price index	[18]
External relations	Foreign direct investment intensity	[60]
	The total import and export volume accounted for the proportion of GDP	[46]

In this prototype decision structure, regional human capital consists of the level of educational development, the level of medical health, and the employment status. People, as the core of IC, are directly influenced by the above factors. When analyzing the human capital of a region, it is important to first fully examine the education situation [53]. The level of educational development reflects the base and potential of a region's talent and is the basic building block of human capital [61]. Three criteria were selected from the literature. Among them, the amount of local fiscal expenditure on education per capita reflects the importance that regional governments attach to local talent cultivation, the number of higher education schools reflects the regional capacity and resources to cultivate high-end talent, and the number of years of education per capita represents the basic education level of the region. The health level also reflects the situation of human capital to a certain extent [18], showing the protection of local labor. Similarly, three medical health criteria were selected. The number of doctors per 10,000 people and the number of medical beds per 10,000 people reflect the basic situation of hospitals, and total health expenditure reflects the importance of health care by the regional government. Human capital captures the knowledge and skills of individuals and organizations to achieve their goals, which includes employability [59]. Measuring the employment status helps to reflect the supply and demand of the labor force, so as to effectively reflect the human capital of labor market. We have selected the classical measures—the number of employed persons and unemployment rate.

Regional structural capital is divided into process capital and innovation capital. This paper argues that regional structural capital provides the infrastructure and platform for talent to function. Process capital can maintain and increase the output of human capital [18]. In the context of the information age, this paper selects the number of Internet subscribers as a measure from the literature. Innovation capital reflects the importance a region places on future competitiveness, which in turn encourages future growth [18]. Based on the literature review, this paper selected two innovation criteria, including the number of persons engaged in science and technology per 10,000 people from the human side and the number of invention and patent applications from the output outcome side.

Relational capital represents the sum of available and potential resources in the system network [62]. Regional relationship capital is analyzed in terms of internal and external relationships, reflecting the business environment in which IC plays a role. For internal relationships, the consumer price index indicator selected from the literature in this paper captures the consumer spending power within the region. For external relationships, foreign direct investment intensity reflects external recognition of whether the region is worth investing in, and the total import and export volume accounting for the proportion of GDP is used to measure the ability to transact with outside the region.

3. Methodology

Evaluating RIC is a typical MCDM problem. Thus, it was first necessary to determine the competing criteria to be included in the structure of the RIC evaluation. The Delphi method, which considers the consensus of an expert panel, was used to form the formal decision structure; its procedure is described in Section 3.1. In Section 3.2, we introduced the GDANP technique that was used to identify the critical factors. In Section 3.3, we described the TOPSIS method, which was used to rank the RIC level of 31 provinces in China.

3.1. Delphi Method

The Delphi method involves participants reaching consensus on a question through their anonymity to each other, using their written responses to a questionnaire, for prediction and information gathering [63]. Ouyang et al. [64] claimed that the Delphi method relies on the experience and intuition of experts to provide different views on the same topic, and they understand each other in order to achieve agreement in another round of adjustment. This helps to avoid conflicts among experts. As a tool for decision-making by expert groups, the Delphi method has been successfully applied in various fields, such as regional development [65,66], tourism [67,68], and medical health [69,70]. In this paper, the quartile deviation (QD) is defined as one-half the interquartile range (IQR), which is the difference between the 25th and the 75th percentiles in the frequency distribution, applied to determine consistency [71]. The QD consensus level is shown in Table 2. If the QD value is $\leq$0.6, it is considered a high consensus level.

Table 2. QD consensus level [71].

Consensus	High	Moderate	Low
QD	$QD \leq 0.6$	$0.6 \leq QD \leq 1$	$1 \leq QD$

Before calculating the QD value, a questionnaire on RIC was distributed to each expert, who provided their opinion on the appropriateness of the criteria. Next, experts were asked to rate the necessity of the criteria for inclusion in the decision structure. A five-point Likert scale was used, and the relationship between rank and necessity is shown in Table 3. We called this process Round one. Round one must be repeated until an acceptable QD value is obtained.

Table 3. Relationship between rating and necessity.

Rating	**1**	**2**	**3**	**4**	**5**
Necessity	Strongly unnecessary	Unnecessary	Average	Necessary	Strongly necessary

3.2. Grey DEMATEL-Based ANP

Since evaluating RIC is a typical MCDM problem, many MCDM techniques can be considered (e.g., AHP, ANP, and DEMATEL). However, these methods have more or fewer limitations, such as the independence assumption of AHP, and the consistency test of AHP and ANP [72]. A hybrid model named DEMATEL-based ANP (DANP) proposed by Ouyang [64] can solve these problems effectively. In practice, DANP uses a direct influence matrix, which involves numbers of items in the process of pairwise comparisons. A troublesome problem is that the greater the number of criteria is, the more time a respondent requires to fill out the direct influence matrix. Often, the quality of questionnaires can be influenced to a certain degree as respondents become bored and tired. Therefore, Jiang [16] developed a decision model, GDANP, which can avoid pairwise comparisons by automatically generating the direct influence matrix. Moreover, GDANP also allows the negative value that cannot be handled by AHP and ANP [16]. Nowadays, the GDANP method has been successfully used in supplier selection [73,74] and two sector interaction [16].

The procedure of the GDANP is as follows:

Step 1: Generating the direct influence matrix by Grey relational analysis (GRA)

Based on the results of Delphi, the direct influence matrix is constructed by the grey relational matrix and grey self-relational matrix, which are calculated using GRA. To perform GRA, we must first compute the grey relational coefficients (GRCs) for each factor. Let the reference sequence be $X_0 = \{x_0(1), x_0(2), \ldots, x_0(n)\}$, and the comparison sequence is $X_i = \{x_i(1), x_i(2), \ldots, x_i(n)\}$. Then,

$$\xi(x_0(k), x_i(k)) = \frac{\underset{i}{\min}\underset{k}{\min}|x_0(k) - x_i(k)| + \rho\underset{i}{max}\underset{k}{max}|x_0(k) - x_i(k)|}{|x_0(k) - x_i(k)| + \rho\underset{i}{max}\underset{k}{max}|x_0(k) - x_i(k)|}, \textit{ for } 1 \le i \le n,\ 1 \le k \le m, \tag{1}$$

where ρ is the discriminative coefficient ($0 \le \rho \le 1$), and usually $\rho = 0.5$.

The grey relational grade (GRG) can be represented in this instance as

$$z(x_0(k), x_i(k)) = \sum_{i=1}^{n} w_i \xi(x_0(k), x_i(k)), \tag{2}$$

where w_i is the relative importance of attribute i. $z(x_0(k), x_i(k))$ ranges from 0 to 1, and the sum of $w_1, w_2, \ldots, w_n$ is one. As a result, the direct influence matrix Z is

$$\mathbf{Z} = \begin{bmatrix} z(x_1, x_1) & z(x_1, x_2) & \cdots & z(x_1, x_n) \\ z(x_2, x_1) & z(x_2, x_2) & \cdots & z(x_2, x_n) \\ & \vdots & \ddots & \vdots \\ z(x_n, x_1) & z(x_n, x_2) & \cdots & z(x_n, x_n) \end{bmatrix}. \tag{3}$$

Step 2: Obtaining the relative weights by DANP

In the direct influence matrix of DANP, all of the diagonal elements are zero. Z is then normalized to produce the normalized direct influence matrix:

$$X = \lambda Z, \tag{4}$$

where

$$\lambda = \frac{1}{\max\limits_{i,j}\left\{ max \sum_{i=1}^{n} z_{ij}, max \sum_{j=1}^{n} z_{ij} \right\}}. \tag{5}$$

Then, the total influence matrix T is generated by

$$\mathrm{T} = \mathrm{X}(\mathrm{I} - \mathrm{X})^{-1} \tag{6}$$

Next, the total influence matrix is regarded as the unweighted supermatrix of ANP. After normalization, we can obtain the limited supermatrix and the relative weights of each criterion.

3.3. TOPSIS Method

The TOPSIS method was firstly developed by Hwang and Yoon in 1981. In recent years, the TOPSIS method and another ranking tool called VIKOR have both become popular in decision making. However, they are essentially different in principle. Ranking obtained by VIKOR only focuses on positive ideal solutions. While pursuing good fortune and avoiding evil is people's eternal pursuit, TOPSIS is concerned with both positive and negative ideal solutions, so as to consider the problem comprehensively. Therefore, the TOPSIS method is widely used in various fields, such as logistics and transportation [75–77], manufacturing [78,79], and commerce [80,81].

The basic principle of TOPSIS is that the chosen alternative should have the shortest distance from the ideal solution and the farthest distance from the negative ideal solution. The TOPSIS procedure consists of the following steps:

(1) Calculate the normalized decision matrix. The normalized value $x_i(k)$ is calculated by

$$x_i(k) = \frac{x_i(k)}{max(x_i)}, \; for\, 1 \le i \le n,\ 1 \le k \le m, \tag{7}$$

where $x_i(k)$ is a "larger-the-better" criterion. Furthermore,

$$x_i(k) = \frac{\min(x_i)}{x_i(k)}, \; for\, 1 \le i \le n,\ 1 \le k \le m, \tag{8}$$

where $x_i(k)$ is a "smaller-the-better "criterion, and where $\max(x_i)$ and $\min(x_i)$ represent the maximum and minimum values.

(2) Calculate the weighted normalized decision matrix. The weighted normalized value $v_i(k)$ is calculated as follows:

$$V_i(k) = w_i\, x_i(k),\ i = 1, \ldots, n;\ k = 1, \ldots, m, \tag{9}$$

where w_i is the weight of the ith attribute or criterion, and $\sum_{i=1}^{n} w_i = 1$.

(3) Determine the positive ideal and negative ideal solution.

$$V^* = \{v_1^*, \ldots\ldots, v_n^*\} = \{\max_i v_i(k) |\ i = 1, \ldots, n\}, \tag{10}$$

$$V^- = \{v_1^-, \ldots\ldots, v_n^-\} = \{\min_i v_i(k) | i = 1, \ldots, n\}. \tag{11}$$

(4) Calculate the separation measures, using the n-dimensional Euclidean distance. The separation of each alternative from the ideal solution is given as

$$D_k^* = \sqrt{\sum_{k=1}^{m} (v_i(k) - v_i^*(k))^2},\ i = 1, \ldots, n. \quad (12)$$

Similarly, the separation from the negative ideal solution is given as

$$D_k^- = \sqrt{\sum_{k=1}^{m} (v_i(k) - v_i^-(k))^2},\ i = 1, \ldots, n. \quad (13)$$

(5) Calculate the relative distance from the positive ideal solution alternative [75]:

$$C_k^* = D_k^- / (D_k^* + D_k^-),\ k = 1, \ldots, m. \quad (14)$$

(6) Rank the preference order.

The framework of the proposed hybrid model in this paper is shown as Figure 1.

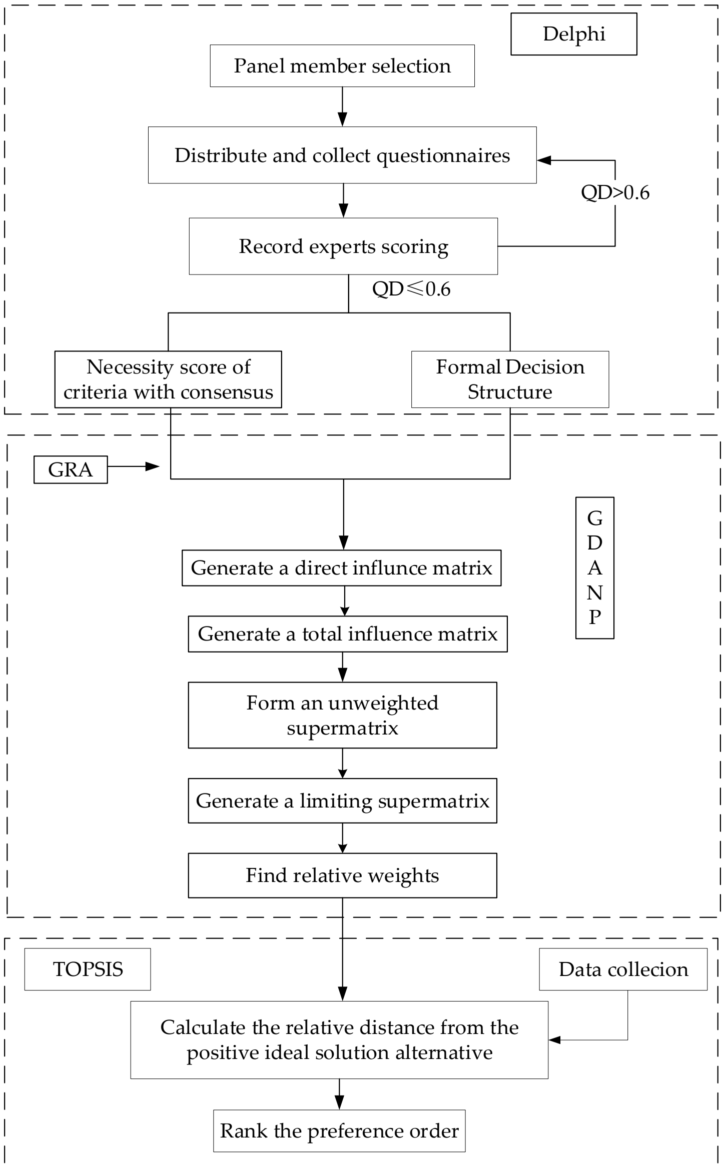

Figure 1. Empirical framework.

4. RIC Evaluation of China

4.1. Determining the Formal Decision Structure

Academics and government researchers often focus on RIC research. By examining the three key factors of RIC, namely human capital, structural capital, and relationship capital, we approached experts from related fields and members of government staff and created a group of eight experts whose professional backgrounds are shown in Table 4. The panel was invited to rate the necessity of including criteria for the prototype (Table 1) in the formal research structure.

Table 4. Professional backgrounds of the selected eight experts for the Delphi survey.

Expert	Organization	Position	Duties	Seniority
A	Dalian University of Technology	Head of Economics Department	Economic system analysis and management	15
B	Harbin Institute of Technology	Vice president	Industrial economics	22
C	Shandong University	Associate professor	New institutional economics	16
D	Shandong University	Professor	Economic theory and macroeconomic policy	28
E	Dalian University of Technology	Vice president	Industrial economics	10
F	Huancui District Development and Reform Commission	Deputy director	National economy and social development strategy and planning	10
G	China Society for the study of foreign economic theories	Standing director	Public economics	25
H	Tianjin Development and Reform Commission	Deputy director	Development Economics	30

After three rounds of the Delph survey, the panel members reached consensus on all criteria. All QD consensus levels were below 0.6, achieving an acceptable level of consensus. Table 5 shows the results of the third round of the Delphi, and the formal decision structure is presented in Table 6.

Table 5. The results of the third round of the Delphi survey.

Criteria	Ascending Order								Mean	QD	Classification
The amount of local fiscal expenditure on education per capita	4.10	4.05	4.50	3.90	4.70	4.70	4.95	4.70	4.45	0.31	High Consensus
The number of higher education institutions	4.30	4.50	4.50	4.00	4.60	4.50	5.00	4.50	4.49	0.08	High Consensus
The number of years of education per capita	4.50	4.50	4.50	5.00	4.80	4.05	5.00	4.50	4.61	0.20	High Consensus
The number of licensed (assistant) doctors per 10,000 people	3.75	4.00	4.50	4.10	4.85	4.40	5.00	4.50	4.39	0.31	High Consensus
The number of medical beds per 10,000 people	4.00	4.00	4.50	4.10	4.75	4.80	5.00	4.30	4.43	0.29	High Consensus
The amount of local fiscal expenditure on health per capita	4.50	4.50	5.00	3.00	4.15	4.00	4.50	4.00	4.21	0.25	High Consensus
The number of health education trainers in health education professional institutions	3.95	3.55	4.50	2.90	4.00	4.45	4.00	4.55	3.99	0.36	High Consensus
Unemployment rate	3.70	4.50	4.50	2.20	4.50	4.30	4.20	4.50	4.05	0.28	High Consensus
The number of employed persons	4.10	4.50	4.55	2.55	3.60	4.80	5.00	4.75	4.23	0.46	High Consensus

Table 5. *Cont.*

Criteria	Ascending Order								Mean	QD	Classification
The number of public employment service instructors	3.95	3.50	4.25	3.25	3.95	4.50	5.00	4.55	4.12	0.40	High Consensus
Passenger volume of transportation industry	4.10	4.50	4.50	4.00	4.40	4.30	5.00	4.60	4.43	0.18	High Consensus
The number of Internet users	4.35	4.00	4.50	3.15	3.65	4.05	4.10	4.55	4.04	0.30	High Consensus
Express volume	4.20	4.35	4.50	5.00	3.55	4.25	5.00	4.50	4.42	0.26	High Consensus
Railway operating mileage	4.50	4.50	5.00	4.00	3.75	3.00	4.50	4.10	4.17	0.31	High Consensus
Highway operating mileage	4.25	4.00	4.50	3.00	3.50	4.55	5.00	4.00	4.10	0.39	High Consensus
The number of R&D personnel	4.20	4.00	4.50	4.90	4.65	4.75	4.40	4.15	4.44	0.26	High Consensus
The number of invention patents authorized	4.10	4.55	4.50	3.20	4.65	4.50	5.00	3.90	4.30	0.30	High Consensus
Commodity market activity	3.65	4.00	4.50	4.00	4.10	4.50	2.95	4.50	4.03	0.34	High Consensus
Consumer price index	4.05	3.00	5.00	4.20	4.10	4.05	4.15	4.00	4.07	0.08	High Consensus
Total investment of foreign invested enterprises	4.55	4.55	4.50	4.05	4.60	4.50	5.00	4.55	4.54	0.04	High Consensus
Total import and export	5.00	4.50	5.00	4.60	4.00	4.00	4.20	4.05	4.42	0.39	High Consensus

Table 6. The formal decision structure.

Dimensions	Aspects	Criteria
Regional human capital	Education development	The amount of local fiscal expenditure on education per capita (x_1)
		The number of higher education institutions (x_2)
		The number of years of education per capita (x_3)
	Medical health level	The number of licensed (assistant) doctors per 10,000 people (x_4)
		The number of medical beds per 10,000 people (x_5)
		The amount of local fiscal expenditure on health per capita (x_6)
		The number of health education trainers in health education professional institutions (x_7)
	Employment situation	Unemployment rate (x_8)
		The number of employed persons (x_9)
		The number of public employment service instructors (x_{10})
Regional structural capital	Process capital	The passenger volume of the transportation industry (x_{11})
		The number of Internet users (x_{12})
		Express volume (x_{13})
		Railway operating mileage (x_{14})
		Highway operating mileage (x_{15})
	Innovation capital	The number of R&D personnel (x_{16})
		The number of invention patents authorized (x_{17})
Regional relationship capital	Internal relations	Commodity market activity (proportion of total retail sales of social consumer goods in GDP) (x_{18})
		Consumer price index (x_{19})
	External relations	The total investment of foreign-invested enterprises (x_{20})
		Total import and export (x_{21})

4.2. Obtaining the Weight of Factors Influencing RIC

In this subsection, the GDANP method was employed to identify critical factors influencing RIC (the results of each step are shown in Appendix A).

GRGs were calculated using Equations (1) and (2), as shown in Table A1. To compute the GRGs, the importance of all of the attributes (i.e., experts) was assumed to be equal. From Equation (2), GRGs is shown in the last column of Table A1. Table A2 shows the grey self-relational matrix. According to Equation (3), it is also the initial direct influence matrix.

By using Equation (4), the normalized direct influence matrix was obtained, as shown in Table A3. According to Equation (6), the total influence matrix is shown in Table A4.

Table A5 shows the weighted supermatrix, which was obtained by normalizing the total influence matrix. Table A6 presents the limited supermatrix derived from the weighted supermatrix.

After the above process, the weights of criteria were finally obtained. Table 7 illustrates the weight of the formal decision structure.

Table 7. The weight of criteria influencing RIC.

Dimensions	Aspects	Criteria	Weight
Regional human capital	Education development	x_1	0.0485736
		x_2	0.0504187
		x_3	0.0502033
	Medical health level	x_4	0.0488057
		x_5	0.0486574
		x_6	0.0449674
		x_7	0.0464527
	Employment situation	x_8	0.0490993
		x_9	0.0481779
		x_{10}	0.0466581
Regional structural capital	Process capital	x_{11}	0.0501493
		x_{12}	0.0458645
		x_{13}	0.0504681
		x_{14}	0.0421389
		x_{15}	0.0475357
	Innovation capital	x_{16}	0.0493820
		x_{17}	0.0485582
Regional relationship capital	Internal relations	x_{18}	0.0459618
		x_{19}	0.0432266
	External relations	x_{20}	0.0495749
		x_{21}	0.0451260

4.3. Ranking of the Intellectual Capital of Provinces in China

Governments regularly publish relevant statistics, and these may be used to analyze the current state of development. Because the historical data in this study were objective rather than subjective, the data were used to evaluate the development of RIC in China (the results of each step are shown in Appendix A). Table A7 describes the relevant data of 31 provinces in China throughout 2018, which were sourced from the China Statistics Bureau [82] and the China Statistical Yearbook [83].

Because the measurement scales were different for the criteria used in this study, it was necessary to normalize the raw data. The criteria that were selected to describe the development of RIC included both larger-the-better criteria and smaller-the-better criteria. Therefore, Equation (7) and Equation (8) were suitable for normalization, as shown in Table A8.

According to Equation (9), the weighted normalized decision matrix is shown in Table A9. As can be seen in Table A9, we obtained the positive ideal solution (V^*) and negative ideal solution (V^-) by using Equation (10) and Equation (11). As shown in Table A10, Equation (12) and Equation (13) were used to separate each alternative from the positive ideal solution and the negative ideal solution. On this basis, we used Equation (14) to calculate the relative distance from the positive ideal solution alternative [75] in Table A10.

As can be seen in Table 8 and Figure 2, according to the relative distance from the positive ideal solution alternative [75], we obtained the RIC ranking of 31 provinces in China, together with the provincial GDP ranking.

Table 8. Ranking of RIC and GDP of provinces in China.

Province	Results of the TOPSIS Method	Ranking of the Intellectual Capital of Provinces	GDP Ranking of China's Provinces in 2018
Guangdong Province	0.673	1	1
Jiangsu Province	0.530	2	2
Zhejiang Province	0.468	3	4
Shandong Province	0.439	4	3
Henan Province	0.413	5	5
Beijing City	0.395	6	12
Hunan Province	0.390	7	8
Hebei Province	0.390	8	9
Sichuan Province	0.386	9	6
Hubei Province	0.355	10	7
Shanghai City	0.320	11	11
Liaoning Province	0.307	12	14
Anhui Province	0.306	13	13
Inner Mongolia Autonomous Region	0.283	14	21
Shaanxi Province	0.283	15	15
Jiangxi Province	0.282	16	16
Guizhou Province	0.268	17	25
Heilongjiang Province	0.268	18	23
Fujian Province	0.263	19	10
Guangxi Zhuang Autonomous Region	0.255	20	18
Shanxi Province	0.248	21	22
Gansu Province	0.242	22	27
Yunnan Province	0.239	23	20
Xinjiang Uygur Autonomous Region	0.236	24	26
Tibet Autonomous Region	0.235	25	31
Jilin Province	0.228	26	24
Chongqing City	0.221	27	17
Qinghai Province	0.219	28	30
Tianjin City	0.204	29	19
Ningxia Hui Autonomous Region	0.155	30	29
Hainan Province	0.133	31	28

In order to better understand this paper, we used Guangdong Province as an example to introduce the calculation process in detail. First, after the standardized calculation of the data of 31 provinces, we used the weight obtained by the GDANP method for weighted standardization to obtain V_i, using Equation (9). The positive ideal solution (V^*) and negative ideal solution (V^-) were selected under each indicator. Next, $D_K{}^*$ and $D_K{}^-$ were then evaluated using Equations (12) and (13). For Guangdong Province,

$$D_K^* = \sqrt{\begin{array}{c}(0.01912-0.04857)^2+(0.04589-0.05042)^2+(0.03788-0.05020)^2+(0.02546-0.04881)^2+(0.03073-0.04866)^2 \\ +(0.01867-0.04497)^2+(0.02446-0.04645)^2+(0.02864-0.04910)^2+(0.04818-0.04818)^2+ \\ (0.01607-0.04666)^2+(0.05015-0.05015)^2+(0.04586-0.04586)^2+(0.05047-0.05047)^2+ \\ (0.01481-0.04214)^2+(0.04754-0.04754)^2+(0.04938-0.04938)^2+(0.04856-0.04856)^2+(0.02505-0.04596)^2+ \\ (0.04310-0.04323)^2+(0.04957-0.04957)^2+(0.04513-0.04513)^2\end{array}} = 0.07496$$

$$D_K^- = \sqrt{\begin{array}{c}(0.01912-0.00946)^2+(0.04589-0.00211)^2+(0.03788-0.02266)^2+(0.02546-0.02016)^2+(0.03073-0.02951)^2 \\ +(0.01867-0.01023)^2+(0.02446-0.00052)^2+(0.02864-0.01718)^2+(0.04818-0.00176)^2+ \\ (0.01607-0.00046)^2+(0.05015-0.00049)^2+(0.04586-0.00085)^2+(0.05047-0.00003)^2+ \\ (0.01481-0.00165)^2+(0.04754-0.00423)^2+(0.04938-0.0001)^2+(0.04856-0.00008)^2+(0.02505-0.01577)^2+ \\ (0.04310-0.04280)^2+(0.04957-0.00007)^2+(0.04513-0.00003)^2\end{array}} = 0.15453$$

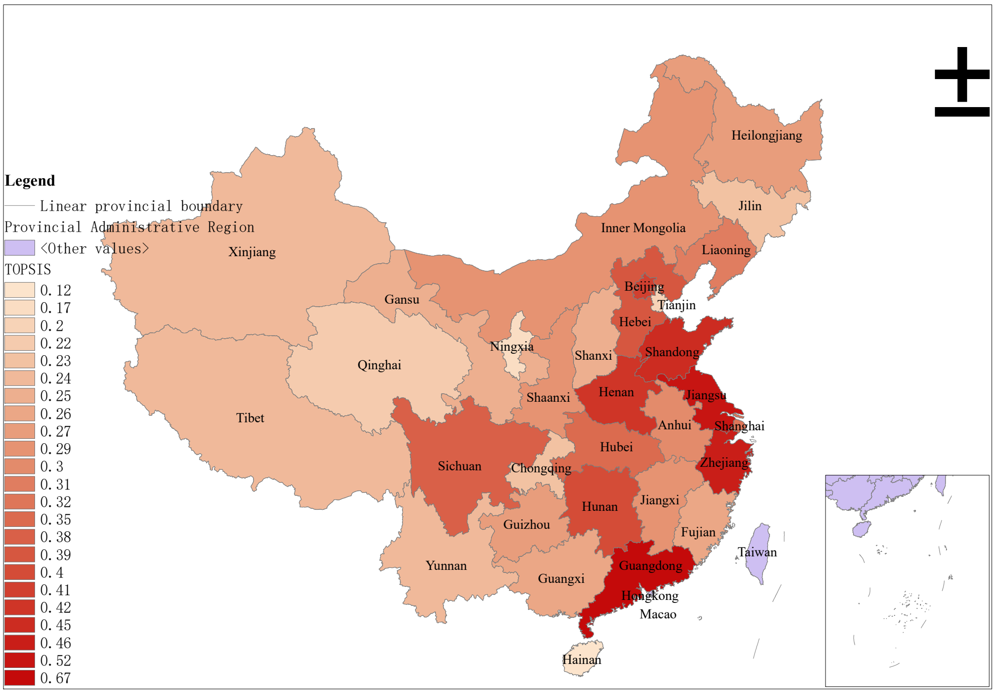

Figure 2. TOPSIS results by province in China.

Finally, the relative distance from the positive ideal solution alternative [75] was calculated by Equation (14). For Guangdong Province, $C_k^* = \frac{0.15453}{(0.15453+0.07496)} = 0.67336$. The TOPSIS data of Guangdong Province are listed in Table 9.

Table 9. The TOPSIS data of Guangdong Province.

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	x_{17}	x_{18}	x_{19}	x_{20}	x_{21}
ω	4.86%	5.04%	5.02%	4.88%	4.87%	4.50%	4.65%	4.91%	4.82%	4.67%	5.01%	4.59%	5.05%	4.21%	4.75%	4.94%	4.86%	4.60%	4.32%	4.96%	4.51%
V_i	0.019	0.046	0.038	0.025	0.031	0.019	0.024	0.029	0.048	0.016	0.050	0.046	0.050	0.015	0.048	0.049	0.049	0.025	0.043	0.050	0.045
V^*	0.049	0.050	0.050	0.049	0.049	0.045	0.046	0.049	0.048	0.047	0.050	0.046	0.050	0.042	0.048	0.049	0.049	0.046	0.043	0.050	0.045
V^-	0.009	0.002	0.023	0.020	0.030	0.010	0.001	0.017	0.002	0.000	0.000	0.001	0.000	0.002	0.004	0.000	0.000	0.016	0.043	0.000	0.000
$D_K{}^*$	0.075																				
$D_K{}^-$	0.155																				
$C_K{}^*$	0.673																				

4.4. Results of Analysis

The weighted ranking of criteria determined by the GDANP method was reasonable. According to the proportion, three dimensions were ranked, namely human capital (48.2%), structural capital (33.4%), and relationship capital (18.4%). The number of higher education institutions (5.04%), express volume (5.05%), and the total investment of foreign-invested enterprises (4.96%) were the criteria with the highest proportion in the above three dimensions, respectively.

As shown in Table 8, the empirical results revealed a positive correlation between the GDP ranking and the level of RIC. It can be seen from Figure 2 that the RIC rankings of China's provinces were generally dominated by eastern provinces, which is in line with Chinese regional development.

As shown in Figure 3, we found significant differences between the RIC ranking and the GDP ranking of nine provinces, among which the RIC rankings of six provinces were better than the GDP ranking, and these provinces included Beijing, Inner Mongolia Autonomous Region, Heilongjiang Province, Guizhou Province, Gansu Province, and Tibet Autonomous Region. The RIC rankings of three provinces, namely Fujian Province, Chongqing, and Tianjin were inferior to the GDP ranking. The following is a detailed analysis that explained the reasons for the ranking of the above nine provinces.

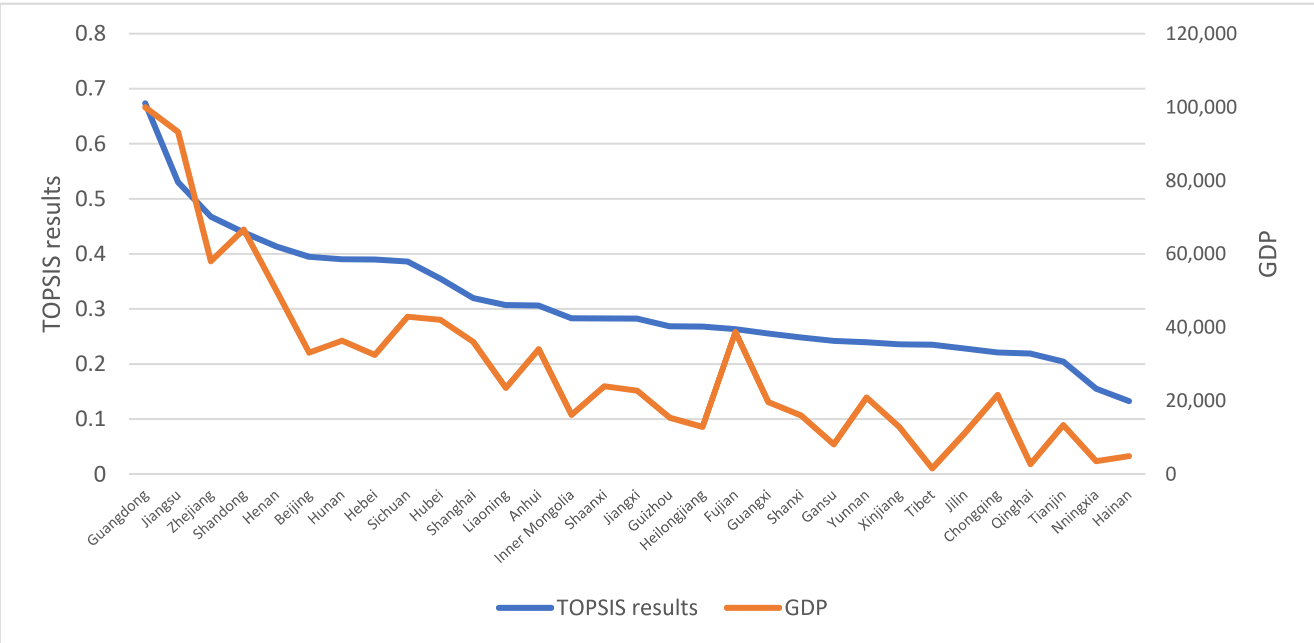

Figure 3. Comparisons on RIC and GDP of provinces in China.

According to the statistical data, the amount of local fiscal expenditure on education and health per capita, express volume, the number of R&D personnel, the number of invention patents authorized, and the investment volume of foreign-invested enterprises in Tianjin and Chongqing in 2018 was far lower than that of the other two municipalities under the direct control of the central government, which explained why the RIC rankings of these municipalities were inferior to the GDP rankings. Furthermore, the number of medical beds per 10,000 people in Fujian Province was lower than that of Beijing, Shanghai, Liaoning, Heilongjiang, Shaanxi, Jiangxi, Anhui, and Guizhou. Moreover, the number of health education trainers in professional health education institutions in Fujian Province was also low. These explained why the RIC ranking of Fujian lagged behind the provinces outlined above, whose GDP rankings were inferior to that of Fujian.

For Beijing, the amount of local fiscal expenditure on education per capita, the number of years of education per capita, the number of licensed (assistant) doctors per 10,000 people, the amount of local fiscal expenditure on health per capita, unemployment rate, and consumer price index ranked first among 31 provinces, making its RIC ranking better than GDP ranking. With respect to the Inner Mongolia Autonomous Region, process capital is the most prominent advantage, especially railroad operating mileage and highway operating mileage. Moreover, the number of licensed (assistant) doctors per 10,000 people and commodity market activity also surpasses Jiangxi, Shaanxi, Fujian, Guangxi, Yunnan, Chongqing, and Tianjin. As a result, although the GDP ranking of these regions was better than that of Inner Mongolia, their RIC ranking was inferior to that of Inner Mongolia. Guizhou Province is also well-developed in terms of process capital, particularly with regard to passenger volume in the transportation industry and highway operating mileage. In this respect, Guizhou Province outperformed Fujian, Heilongjiang, Guangxi, Shanxi, Yunnan, Jilin, Chongqing, and Tianjin, and therefore its RIC ranking was higher than them. Heilongjiang Province outperformed Fujian, Guangxi, Shanxi, Yunnan, Chongqing, and Tianjin with respect to its commodity market activity and railway operating mileage. As such, it had a higher RIC ranking. Gansu Province attaches great importance to health education and training. The number of health education trainers in professional health education institutions in Gansu Province is several times greater than that of Yunnan, Xinjiang, Jilin, Chongqing, and Tianjin, and its RIC ranking was therefore higher than that of these regions. Although the economic development level of Tibet Autonomous Region is low, the amount of local financial expenditure on education and health per capita is far higher than that of Qinghai, Jilin, Chongqing, Tianjin, Ningxia, and Hainan. Therefore, the GDP ranking of Tibet Autonomous Region lagged behind, but its RIC ranking was better than the aforementioned provinces.

It can be concluded that the level of RIC was closely related to regional comprehensive development. Thus, it is critical to identify ways of ensuring a steady increase in the level of RIC.

5. Managerial Implications

It is imperative to focus on RIC, and governments and enterprises must pay greater attention to this issue. The research results obtained from the intellectual capital indicator system and ranking provided guidance for regional governments that can help them to make more informed decisions in this era of the knowledge economy. Governments should take targeted measures to correct the problems and deficiencies identified in the empirical analysis and improve the level of development of regional integration. In the areas of regional education, healthcare, employment, talent mobility infrastructure, innovation and investment, and the operation of internal and external relations, provinces should pay greater attention to improving the relevant conditions in their own provinces. The following content proposes some suggestions with regard to three components of regional integration.

First, human capital represents the core of RIC and is the eternal driving force of the economic development. Considering that the constructed intellectual capital indicator system is based on human capital as the main evaluation factor, provinces should increase their investment in education, health care, employment, and other public utilities to improve the overall quality of human capital. Financial investment in human capital is an indispensable factor for regional development. Among the municipalities that are under the direct control of the central government, Tianjin and Chongqing should focus on allocating finances to local education, so that the financial educational support received by each individual is maintained at a reasonable level. The demographic dividend is disappearing, and labor shortages and rising costs are becoming increasingly prominent. As such, it is necessary to further promote universal education and higher education, so as to encourage a transition away from a reliance on quantitative and cost advantages, and to instead focus on quality advantages. Therefore, provinces should continue to focus on the accumulation and enhancement of human capital to achieve a steady improvement in this area. Furthermore, the number of healthcare talents in Tianjin, Chongqing, and Fujian Province needs to be improved; otherwise, this situation will prove detrimental to healthcare services as a result of inadequate talent management and a lack of understanding about medical risks. These provinces should improve the incentive mechanism, implement a performance assessment system, strengthen safety and security efforts, and ensure full-coverage liability insurance.

Secondly, regional structural capital provides a platform for human capital to play a role, and it is a key link in efforts to enhance regional scientific and technological innovation, so as to ensure quality human capital. This paper proposes that the relationship between structural capital and human capital is benign and complementary. Investment in human capital is critical for the development of innovation capital in structural capital. The continuous supply of R&D personnel depends upon the local education level, while a steady improvement in the regional innovation level will also stimulate and promote the development and convergence of local talent. Municipalities such as Tianjin and Chongqing should focus on cultivating and attracting R&D personnel and encourage the development of invention patents. At the same time, process capital provides fundamental facilities to ensure the flow of talent. Inner Mongolia, Guizhou, and Heilongjiang have achieved a high level of process capital by virtue of their relatively superior geographical conditions. Provinces should focus on improving the construction of infrastructure and boosting social circulation and information communication mechanisms.

In addition, regional relational capital reflects the network of relationships within and outside the region, which can generate resource and information advantages. Relational capital reflects the business environment and investment potential of a region. It represents the coordination and sustainability of joint development within and outside the region, and it is thus relevant for stakeholders who share concerns about the region's future. As the world economy becomes increasingly more inclusive, and as trade between countries becomes more frequent, foreign investment offers a fundamental means of promoting economic development. Foreign investment activities take into account the influence of regional location factors. An increase in the level of IC is conducive to attracting foreign investment and will likewise improve the level of IC in the region. Compared with Beijing and Shanghai, Tianjin and Chongqing need to actively attract foreign investment, enhance the scale of high-tech enterprise industries in the region, balance the quantity and quality of foreign investment to help optimize the industrial structure, and accelerate the urbanization process.

Finally, regional development should be coordinated, and regions with developed IC should strive to drive backward regions, in order to narrow the regional gap. As can be seen from Figure 2, IC shows a decreasing trend from the eastern coast to western inland areas. In order to achieve overall progress of the country, the government should encourage cross-regional cooperation between advantaged regions and disadvantaged regions and realize the advantaged regions to drive the disadvantaged regions through project experience exchange and resource complementation. The optimization of spatial flow and the allocation of production factors, as well as investment, talents, goods, and services should be strengthened among regions to achieve a rational division of labor and specialization, so as to enhance the level of IC.

In brief, RIC is the result of many factors, including the regional economy, politics, education, science, technology, and culture. It is an unstoppable trend that seeks to enhance RIC and promote regional development.

6. Discussion

The main research contributions of this paper are as follows: to begin with, this paper innovatively combines the Delphi method and the GDANP method further to improve the comprehensive RIC index evaluation system. We constructed a prototype decision structure on the basis of studying the literature, and the members of the expert group formed based on the Delphi method provided suggestions and scoring. This process effectively avoids the confrontation between experts. After constructing a formal decision structure according to the Delphi method, this paper uses the GDANP method to calculate the weight of each indicator in the system. The GDANP method can avoid the need for respondents to fill in the cumbersome DEMATEL questionnaire and can effectively solve the negative value, which cannot be solved in other methods, such as ANP, AHP, etc. [16].

Next, this paper specifically analyzes the RIC level of each province in China using the TOPSIS method, which provides a reference for the study of IC and regional development status based on Chinese national conditions. The TOPSIS method obtains the ranking by calculating the relative distance from the positive ideal solution alternative [75].

This study has some limitations. There is a lack of support among experts from the 31 provinces, and only eight experts in the field are selected. Moreover, due to insufficient domestic statistical data, many plausible criteria are not applied in this study. In addition, this paper did not conduct an in-depth analysis of the relationship between IC and regional economic efficiency by applying the index. In the future, this will be a direction for further research in this area. For example, the relationship between the role of IC and prefecture-level cities' economic development could be carried out.

7. Conclusions

Given the immateriality, inherent complexity, and dynamics of capital, the concept of RIC is inconsistent. Based on previous literature and empirical research, this article defined RIC as a variety of intangible assets in a region, and indicators were examined at three levels, namely human capital, structural capital, and relationship capital. In order to comprehensively evaluate the level of RIC, 21 four-level indicators were selected around the three-level evaluation index, and a formal decision structure was constructed (Table 6). Among them, 14 indicators were sourced from the previous literature, and seven indicators were compiled from experience. By combining the Delphi method with the GDANP technique, this paper obtained weight to the formal decision structure (Table 7). According to the weight, the secondary evaluation indicators were ranked as regional human capital (48.2%), regional structural capital (33.4%), and regional relationship capital (18.4%). The empirical results (Table 8) revealed a positive correlation between the GDP ranking and the level of RIC. In Figure 2, it can be seen that the RIC rankings of China's provinces were generally dominated by eastern provinces, which is in line with Chinese regional development. It is concluded that RIC played an important role in regional development.

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Appendix A

Table A1. Calculating the grey relational grade (GRG) by treating xi as the reference sequence.

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
x_1	x_1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_2	0.8333	0.6897	1.0000	0.9091	0.9091	0.8333	0.9524	0.8333	0.8700
	x_3	0.7143	0.6897	1.0000	0.4762	0.9091	0.6061	0.9524	0.8333	0.7726
	x_4	0.7407	0.9524	1.0000	0.8333	0.8696	0.7692	0.9524	0.8333	0.8689
	x_5	0.9091	0.9524	1.0000	0.8333	0.9524	0.9091	0.9524	0.7143	0.9029
	x_6	0.7143	0.6897	0.6667	0.5263	0.6452	0.5882	0.6897	0.5882	0.6385
	x_7	0.8696	0.6667	1.0000	0.5000	0.5882	0.8000	0.5128	0.8696	0.7259
	x_8	0.7143	0.6897	1.0000	0.3704	0.8333	0.7143	0.5714	0.8333	0.7158

Table A1. *Cont.*

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
	x_9	1.0000	0.6897	0.9524	0.4255	0.4762	0.9091	0.9524	0.9524	0.7947
	x_{10}	0.8696	0.6452	0.8000	0.6061	0.5714	0.8333	0.9524	0.8696	0.7684
	x_{11}	1.0000	0.6897	1.0000	0.9091	0.7692	0.7143	0.9524	0.9091	0.8680
	x_{12}	0.8000	0.9524	1.0000	0.5714	0.4878	0.6061	0.5405	0.8696	0.7285
	x_{13}	0.9091	0.7692	1.0000	0.4762	0.4651	0.6897	0.9524	0.8333	0.7619
	x_{14}	0.7143	0.6897	0.6667	0.9091	0.5128	0.3704	0.6897	0.6250	0.6472
	x_{15}	0.8696	0.9524	1.0000	0.5263	0.4545	0.8696	0.9524	0.5882	0.7766
	x_{16}	0.9091	0.9524	1.0000	0.5000	0.9524	0.9524	0.6452	0.6452	0.8196
	x_{17}	1.0000	0.6667	1.0000	0.5882	0.9524	0.8333	0.9524	0.5556	0.8186
	x_{18}	0.6897	0.9524	1.0000	0.9091	0.6250	0.8333	0.3333	0.8333	0.7720
	x_{19}	0.9524	0.4878	0.6667	0.7692	0.6250	0.6061	0.5556	0.5882	0.6564
	x_{20}	0.6897	0.6667	1.0000	0.8696	0.9091	0.8333	0.9524	0.8696	0.8488
	x_{21}	0.5263	0.6897	0.6667	0.5882	0.5882	0.5882	0.5714	0.6061	0.6031
x_2	x_1	0.8367	0.6949	1.0000	0.9111	0.9111	0.8367	0.9535	0.8367	0.8726
	x_2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_3	0.8367	1.0000	1.0000	0.5062	0.8367	0.6949	1.0000	1.0000	0.8593
	x_4	0.6508	0.6721	1.0000	0.9111	0.8039	0.9111	1.0000	1.0000	0.8686
	x_5	0.7736	0.6721	1.0000	0.9111	0.8723	0.7736	1.0000	0.8367	0.8549
	x_6	0.8367	1.0000	0.6721	0.5062	0.6949	0.6721	0.6721	0.6721	0.7158
	x_7	0.7455	0.5190	1.0000	0.4824	0.6308	0.9535	0.5062	0.9535	0.7238
	x_8	0.6308	1.0000	1.0000	0.3628	0.9111	0.8367	0.5616	1.0000	0.7879
	x_9	0.8367	1.0000	0.9535	0.4141	0.5062	0.7736	1.0000	0.8039	0.7860
	x_{10}	0.7455	0.5062	0.8039	0.5775	0.6119	1.0000	1.0000	0.9535	0.7748
	x_{11}	0.8367	1.0000	1.0000	1.0000	0.8367	0.8367	1.0000	0.9111	0.9277
	x_{12}	0.9535	0.6721	1.0000	0.5467	0.5190	0.6949	0.5325	0.9535	0.7340
	x_{13}	0.9111	0.8723	1.0000	0.5062	0.4940	0.8039	1.0000	1.0000	0.8234
	x_{14}	0.8367	1.0000	0.6721	1.0000	0.5467	0.4059	0.6721	0.7193	0.7316
	x_{15}	0.9535	0.6721	1.0000	0.5062	0.4824	0.9535	1.0000	0.6721	0.7800
	x_{16}	0.9111	0.6721	1.0000	0.5325	0.9535	0.8039	0.6308	0.7455	0.7812
	x_{17}	0.8367	0.9535	1.0000	0.5616	0.9535	1.0000	1.0000	0.6308	0.8670
	x_{18}	0.6119	0.6721	1.0000	1.0000	0.6721	1.0000	0.3333	1.0000	0.7862
	x_{19}	0.8039	0.4059	0.6721	0.8367	0.6721	0.6949	0.5467	0.6721	0.6631
	x_{20}	0.8039	0.9535	1.0000	0.9535	1.0000	1.0000	1.0000	0.9535	0.9580
	x_{21}	0.5942	1.0000	0.6721	0.6308	0.6308	0.6721	0.5616	0.6949	0.6821
x_3	x_1	0.7778	0.7568	1.0000	0.5600	0.9333	0.6829	0.9655	0.8750	0.8189
	x_2	0.8750	1.0000	1.0000	0.5833	0.8750	0.7568	1.0000	1.0000	0.8863
	x_3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_4	0.6512	0.7368	1.0000	0.6087	0.9655	0.8000	1.0000	1.0000	0.8453
	x_5	0.7368	0.7368	1.0000	0.6087	0.9655	0.6512	1.0000	0.8750	0.8218
	x_6	1.0000	1.0000	0.7368	0.4118	0.6829	0.9655	0.7368	0.7368	0.7838
	x_7	0.7179	0.5957	1.0000	0.4000	0.6364	0.7778	0.5833	0.9655	0.7096
	x_8	0.6364	1.0000	1.0000	0.3333	0.8235	0.8485	0.6364	1.0000	0.7848
	x_9	0.7778	1.0000	0.9655	0.3636	0.5385	0.6512	1.0000	0.8485	0.7681

Table A1. *Cont.*

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
	x_{10}	0.7179	0.5833	0.8485	0.4444	0.6222	0.7568	1.0000	0.9655	0.7423
	x_{11}	0.7778	1.0000	1.0000	0.5833	0.7778	0.8485	1.0000	0.9333	0.8651
	x_{12}	0.9032	0.7368	1.0000	0.4308	0.5490	1.0000	0.6087	0.9655	0.7743
	x_{13}	0.8235	0.9032	1.0000	1.0000	0.5283	0.8750	1.0000	1.0000	0.8913
	x_{14}	1.0000	1.0000	0.7368	0.5833	0.5714	0.5714	0.7368	0.7778	0.7472
	x_{15}	0.8485	0.7368	1.0000	0.4118	0.5185	0.7368	1.0000	0.7368	0.7487
	x_{16}	0.8235	0.7368	1.0000	0.9333	0.9032	0.6667	0.7000	0.8000	0.8204
	x_{17}	0.7778	0.9655	1.0000	0.4375	0.9032	0.7568	1.0000	0.7000	0.8176
	x_{18}	0.6222	0.7368	1.0000	0.5833	0.6667	0.7568	0.4058	1.0000	0.7215
	x_{19}	0.7568	0.4828	0.7368	0.6364	0.6667	1.0000	0.6222	0.7368	0.7048
	x_{20}	0.9655	0.9655	1.0000	0.5957	0.8750	0.7568	1.0000	0.9655	0.8905
	x_{21}	0.7368	1.0000	0.7368	0.7778	0.6364	0.9655	0.6364	0.7568	0.7808
x_4	x_1	0.7455	0.9535	1.0000	0.8367	0.8723	0.7736	0.9535	0.8367	0.8715
	x_2	0.6508	0.6721	1.0000	0.9111	0.8039	0.9111	1.0000	1.0000	0.8686
	x_3	0.5775	0.6721	1.0000	0.5325	0.9535	0.7455	1.0000	1.0000	0.8101
	x_4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_5	0.8039	1.0000	1.0000	1.0000	0.9111	0.7193	1.0000	0.8367	0.9089
	x_6	0.5775	0.6721	0.6721	0.4824	0.5942	0.7193	0.6721	0.6721	0.6327
	x_7	0.8367	0.6949	1.0000	0.4607	0.5467	0.9535	0.5062	0.9535	0.7440
	x_8	0.9535	0.6721	1.0000	0.3504	0.7455	0.9111	0.5616	1.0000	0.7743
	x_9	0.7455	0.6721	0.9535	0.3981	0.4505	0.7193	1.0000	0.8039	0.7179
	x_{10}	0.8367	0.6721	0.8039	0.5467	0.5325	0.9111	1.0000	0.9535	0.7821
	x_{11}	0.7455	0.6721	1.0000	0.9111	0.6949	0.9111	1.0000	0.9111	0.8557
	x_{12}	0.6308	1.0000	1.0000	0.5190	0.4607	0.7455	0.5325	0.9535	0.7302
	x_{13}	0.6949	0.7455	1.0000	0.5325	0.4409	0.8723	1.0000	1.0000	0.7858
	x_{14}	0.5775	0.6721	0.6721	0.9111	0.4824	0.4227	0.6721	0.7193	0.6412
	x_{15}	0.6721	1.0000	1.0000	0.4824	0.4316	0.8723	1.0000	0.6721	0.7663
	x_{16}	0.6949	1.0000	1.0000	0.5616	0.8367	0.7455	0.6308	0.7455	0.7769
	x_{17}	0.7455	0.6508	1.0000	0.5325	0.8367	0.9111	1.0000	0.6308	0.7884
	x_{18}	0.9111	1.0000	1.0000	0.9111	0.5775	0.9111	0.3333	1.0000	0.8305
	x_{19}	0.7736	0.5062	0.6721	0.9111	0.5775	0.7455	0.5467	0.6721	0.6756
	x_{20}	0.5616	0.6508	1.0000	0.9535	0.8039	0.9111	1.0000	0.9535	0.8543
	x_{21}	0.4505	0.6721	0.6721	0.6721	0.5467	0.7193	0.5616	0.6949	0.6237
x_5	x_1	0.9111	0.9535	1.0000	0.8367	0.9535	0.9111	0.9535	0.7193	0.9048
	x_2	0.7736	0.6721	1.0000	0.9111	0.8723	0.7736	1.0000	0.8367	0.8549
	x_3	0.6721	0.6721	1.0000	0.5325	0.9535	0.5775	1.0000	0.8367	0.7806
	x_4	0.8039	1.0000	1.0000	1.0000	0.9111	0.7193	1.0000	0.8367	0.9089
	x_5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_6	0.6721	0.6721	0.6721	0.4824	0.6308	0.5616	0.6721	0.7736	0.6421
	x_7	0.9535	0.6949	1.0000	0.4607	0.5775	0.7455	0.5062	0.8039	0.7178
	x_8	0.7736	0.6721	1.0000	0.3504	0.8039	0.6721	0.5616	0.8367	0.7088
	x_9	0.9111	0.6721	0.9535	0.3981	0.4713	1.0000	1.0000	0.6949	0.7626
	x_{10}	0.9535	0.6721	0.8039	0.5467	0.5616	0.7736	1.0000	0.8039	0.7644
	x_{11}	0.9111	0.6721	1.0000	0.9111	0.7455	0.6721	1.0000	0.7736	0.8357

Table A1. *Cont.*

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
	x_{12}	0.7455	1.0000	1.0000	0.5190	0.4824	0.5775	0.5325	0.8039	0.7076
	x_{13}	0.8367	0.7455	1.0000	0.5325	0.4607	0.6508	1.0000	0.8367	0.7579
	x_{14}	0.6721	0.6721	0.6721	0.9111	0.5062	0.3628	0.6721	0.8367	0.6632
	x_{15}	0.8039	1.0000	1.0000	0.4824	0.4505	0.8039	1.0000	0.7736	0.7893
	x_{16}	0.8367	1.0000	1.0000	0.5616	0.9111	0.9535	0.6308	0.8723	0.8458
	x_{17}	0.9111	0.6508	1.0000	0.5325	0.9111	0.7736	1.0000	0.7193	0.8123
	x_{18}	0.7455	1.0000	1.0000	0.9111	0.6119	0.7736	0.3333	0.8367	0.7765
	x_{19}	0.9535	0.5062	0.6721	0.9111	0.6119	0.5775	0.5467	0.7736	0.6941
	x_{20}	0.6508	0.6508	1.0000	0.9535	0.8723	0.7736	1.0000	0.8039	0.8381
	x_{21}	0.5062	0.6721	0.6721	0.6721	0.5775	0.5616	0.5616	0.8039	0.6284
x_6	x_1	0.7143	0.6897	0.6667	0.5263	0.6452	0.5882	0.6897	0.5882	0.6385
	x_2	0.8333	1.0000	0.6667	0.5000	0.6897	0.6667	0.6667	0.6667	0.7112
	x_3	1.0000	1.0000	0.6667	0.3333	0.6061	0.9524	0.6667	0.6667	0.7365
	x_4	0.5714	0.6667	0.6667	0.4762	0.5882	0.7143	0.6667	0.6667	0.6271
	x_5	0.6667	0.6667	0.6667	0.4762	0.6250	0.5556	0.6667	0.7692	0.6366
	x_6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_7	0.6452	0.5128	0.6667	0.9091	0.8696	0.6897	0.6667	0.6452	0.7006
	x_8	0.5556	1.0000	0.6667	0.5556	0.7407	0.7692	0.7692	0.6667	0.7155
	x_9	0.7143	1.0000	0.6897	0.6897	0.6452	0.5556	0.6667	0.5714	0.6916
	x_{10}	0.6452	0.5000	0.5714	0.8000	0.8333	0.6667	0.6667	0.6452	0.6661
	x_{11}	0.7143	1.0000	0.6667	0.5000	0.8000	0.7692	0.6667	0.6250	0.7177
	x_{12}	0.8696	0.6667	0.6667	0.8696	0.6667	0.9524	0.7143	0.6452	0.7564
	x_{13}	0.7692	0.8696	0.6667	0.3333	0.6250	0.8000	0.6667	0.6667	0.6746
	x_{14}	1.0000	1.0000	1.0000	0.5000	0.7143	0.5000	1.0000	0.9091	0.8279
	x_{15}	0.8000	0.6667	0.6667	1.0000	0.6061	0.6452	0.6667	1.0000	0.7564
	x_{16}	0.7692	0.6667	0.6667	0.3448	0.6667	0.5714	0.9091	0.8696	0.6830
	x_{17}	0.7143	0.9524	0.6667	0.8333	0.6667	0.6667	0.6667	0.9091	0.7595
	x_{18}	0.5405	0.6667	0.6667	0.5000	0.9524	0.6667	0.3922	0.6667	0.6315
	x_{19}	0.6897	0.4000	1.0000	0.4545	0.9524	0.9524	0.7407	1.0000	0.7737
	x_{20}	0.9524	0.9524	0.6667	0.4878	0.6897	0.6667	0.6667	0.6452	0.7159
	x_{21}	0.6667	1.0000	1.0000	0.3846	0.8696	1.0000	0.7692	0.9524	0.8303
x_7	x_1	0.8750	0.6774	1.0000	0.5122	0.6000	0.8077	0.5250	0.8750	0.7340
	x_2	0.7500	0.5250	1.0000	0.4884	0.6364	0.9545	0.5122	0.9545	0.7276
	x_3	0.6563	0.5250	1.0000	0.3333	0.5676	0.7241	0.5122	0.9545	0.6591
	x_4	0.8400	0.7000	1.0000	0.4667	0.5526	0.9545	0.5122	0.9545	0.7476
	x_5	0.9545	0.7000	1.0000	0.4667	0.5833	0.7500	0.5122	0.8077	0.7218
	x_6	0.6563	0.5250	0.6774	0.9130	0.8750	0.7000	0.6774	0.6563	0.7100
	x_7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_8	0.8077	0.5250	1.0000	0.6000	0.6774	0.8750	0.8400	0.9545	0.7850
	x_9	0.8750	0.5250	0.9545	0.7500	0.7241	0.7500	0.5122	0.8400	0.7414
	x_{10}	1.0000	0.9545	0.8077	0.7500	0.9545	0.9545	0.5122	1.0000	0.8667
	x_{11}	0.8750	0.5250	1.0000	0.4884	0.7241	0.8750	0.5122	0.9545	0.7443
	x_{12}	0.7241	0.7000	1.0000	0.8077	0.7500	0.7241	0.9130	1.0000	0.8274
	x_{13}	0.8077	0.5676	1.0000	0.3333	0.7000	0.8400	0.5122	0.9545	0.7144

Table A1. *Cont.*

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
	x_{14}	0.6563	0.5250	0.6774	0.4884	0.8077	0.4200	0.6774	0.7000	0.6190
	x_{15}	0.7778	0.7000	1.0000	0.9130	0.6774	0.9130	0.5122	0.6563	0.7687
	x_{16}	0.8077	0.7000	1.0000	0.3443	0.6176	0.7778	0.7241	0.7241	0.7120
	x_{17}	0.8750	0.5122	1.0000	0.7778	0.6176	0.9545	0.5122	0.6176	0.7334
	x_{18}	0.7778	0.7000	1.0000	0.4884	0.9130	0.9545	0.5000	0.9545	0.7860
	x_{19}	0.9130	0.6563	0.6774	0.4468	0.9130	0.7241	0.8750	0.6563	0.7327
	x_{20}	0.6364	0.5122	1.0000	0.4773	0.6364	0.9545	0.5122	1.0000	0.7161
	x_{21}	0.5000	0.5250	0.6774	0.3818	1.0000	0.7000	0.8400	0.6774	0.6627
x_8	x_1	0.7778	0.7568	1.0000	0.4516	0.8750	0.7778	0.6512	0.8750	0.7706
	x_2	0.7000	1.0000	1.0000	0.4375	0.9333	0.8750	0.6364	1.0000	0.8228
	x_3	0.6364	1.0000	1.0000	0.3333	0.8235	0.8485	0.6364	1.0000	0.7848
	x_4	0.9655	0.7368	1.0000	0.4242	0.8000	0.9333	0.6364	1.0000	0.8120
	x_5	0.8235	0.7368	1.0000	0.4242	0.8485	0.7368	0.6364	0.8750	0.7602
	x_6	0.6364	1.0000	0.7368	0.6364	0.8000	0.8235	0.8235	0.7368	0.7742
	x_7	0.8485	0.5957	1.0000	0.6667	0.7368	0.9032	0.8750	0.9655	0.8239
	x_8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_9	0.7778	1.0000	0.9655	0.8000	0.6087	0.7368	0.6364	0.8485	0.7967
	x_{10}	0.8485	0.5833	0.8485	0.5714	0.7179	0.8750	0.6364	0.9655	0.7558
	x_{11}	0.7778	1.0000	1.0000	0.4375	0.9333	1.0000	0.6364	0.9333	0.8398
	x_{12}	0.6829	0.7368	1.0000	0.5957	0.6222	0.8485	0.9333	0.9655	0.7981
	x_{13}	0.7368	0.9032	1.0000	0.3333	0.5957	0.9655	0.6364	1.0000	0.7714
	x_{14}	0.6364	1.0000	0.7368	0.4375	0.6512	0.5185	0.8235	0.7778	0.6977
	x_{15}	0.7179	0.7368	1.0000	0.6364	0.5833	0.8485	0.6364	0.7368	0.7370
	x_{16}	0.7368	0.7368	1.0000	0.3415	0.9032	0.7568	0.8750	0.8000	0.7688
	x_{17}	0.7778	0.9655	1.0000	0.5833	0.9032	0.8750	0.6364	0.7000	0.8052
	x_{18}	0.9655	0.7368	1.0000	0.4375	0.7778	0.8750	0.5283	1.0000	0.7901
	x_{19}	0.8000	0.4828	0.7368	0.4118	0.7778	0.8485	0.9655	0.7368	0.7200
	x_{20}	0.6222	0.9655	1.0000	0.4308	0.9333	0.8750	0.6364	0.9655	0.8036
	x_{21}	0.5185	1.0000	0.7368	0.3684	0.7368	0.8235	1.0000	0.7568	0.7426
x_9	x_1	1.0000	0.7313	0.9608	0.4757	0.5269	0.9245	0.9608	0.9608	0.8176
	x_2	0.8596	1.0000	0.9608	0.4579	0.5506	0.8033	1.0000	0.8305	0.8078
	x_3	0.7538	1.0000	0.9608	0.3333	0.5052	0.6203	1.0000	0.8305	0.7505
	x_4	0.7778	0.7101	0.9608	0.4414	0.4949	0.7538	1.0000	0.8305	0.7462
	x_5	0.9245	0.7101	0.9608	0.4414	0.5158	1.0000	1.0000	0.7313	0.7855
	x_6	0.7538	1.0000	0.7313	0.7313	0.6901	0.6049	0.7101	0.6203	0.7303
	x_7	0.8909	0.5632	0.9608	0.7778	0.7538	0.7778	0.5506	0.8596	0.7668
	x_8	0.7538	1.0000	0.9608	0.7778	0.5765	0.7101	0.6049	0.8305	0.7768
	x_9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{10}	0.8909	0.5506	0.8033	0.6364	0.7778	0.8033	1.0000	0.8596	0.7902
	x_{11}	1.0000	1.0000	0.9608	0.4579	0.6049	0.7101	1.0000	0.8909	0.8281
	x_{12}	0.8305	0.7101	0.9608	0.6712	0.9608	0.6203	0.5765	0.8596	0.7737
	x_{13}	0.9245	0.8909	0.9608	0.3333	0.9608	0.6901	1.0000	0.8305	0.8239
	x_{14}	0.7538	1.0000	0.7313	0.4579	0.8909	0.4050	0.7101	0.6533	0.7003

Table A1. *Cont.*

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
	x_{15}	0.8909	0.7101	0.9608	0.7313	0.9245	0.8305	1.0000	0.6203	0.8336
	x_{16}	0.9245	0.7101	0.9608	0.3427	0.5385	0.9608	0.6712	0.6712	0.7225
	x_{17}	1.0000	0.9608	0.9608	0.6533	0.5385	0.8033	1.0000	0.5904	0.8134
	x_{18}	0.7313	0.7101	0.9608	0.4579	0.7101	0.8033	0.3740	0.8305	0.6973
	x_{19}	0.9608	0.4495	0.7313	0.4261	0.7101	0.6203	0.5904	0.6203	0.6386
	x_{20}	0.7313	0.9608	0.9608	0.4495	0.5506	0.8033	1.0000	0.8596	0.7895
	x_{21}	0.5765	1.0000	0.7313	0.3740	0.7538	0.6049	0.6049	0.6364	0.6602
x_{10}	x_1	0.8723	0.6508	0.8039	0.6119	0.5775	0.8367	0.9535	0.8723	0.7724
	x_2	0.7455	0.5062	0.8039	0.5775	0.6119	1.0000	1.0000	0.9535	0.7748
	x_3	0.6508	0.5062	0.8039	0.3694	0.5467	0.6949	1.0000	0.9535	0.6907
	x_4	0.8367	0.6721	0.8039	0.5467	0.5325	0.9111	1.0000	0.9535	0.7821
	x_5	0.9535	0.6721	0.8039	0.5467	0.5616	0.7736	1.0000	0.8039	0.7644
	x_6	0.6508	0.5062	0.5775	0.8039	0.8367	0.6721	0.6721	0.6508	0.6713
	x_7	1.0000	0.9535	0.8039	0.7455	0.9535	0.9535	0.5062	1.0000	0.8645
	x_8	0.8039	0.5062	0.8039	0.4940	0.6508	0.8367	0.5616	0.9535	0.7013
	x_9	0.8723	0.5062	0.7736	0.5942	0.7455	0.7736	1.0000	0.8367	0.7628
	x_{10}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{11}	0.8723	0.5062	0.8039	0.5775	0.6949	0.8367	1.0000	0.9535	0.7806
	x_{12}	0.7193	0.6721	0.8039	0.9111	0.7736	0.6949	0.5325	1.0000	0.7634
	x_{13}	0.8039	0.5467	0.8039	0.3694	0.7193	0.8039	1.0000	0.9535	0.7501
	x_{14}	0.6508	0.5062	0.5775	0.5775	0.8367	0.4059	0.6721	0.6949	0.6152
	x_{15}	0.7736	0.6721	0.8039	0.8039	0.6949	0.9535	1.0000	0.6508	0.7941
	x_{16}	0.8039	0.6721	0.8039	0.3832	0.5942	0.8039	0.6308	0.7193	0.6764
	x_{17}	0.8723	0.4940	0.8039	0.9535	0.5942	1.0000	1.0000	0.6119	0.7912
	x_{18}	0.7736	0.6721	0.8039	0.5775	0.8723	1.0000	0.3333	0.9535	0.7483
	x_{19}	0.9111	0.6721	0.5775	0.5190	0.8723	0.6949	0.5467	0.6508	0.6806
	x_{20}	0.6308	0.4940	0.8039	0.5616	0.6119	1.0000	1.0000	1.0000	0.7628
	x_{21}	0.4940	0.5062	0.5775	0.4316	0.9535	0.6721	0.5616	0.6721	0.6086
x_{11}	x_1	1.0000	0.6949	1.0000	0.9111	0.7736	0.7193	0.9535	0.9111	0.8704
	x_2	0.8367	1.0000	1.0000	1.0000	0.8367	0.8367	1.0000	0.9111	0.9277
	x_3	0.7193	1.0000	1.0000	0.5062	0.7193	0.8039	1.0000	0.9111	0.8325
	x_4	0.7455	0.6721	1.0000	0.9111	0.6949	0.9111	1.0000	0.9111	0.8557
	x_5	0.9111	0.6721	1.0000	0.9111	0.7455	0.6721	1.0000	0.7736	0.8357
	x_6	0.7193	1.0000	0.6721	0.5062	0.8039	0.7736	0.6721	0.6308	0.7223
	x_7	0.8723	0.5190	1.0000	0.4824	0.7193	0.8723	0.5062	0.9535	0.7406
	x_8	0.7193	1.0000	1.0000	0.3628	0.9111	1.0000	0.5616	0.9111	0.8082
	x_9	1.0000	1.0000	0.9535	0.4141	0.5616	0.6721	1.0000	0.8723	0.8092
	x_{10}	0.8723	0.5062	0.8039	0.5775	0.6949	0.8367	1.0000	0.9535	0.7806
	x_{11}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{12}	0.8039	0.6721	1.0000	0.5467	0.5775	0.8039	0.5325	0.9535	0.7363
	x_{13}	0.9111	0.8723	1.0000	0.5062	0.5467	0.9535	1.0000	0.9111	0.8376
	x_{14}	0.7193	1.0000	0.6721	1.0000	0.6119	0.4409	0.6721	0.6721	0.7236
	x_{15}	0.8723	0.6721	1.0000	0.5062	0.5325	0.8039	1.0000	0.6308	0.7522
	x_{16}	0.9111	0.6721	1.0000	0.5325	0.8039	0.6949	0.6308	0.6949	0.7425

Table A1. *Cont.*

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
	x_{17}	1.0000	0.9535	1.0000	0.5616	0.8039	0.8367	1.0000	0.5942	0.8437
	x_{18}	0.6949	0.6721	1.0000	1.0000	0.7736	0.8367	0.3333	0.9111	0.7777
	x_{19}	0.9535	0.4059	0.6721	0.8367	0.7736	0.8039	0.5467	0.6308	0.7029
	x_{20}	0.6949	0.9535	1.0000	0.9535	0.8367	0.8367	1.0000	0.9535	0.9036
	x_{21}	0.5325	1.0000	0.6721	0.6308	0.7193	0.7736	0.5616	0.6508	0.6926
x_{12}	x_1	0.7872	0.9487	1.0000	0.5522	0.4684	0.5873	0.5211	0.8605	0.7157
	x_2	0.9487	0.6491	1.0000	0.5211	0.4933	0.6727	0.5068	0.9487	0.7176
	x_3	0.8605	0.6491	1.0000	0.3333	0.4458	1.0000	0.5068	0.9487	0.7180
	x_4	0.6066	1.0000	1.0000	0.4933	0.4353	0.7255	0.5068	0.9487	0.7145
	x_5	0.7255	1.0000	1.0000	0.4933	0.4568	0.5522	0.5068	0.7872	0.6902
	x_6	0.8605	0.6491	0.6491	0.8605	0.6491	0.9487	0.6981	0.6271	0.7428
	x_7	0.6981	0.6727	1.0000	0.7872	0.7255	0.6981	0.9024	1.0000	0.8105
	x_8	0.5873	0.6491	1.0000	0.4933	0.5211	0.7872	0.9024	0.9487	0.7362
	x_9	0.7872	0.6491	0.9487	0.6066	0.9487	0.5522	0.5068	0.8222	0.7277
	x_{10}	0.6981	0.6491	0.7872	0.9024	0.7551	0.6727	0.5068	1.0000	0.7464
	x_{11}	0.7872	0.6491	1.0000	0.5211	0.5522	0.7872	0.5068	0.9487	0.7191
	x_{12}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{13}	0.8605	0.7255	1.0000	0.3333	0.9024	0.8222	0.5068	0.9487	0.7624
	x_{14}	0.8605	0.6491	0.6491	0.5211	0.9024	0.4684	0.6981	0.6727	0.6777
	x_{15}	0.9024	1.0000	1.0000	0.8605	0.8605	0.6491	0.5068	0.6271	0.8008
	x_{16}	0.8605	1.0000	1.0000	0.3458	0.4805	0.5692	0.7551	0.6981	0.7137
	x_{17}	0.7872	0.6271	1.0000	0.9487	0.4805	0.6727	0.5068	0.5873	0.7013
	x_{18}	0.5692	1.0000	1.0000	0.5211	0.6727	0.6727	0.4458	0.9487	0.7288
	x_{19}	0.7551	0.4805	0.6491	0.4684	0.6727	1.0000	0.9487	0.6271	0.7002
	x_{20}	0.8222	0.6271	1.0000	0.5068	0.4933	0.6727	0.5068	1.0000	0.7036
	x_{21}	0.5873	0.6491	0.6491	0.3895	0.7255	0.9487	0.9024	0.6491	0.6876
x_{13}	x_1	0.9333	0.8235	1.0000	0.5600	0.5490	0.7568	0.9655	0.8750	0.8079
	x_2	0.9333	0.9032	1.0000	0.5833	0.5714	0.8485	1.0000	1.0000	0.8550
	x_3	0.8235	0.9032	1.0000	1.0000	0.5283	0.8750	1.0000	1.0000	0.8913
	x_4	0.7568	0.8000	1.0000	0.6087	0.5185	0.9032	1.0000	1.0000	0.8234
	x_5	0.8750	0.8000	1.0000	0.6087	0.5385	0.7179	1.0000	0.8750	0.8019
	x_6	0.8235	0.9032	0.7368	0.4118	0.7000	0.8485	0.7368	0.7368	0.7372
	x_7	0.8485	0.6364	1.0000	0.4000	0.7568	0.8750	0.5833	0.9655	0.7582
	x_8	0.7368	0.9032	1.0000	0.3333	0.5957	0.9655	0.6364	1.0000	0.7714
	x_9	0.9333	0.9032	0.9655	0.3636	0.9655	0.7179	1.0000	0.8485	0.8372
	x_{10}	0.8485	0.6222	0.8485	0.4444	0.7778	0.8485	1.0000	0.9655	0.7944
	x_{11}	0.9333	0.9032	1.0000	0.5833	0.6222	0.9655	1.0000	0.9333	0.8676
	x_{12}	0.9032	0.8000	1.0000	0.4308	0.9333	0.8750	0.6087	0.9655	0.8146
	x_{13}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{14}	0.8235	0.9032	0.7368	0.5833	0.8750	0.5283	0.7368	0.7778	0.7456
	x_{15}	0.9655	0.8000	1.0000	0.4118	0.9655	0.8235	1.0000	0.7368	0.8379
	x_{16}	1.0000	0.8000	1.0000	0.9333	0.5600	0.7368	0.7000	0.8000	0.8163
	x_{17}	0.9333	0.8750	1.0000	0.4375	0.5600	0.8485	1.0000	0.7000	0.7943

Table A1. *Cont.*

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
	x_{18}	0.7179	0.8000	1.0000	0.5833	0.7179	0.8485	0.4058	1.0000	0.7592
	x_{19}	0.9032	0.5091	0.7368	0.6364	0.7179	0.8750	0.6222	0.7368	0.7172
	x_{20}	0.8000	0.8750	1.0000	0.5957	0.5714	0.8485	1.0000	0.9655	0.8320
	x_{21}	0.6364	0.9032	0.7368	0.7778	0.7568	0.8485	0.6364	0.7568	0.7566
x_{14}	x_1	0.6923	0.6667	0.6429	0.9000	0.4865	0.3462	0.6667	0.6000	0.6251
	x_2	0.8182	1.0000	0.6429	1.0000	0.5143	0.3750	0.6429	0.6923	0.7107
	x_3	1.0000	1.0000	0.6429	0.4737	0.4615	0.4615	0.6429	0.6923	0.6718
	x_4	0.5455	0.6429	0.6429	0.9000	0.4500	0.3913	0.6429	0.6923	0.6135
	x_5	0.6429	0.6429	0.6429	0.9000	0.4737	0.3333	0.6429	0.8182	0.6371
	x_6	1.0000	1.0000	1.0000	0.4737	0.6923	0.4737	1.0000	0.9000	0.8175
	x_7	0.6207	0.4865	0.6429	0.4500	0.7826	0.3830	0.6429	0.6667	0.5844
	x_8	0.5294	1.0000	0.6429	0.3333	0.5455	0.4091	0.7500	0.6923	0.6128
	x_9	0.6923	1.0000	0.6667	0.3830	0.8571	0.3333	0.6429	0.5806	0.6445
	x_{10}	0.6207	0.4737	0.5455	0.5455	0.8182	0.3750	0.6429	0.6667	0.5860
	x_{11}	0.6923	1.0000	0.6429	1.0000	0.5806	0.4091	0.6429	0.6429	0.7013
	x_{12}	0.8571	0.6429	0.6429	0.5143	0.9000	0.4615	0.6923	0.6667	0.6722
	x_{13}	0.7500	0.8571	0.6429	0.4737	0.8182	0.4186	0.6429	0.6923	0.6620
	x_{14}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{15}	0.7826	0.6429	0.6429	0.4737	0.7826	0.3673	0.6429	0.9000	0.6544
	x_{16}	0.7500	0.6429	0.6429	0.5000	0.5000	0.3396	0.9000	0.9474	0.6528
	x_{17}	0.6923	0.9474	0.6429	0.5294	0.5000	0.3750	0.6429	0.8182	0.6435
	x_{18}	0.5143	0.6429	0.6429	1.0000	0.7200	0.3750	0.3673	0.6923	0.6193
	x_{19}	0.6667	0.3750	1.0000	0.8182	0.7200	0.4615	0.7200	0.9000	0.7077
	x_{20}	0.9474	0.9474	0.6429	0.9474	0.5143	0.3750	0.6429	0.6667	0.7105
	x_{21}	0.6429	1.0000	1.0000	0.6000	0.7826	0.4737	0.7500	0.9474	0.7746
x_{15}	x_1	0.8723	0.9535	1.0000	0.5325	0.4607	0.8723	0.9535	0.5942	0.7799
	x_2	0.9535	0.6721	1.0000	0.5062	0.4824	0.9535	1.0000	0.6721	0.7800
	x_3	0.8039	0.6721	1.0000	0.3388	0.4409	0.6721	1.0000	0.6721	0.7000
	x_4	0.6721	1.0000	1.0000	0.4824	0.4316	0.8723	1.0000	0.6721	0.7663
	x_5	0.8039	1.0000	1.0000	0.4824	0.4505	0.8039	1.0000	0.7736	0.7893
	x_6	0.8039	0.6721	0.6721	1.0000	0.6119	0.6508	0.6721	1.0000	0.7604
	x_7	0.7736	0.6949	1.0000	0.9111	0.6721	0.9111	0.5062	0.6508	0.7650
	x_8	0.6508	0.6721	1.0000	0.5616	0.5062	0.8039	0.5616	0.6721	0.6786
	x_9	0.8723	0.6721	0.9535	0.6949	0.9111	0.8039	1.0000	0.5775	0.8107
	x_{10}	0.7736	0.6721	0.8039	0.8039	0.6949	0.9535	1.0000	0.6508	0.7941
	x_{11}	0.8723	0.6721	1.0000	0.5062	0.5325	0.8039	1.0000	0.6308	0.7522
	x_{12}	0.9111	1.0000	1.0000	0.8723	0.8723	0.6721	0.5325	0.6508	0.8139
	x_{13}	0.9535	0.7455	1.0000	0.3388	0.9535	0.7736	1.0000	0.6721	0.8046
	x_{14}	0.8039	0.6721	0.6721	0.5062	0.8039	0.3981	0.6721	0.9111	0.6799
	x_{15}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{16}	0.9535	1.0000	1.0000	0.3504	0.4713	0.8367	0.6308	0.8723	0.7644
	x_{17}	0.8723	0.6508	1.0000	0.8367	0.4713	0.9535	1.0000	0.9111	0.8370
	x_{18}	0.6308	1.0000	1.0000	0.5062	0.6308	0.9535	0.3333	0.6721	0.7158
	x_{19}	0.8367	0.5062	0.6721	0.4607	0.6308	0.6721	0.5467	1.0000	0.6657

Table A1. *Cont.*

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
	x_{20}	0.7736	0.6508	1.0000	0.4940	0.4824	0.9535	1.0000	0.6508	0.7506
	x_{21}	0.5775	0.6721	0.6721	0.3905	0.6721	0.6508	0.5616	0.9535	0.6438
x_{16}	x_1	0.9310	0.9643	1.0000	0.5745	0.9643	0.9643	0.7105	0.7105	0.8524
	x_2	0.9310	0.7297	1.0000	0.6000	0.9643	0.8438	0.6923	0.7941	0.8194
	x_3	0.8182	0.7297	1.0000	0.9310	0.9000	0.6585	0.6923	0.7941	0.8155
	x_4	0.7500	1.0000	1.0000	0.6279	0.8710	0.7941	0.6923	0.7941	0.8162
	x_5	0.8710	1.0000	1.0000	0.6279	0.9310	0.9643	0.6923	0.9000	0.8733
	x_6	0.8182	0.7297	0.7297	0.4154	0.7297	0.6429	0.9310	0.9000	0.7371
	x_7	0.8438	0.7500	1.0000	0.4030	0.6750	0.8182	0.7714	0.7714	0.7541
	x_8	0.7297	0.7297	1.0000	0.3333	0.9000	0.7500	0.8710	0.7941	0.7635
	x_9	0.9310	0.7297	0.9643	0.3649	0.5625	0.9643	0.6923	0.6923	0.7377
	x_{10}	0.8438	0.7297	0.8438	0.4500	0.6585	0.8438	0.6923	0.7714	0.7292
	x_{11}	0.9310	0.7297	1.0000	0.6000	0.8438	0.7500	0.6923	0.7500	0.7871
	x_{12}	0.9000	1.0000	1.0000	0.4355	0.5745	0.6585	0.8182	0.7714	0.7698
	x_{13}	1.0000	0.7941	1.0000	0.9310	0.5510	0.7297	0.6923	0.7941	0.8115
	x_{14}	0.8182	0.7297	0.7297	0.6000	0.6000	0.4355	0.9310	0.9643	0.7261
	x_{15}	0.9643	1.0000	1.0000	0.4154	0.5400	0.8710	0.6923	0.9000	0.7979
	x_{16}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{17}	0.9310	0.7105	1.0000	0.4426	1.0000	0.8438	0.6923	0.8438	0.8080
	x_{18}	0.7105	1.0000	1.0000	0.6000	0.7105	0.8438	0.4821	0.7941	0.7676
	x_{19}	0.9000	0.5745	0.7297	0.6585	0.7105	0.6585	0.8438	0.9000	0.7469
	x_{20}	0.7941	0.7105	1.0000	0.6136	0.9643	0.8438	0.6923	0.7714	0.7988
	x_{21}	0.6279	0.7297	0.7297	0.8182	0.6750	0.6429	0.8710	0.9310	0.7532
x_{17}	x_1	1.0000	0.6721	1.0000	0.5942	0.9535	0.8367	0.9535	0.5616	0.8215
	x_2	0.8367	0.9535	1.0000	0.5616	0.9535	1.0000	1.0000	0.6308	0.8670
	x_3	0.7193	0.9535	1.0000	0.3628	0.8723	0.6949	1.0000	0.6308	0.7792
	x_4	0.7455	0.6508	1.0000	0.5325	0.8367	0.9111	1.0000	0.6308	0.7884
	x_5	0.9111	0.6508	1.0000	0.5325	0.9111	0.7736	1.0000	0.7193	0.8123
	x_6	0.7193	0.9535	0.6721	0.8367	0.6721	0.6721	0.6721	0.9111	0.7636
	x_7	0.8723	0.5062	1.0000	0.7736	0.6119	0.9535	0.5062	0.6119	0.7295
	x_8	0.7193	0.9535	1.0000	0.5062	0.8723	0.8367	0.5616	0.6308	0.7601
	x_9	1.0000	0.9535	0.9535	0.6119	0.4940	0.7736	1.0000	0.5467	0.7916
	x_{10}	0.8723	0.4940	0.8039	0.9535	0.5942	1.0000	1.0000	0.6119	0.7912
	x_{11}	1.0000	0.9535	1.0000	0.5616	0.8039	0.8367	1.0000	0.5942	0.8437
	x_{12}	0.8039	0.6508	1.0000	0.9535	0.5062	0.6949	0.5325	0.6119	0.7192
	x_{13}	0.9111	0.8367	1.0000	0.3628	0.4824	0.8039	1.0000	0.6308	0.7535
	x_{14}	0.7193	0.9535	0.6721	0.5616	0.5325	0.4059	0.6721	0.8367	0.6692
	x_{15}	0.8723	0.6508	1.0000	0.8367	0.4713	0.9535	1.0000	0.9111	0.8370
	x_{16}	0.9111	0.6508	1.0000	0.3761	1.0000	0.8039	0.6308	0.8039	0.7721
	x_{17}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{18}	0.6949	0.6508	1.0000	0.5616	0.6508	1.0000	0.3333	0.6308	0.6903
	x_{19}	0.9535	0.3981	0.6721	0.5062	0.6508	0.6949	0.5467	0.9111	0.6667
	x_{20}	0.6949	1.0000	1.0000	0.5467	0.9535	1.0000	1.0000	0.6119	0.8509
	x_{21}	0.5325	0.9535	0.6721	0.4227	0.6119	0.6721	0.5616	0.8723	0.6624

Table A1. *Cont.*

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
x_{18}	x_1	0.6949	0.9535	1.0000	0.9111	0.6308	0.8367	0.3388	0.8367	0.7753
	x_2	0.6119	0.6721	1.0000	1.0000	0.6721	1.0000	0.3333	1.0000	0.7862
	x_3	0.5467	0.6721	1.0000	0.5062	0.5942	0.6949	0.3333	1.0000	0.6684
	x_4	0.9111	1.0000	1.0000	0.9111	0.5775	0.9111	0.3333	1.0000	0.8305
	x_5	0.7455	1.0000	1.0000	0.9111	0.6119	0.7736	0.3333	0.8367	0.7765
	x_6	0.5467	0.6721	0.6721	0.5062	0.9535	0.6721	0.3981	0.6721	0.6366
	x_7	0.7736	0.6949	1.0000	0.4824	0.9111	0.9535	0.4940	0.9535	0.7829
	x_8	0.9535	0.6721	1.0000	0.3628	0.7193	0.8367	0.4505	1.0000	0.7494
	x_9	0.6949	0.6721	0.9535	0.4141	0.6721	0.7736	0.3333	0.8039	0.6647
	x_{10}	0.7736	0.6721	0.8039	0.5775	0.8723	1.0000	0.3333	0.9535	0.7483
	x_{11}	0.6949	0.6721	1.0000	1.0000	0.7736	0.8367	0.3333	0.9111	0.7777
	x_{12}	0.5942	1.0000	1.0000	0.5467	0.6949	0.6949	0.4713	0.9535	0.7444
	x_{13}	0.6508	0.7455	1.0000	0.5062	0.6508	0.8039	0.3333	1.0000	0.7113
	x_{14}	0.5467	0.6721	0.6721	1.0000	0.7455	0.4059	0.3981	0.7193	0.6450
	x_{15}	0.6308	1.0000	1.0000	0.5062	0.6308	0.9535	0.3333	0.6721	0.7158
	x_{16}	0.6508	1.0000	1.0000	0.5325	0.6508	0.8039	0.4141	0.7455	0.7247
	x_{17}	0.6949	0.6508	1.0000	0.5616	0.6508	1.0000	0.3333	0.6308	0.6903
	x_{18}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{19}	0.7193	0.5062	0.6721	0.8367	1.0000	0.6949	0.4607	0.6721	0.6953
	x_{20}	0.5325	0.6508	1.0000	0.9535	0.6721	1.0000	0.3333	0.9535	0.7620
	x_{21}	0.4316	0.6721	0.6721	0.6308	0.9111	0.6721	0.4505	0.6949	0.6419
x_{19}	x_1	0.9524	0.4878	0.6667	0.7692	0.6250	0.6061	0.5556	0.5882	0.6564
	x_2	0.8000	0.4000	0.6667	0.8333	0.6667	0.6897	0.5405	0.6667	0.6579
	x_3	0.6897	0.4000	0.6667	0.5556	0.5882	1.0000	0.5405	0.6667	0.6384
	x_4	0.7692	0.5000	0.6667	0.9091	0.5714	0.7407	0.5405	0.6667	0.6705
	x_5	0.9524	0.5000	0.6667	0.9091	0.6061	0.5714	0.5405	0.7692	0.6894
	x_6	0.6897	0.4000	1.0000	0.4545	0.9524	0.9524	0.7407	1.0000	0.7737
	x_7	0.9091	0.6452	0.6667	0.4348	0.9091	0.7143	0.8696	0.6452	0.7242
	x_8	0.7407	0.4000	0.6667	0.3333	0.7143	0.8000	0.9524	0.6667	0.6593
	x_9	0.9524	0.4000	0.6897	0.3774	0.6667	0.5714	0.5405	0.5714	0.5962
	x_{10}	0.9091	0.6667	0.5714	0.5128	0.8696	0.6897	0.5405	0.6452	0.6756
	x_{11}	0.9524	0.4000	0.6667	0.8333	0.7692	0.8000	0.5405	0.6250	0.6984
	x_{12}	0.7692	0.5000	0.6667	0.4878	0.6897	1.0000	0.9524	0.6452	0.7139
	x_{13}	0.8696	0.4255	0.6667	0.5556	0.6452	0.8333	0.5405	0.6667	0.6504
	x_{14}	0.6897	0.4000	1.0000	0.8333	0.7407	0.4878	0.7407	0.9091	0.7252
	x_{15}	0.8333	0.5000	0.6667	0.4545	0.6250	0.6667	0.5405	1.0000	0.6608
	x_{16}	0.8696	0.5000	0.6667	0.5882	0.6452	0.5882	0.8000	0.8696	0.6909
	x_{17}	0.9524	0.3922	0.6667	0.5000	0.6452	0.6897	0.5405	0.9091	0.6620
	x_{18}	0.7143	0.5000	0.6667	0.8333	1.0000	0.6897	0.4545	0.6667	0.6906
	x_{19}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{20}	0.6667	0.3922	0.6667	0.8696	0.6667	0.6897	0.5405	0.6452	0.6421
	x_{21}	0.5128	0.4000	1.0000	0.7143	0.9091	0.9524	0.9524	0.9524	0.7992

Table A1. *Cont.*

Reference Sequence	Comparative Sequence	GRC								GRG
		Expert A	Expert B	Expert C	Expert D	Expert E	Expert F	Expert G	Expert H	
x_{20}	x_1	0.6949	0.6721	1.0000	0.8723	0.9111	0.8367	0.9535	0.8723	0.8516
	x_2	0.8039	0.9535	1.0000	0.9535	1.0000	1.0000	1.0000	0.9535	0.9580
	x_3	0.9535	0.9535	1.0000	0.5190	0.8367	0.6949	1.0000	0.9535	0.8639
	x_4	0.5616	0.6508	1.0000	0.9535	0.8039	0.9111	1.0000	0.9535	0.8543
	x_5	0.6508	0.6508	1.0000	0.9535	0.8723	0.7736	1.0000	0.8039	0.8381
	x_6	0.9535	0.9535	0.6721	0.4940	0.6949	0.6721	0.6721	0.6508	0.7204
	x_7	0.6308	0.5062	1.0000	0.4713	0.6308	0.9535	0.5062	1.0000	0.7123
	x_8	0.5467	0.9535	1.0000	0.3565	0.9111	0.8367	0.5616	0.9535	0.7650
	x_9	0.6949	0.9535	0.9535	0.4059	0.5062	0.7736	1.0000	0.8367	0.7655
	x_{10}	0.6308	0.4940	0.8039	0.5616	0.6119	1.0000	1.0000	1.0000	0.7628
	x_{11}	0.6949	0.9535	1.0000	0.9535	0.8367	0.8367	1.0000	0.9535	0.9036
	x_{12}	0.8367	0.6508	1.0000	0.5325	0.5190	0.6949	0.5325	1.0000	0.7208
	x_{13}	0.7455	0.8367	1.0000	0.5190	0.4940	0.8039	1.0000	0.9535	0.7941
	x_{14}	0.9535	0.9535	0.6721	0.9535	0.5467	0.4059	0.6721	0.6949	0.7315
	x_{15}	0.7736	0.6508	1.0000	0.4940	0.4824	0.9535	1.0000	0.6508	0.7506
	x_{16}	0.7455	0.6508	1.0000	0.5467	0.9535	0.8039	0.6308	0.7193	0.7563
	x_{17}	0.6949	1.0000	1.0000	0.5467	0.9535	1.0000	1.0000	0.6119	0.8509
	x_{18}	0.5325	0.6508	1.0000	0.9535	0.6721	1.0000	0.3333	0.9535	0.7620
	x_{19}	0.6721	0.3981	0.6721	0.8723	0.6721	0.6949	0.5467	0.6508	0.6474
	x_{20}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	x_{21}	0.6949	0.9535	0.6721	0.6508	0.6308	0.6721	0.5616	0.6721	0.6885
x_{21}	x_1	0.5714	0.7273	0.7059	0.6316	0.6316	0.6316	0.6154	0.6486	0.6454
	x_2	0.6316	1.0000	0.7059	0.6667	0.6667	0.7059	0.6000	0.7273	0.7130
	x_3	0.7059	1.0000	0.7059	0.7500	0.6000	0.9600	0.6000	0.7273	0.7561
	x_4	0.4898	0.7059	0.7059	0.7059	0.5854	0.7500	0.6000	0.7273	0.6588
	x_5	0.5455	0.7059	0.7059	0.7059	0.6154	0.6000	0.6000	0.8276	0.6633
	x_6	0.7059	1.0000	1.0000	0.4286	0.8889	1.0000	0.8000	0.9600	0.8479
	x_7	0.5333	0.5581	0.7059	0.4138	1.0000	0.7273	0.8571	0.7059	0.6877
	x_8	0.4800	1.0000	0.7059	0.3333	0.7059	0.8000	1.0000	0.7273	0.7190
	x_9	0.5714	1.0000	0.7273	0.3692	0.7500	0.6000	0.6000	0.6316	0.6562
	x_{10}	0.5333	0.5455	0.6154	0.4706	0.9600	0.7059	0.6000	0.7059	0.6421
	x_{11}	0.5714	1.0000	0.7059	0.6667	0.7500	0.8000	0.6000	0.6857	0.7225
	x_{12}	0.6486	0.7059	0.7059	0.4528	0.7742	0.9600	0.9231	0.7059	0.7345
	x_{13}	0.6000	0.8889	0.7059	0.7500	0.7273	0.8276	0.6000	0.7273	0.7284
	x_{14}	0.7059	1.0000	1.0000	0.6667	0.8276	0.5455	0.8000	0.9600	0.8132
	x_{15}	0.6154	0.7059	0.7059	0.4286	0.7059	0.6857	0.6000	0.9600	0.6759
	x_{16}	0.6000	0.7059	0.7059	0.8000	0.6486	0.6154	0.8571	0.9231	0.7320
	x_{17}	0.5714	0.9600	0.7059	0.4615	0.6486	0.7059	0.6000	0.8889	0.6928
	x_{18}	0.4706	0.7059	0.7059	0.6667	0.9231	0.7059	0.4898	0.7273	0.6744
	x_{19}	0.5581	0.4444	1.0000	0.7500	0.9231	0.9600	0.9600	0.9600	0.8195
	x_{20}	0.7273	0.9600	0.7059	0.6857	0.6667	0.7059	0.6000	0.7059	0.7197
	x_{21}	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Table A2. The initial direct influence matrix.

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	x_{17}	x_{18}	x_{19}	x_{20}	x_{21}
x_1	0.0000	0.8700	0.7726	0.8689	0.9029	0.6385	0.7259	0.7158	0.7947	0.7684	0.8680	0.7285	0.7619	0.6472	0.7766	0.8196	0.8186	0.7720	0.6564	0.8488	0.6031
x_2	0.8726	0	0.8593	0.8686	0.8549	0.7158	0.7238	0.7879	0.7860	0.7748	0.9277	0.7340	0.8234	0.7316	0.7800	0.7812	0.8670	0.7862	0.6631	0.9580	0.6821
x_3	0.8189	0.8863	0	0.8453	0.8218	0.7838	0.7096	0.7848	0.7681	0.7423	0.8651	0.7743	0.8913	0.7472	0.7487	0.8204	0.8176	0.7215	0.7048	0.8905	0.7808
x_4	0.8715	0.8686	0.8101	0.0000	0.9089	0.6327	0.7440	0.7743	0.7179	0.7821	0.8557	0.7302	0.7858	0.6412	0.7663	0.7769	0.7884	0.8305	0.6756	0.8543	0.6237
x_5	0.9048	0.8549	0.7806	0.9089	0.0000	0.6421	0.7178	0.7088	0.7626	0.7644	0.8357	0.7076	0.7579	0.6632	0.7893	0.8458	0.8123	0.7765	0.6941	0.8381	0.6284
x_6	0.6385	0.7112	0.7365	0.6271	0.6366	0.0000	0.7006	0.7155	0.6916	0.6661	0.7177	0.7564	0.6746	0.8279	0.7564	0.6830	0.7595	0.6315	0.7737	0.7159	0.8303
x_7	0.7340	0.7276	0.6591	0.7476	0.7218	0.7100	0.0000	0.7850	0.7414	0.8667	0.7443	0.8274	0.7144	0.6190	0.7687	0.7120	0.7334	0.7860	0.7327	0.7161	0.6627
x_8	0.7706	0.8228	0.7848	0.8120	0.7602	0.7742	0.8239	0.0000	0.7967	0.7558	0.8398	0.7981	0.7714	0.6977	0.7370	0.7688	0.8052	0.7901	0.7200	0.8036	0.7426
x_9	0.8176	0.8078	0.7505	0.7462	0.7855	0.7303	0.7668	0.7768	0.0000	0.7902	0.8281	0.7737	0.8239	0.7003	0.8336	0.7225	0.8134	0.6973	0.6386	0.7895	0.6602
x_{10}	0.7724	0.7748	0.6907	0.7821	0.7644	0.6713	0.8645	0.7013	0.7628	0.0000	0.7806	0.7634	0.7501	0.6152	0.7941	0.6764	0.7912	0.7483	0.6806	0.7628	0.6086
x_{11}	0.8704	0.9277	0.8325	0.8557	0.8357	0.7223	0.7406	0.8082	0.8092	0.7806	0.0000	0.7363	0.8376	0.7236	0.7522	0.7425	0.8437	0.7777	0.7029	0.9036	0.6926
x_{12}	0.7157	0.7176	0.7180	0.7145	0.6902	0.7428	0.8105	0.7362	0.7277	0.7464	0.7191	0.0000	0.7624	0.6777	0.8008	0.7137	0.7013	0.7288	0.7002	0.7036	0.6876
x_{13}	0.8079	0.8550	0.8913	0.8234	0.8019	0.7372	0.7582	0.7714	0.8372	0.7944	0.8676	0.8146	0.0000	0.7456	0.8379	0.8163	0.7943	0.7592	0.7172	0.8320	0.7566
x_{14}	0.6251	0.7107	0.6718	0.6135	0.6371	0.8175	0.5844	0.6128	0.6445	0.5860	0.7013	0.6722	0.6620	0.0000	0.6544	0.6528	0.6435	0.6193	0.7077	0.7105	0.7746
x_{15}	0.7799	0.7800	0.7000	0.7663	0.7893	0.7604	0.7650	0.6786	0.8107	0.7941	0.7522	0.8139	0.8046	0.6799	0.0000	0.7644	0.8370	0.7158	0.6657	0.7506	0.6438
x_{16}	0.8524	0.8194	0.8155	0.8162	0.8733	0.7371	0.7541	0.7635	0.7377	0.7292	0.7871	0.7698	0.8115	0.7261	0.7979	0.0000	0.8080	0.7676	0.7469	0.7988	0.7532
x_{17}	0.8215	0.8670	0.7792	0.7884	0.8123	0.7636	0.7295	0.7601	0.7916	0.7912	0.8437	0.7192	0.7535	0.6692	0.8370	0.7721	0.0000	0.6903	0.6667	0.8509	0.6624
x_{18}	0.7753	0.7862	0.6684	0.8305	0.7765	0.6366	0.7829	0.7494	0.6647	0.7483	0.7777	0.7444	0.7113	0.6450	0.7158	0.7247	0.6903	0.0000	0.6953	0.7620	0.6419
x_{19}	0.6564	0.6579	0.6384	0.6705	0.6894	0.7737	0.7242	0.6593	0.5962	0.6756	0.6984	0.7139	0.6504	0.7252	0.6608	0.6909	0.6620	0.6906	0.0000	0.6421	0.7992
x_{20}	0.8516	0.9580	0.8639	0.8543	0.8381	0.7204	0.7123	0.7650	0.7655	0.7628	0.9036	0.7208	0.7941	0.7315	0.7506	0.7563	0.8509	0.7620	0.6474	0.0000	0.6885
x_{21}	0.6454	0.7130	0.7561	0.6588	0.6633	0.8479	0.6877	0.7190	0.6562	0.6421	0.7225	0.7345	0.7284	0.8132	0.6759	0.7320	0.6928	0.6744	0.8195	0.7197	0.0000

Table A3. The normalized direct influence matrix.

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	x_{17}	x_{18}	x_{19}	x_{20}	x_{21}
x_1	0.0000	0.0543	0.0482	0.0542	0.0564	0.0399	0.0453	0.0447	0.0496	0.0480	0.0542	0.0455	0.0476	0.0404	0.0485	0.0512	0.0511	0.0482	0.0410	0.0530	0.0376
x_2	0.0545	0.0000	0.0536	0.0542	0.0534	0.0447	0.0452	0.0492	0.0491	0.0484	0.0579	0.0458	0.0514	0.0457	0.0487	0.0488	0.0541	0.0491	0.0414	0.0598	0.0426
x_3	0.0511	0.0553	0.0000	0.0528	0.0513	0.0489	0.0443	0.0490	0.0480	0.0463	0.0540	0.0483	0.0556	0.0466	0.0467	0.0512	0.0510	0.0450	0.0440	0.0556	0.0487
x_4	0.0544	0.0542	0.0506	0.0000	0.0567	0.0395	0.0464	0.0483	0.0448	0.0488	0.0534	0.0456	0.0491	0.0400	0.0478	0.0485	0.0492	0.0518	0.0422	0.0533	0.0389
x_5	0.0565	0.0534	0.0487	0.0567	0.0000	0.0401	0.0448	0.0442	0.0476	0.0477	0.0522	0.0442	0.0473	0.0414	0.0493	0.0528	0.0507	0.0485	0.0433	0.0523	0.0392
x_6	0.0399	0.0444	0.0460	0.0391	0.0397	0.0000	0.0437	0.0447	0.0432	0.0416	0.0448	0.0472	0.0421	0.0517	0.0472	0.0426	0.0474	0.0394	0.0483	0.0447	0.0518
x_7	0.0458	0.0454	0.0411	0.0467	0.0451	0.0443	0.0000	0.0490	0.0463	0.0541	0.0465	0.0516	0.0446	0.0386	0.0480	0.0444	0.0458	0.0491	0.0457	0.0447	0.0414
x_8	0.0481	0.0514	0.0490	0.0507	0.0475	0.0483	0.0514	0.0000	0.0497	0.0472	0.0524	0.0498	0.0482	0.0436	0.0460	0.0480	0.0503	0.0493	0.0449	0.0502	0.0464
x_9	0.0510	0.0504	0.0468	0.0466	0.0490	0.0456	0.0479	0.0485	0.0000	0.0493	0.0517	0.0483	0.0514	0.0437	0.0520	0.0451	0.0508	0.0435	0.0399	0.0493	0.0412
x_{10}	0.0482	0.0484	0.0431	0.0488	0.0477	0.0419	0.0540	0.0438	0.0476	0.0000	0.0487	0.0477	0.0468	0.0384	0.0496	0.0422	0.0494	0.0467	0.0425	0.0476	0.0380
x_{11}	0.0543	0.0579	0.0520	0.0534	0.0522	0.0451	0.0462	0.0505	0.0505	0.0487	0.0000	0.0460	0.0523	0.0452	0.0470	0.0464	0.0527	0.0486	0.0439	0.0564	0.0432
x_{12}	0.0447	0.0448	0.0448	0.0446	0.0431	0.0464	0.0506	0.0460	0.0454	0.0466	0.0449	0.0000	0.0476	0.0423	0.0500	0.0446	0.0438	0.0455	0.0437	0.0439	0.0429
x_{13}	0.0504	0.0534	0.0556	0.0514	0.0501	0.0460	0.0473	0.0482	0.0523	0.0496	0.0542	0.0509	0.0000	0.0465	0.0523	0.0510	0.0496	0.0474	0.0448	0.0519	0.0472
x_{14}	0.0390	0.0444	0.0419	0.0383	0.0398	0.0510	0.0365	0.0383	0.0402	0.0366	0.0438	0.0420	0.0413	0.0000	0.0408	0.0408	0.0402	0.0387	0.0442	0.0444	0.0484
x_{15}	0.0487	0.0487	0.0437	0.0478	0.0493	0.0475	0.0478	0.0424	0.0506	0.0496	0.0470	0.0508	0.0502	0.0424	0.0000	0.0477	0.0522	0.0447	0.0416	0.0469	0.0402
x_{16}	0.0532	0.0512	0.0509	0.0510	0.0545	0.0460	0.0471	0.0477	0.0460	0.0455	0.0491	0.0481	0.0507	0.0453	0.0498	0.0000	0.0504	0.0479	0.0466	0.0499	0.0470
x_{17}	0.0513	0.0541	0.0486	0.0492	0.0507	0.0477	0.0455	0.0474	0.0494	0.0494	0.0527	0.0449	0.0470	0.0418	0.0522	0.0482	0.0000	0.0431	0.0416	0.0531	0.0413
x_{18}	0.0484	0.0491	0.0417	0.0518	0.0485	0.0397	0.0489	0.0468	0.0415	0.0467	0.0486	0.0465	0.0444	0.0403	0.0447	0.0452	0.0431	0.0000	0.0434	0.0476	0.0401
x_{19}	0.0410	0.0411	0.0399	0.0419	0.0430	0.0483	0.0452	0.0412	0.0372	0.0422	0.0436	0.0446	0.0406	0.0453	0.0413	0.0431	0.0413	0.0431	0.0000	0.0401	0.0499
x_{20}	0.0532	0.0598	0.0539	0.0533	0.0523	0.0450	0.0445	0.0478	0.0478	0.0476	0.0564	0.0450	0.0496	0.0457	0.0469	0.0472	0.0531	0.0476	0.0404	0.0000	0.0430
x_{21}	0.0403	0.0445	0.0472	0.0411	0.0414	0.0529	0.0429	0.0449	0.0410	0.0401	0.0451	0.0459	0.0455	0.0508	0.0422	0.0457	0.0432	0.0421	0.0512	0.0449	0.0000

Table A4. The total influence matrix.

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	x_{17}	x_{18}	x_{19}	x_{20}	x_{21}
x_1	0.7833	0.8589	0.8080	0.8344	0.8345	0.7672	0.7869	0.7846	0.7941	0.7971	0.8546	0.7965	0.8115	0.7429	0.8102	0.8001	0.8276	0.7858	0.7421	0.8451	0.7346
x_2	0.8647	0.8381	0.8419	0.8641	0.8614	0.7994	0.8150	0.8168	0.8220	0.8259	0.8884	0.8254	0.8440	0.7745	0.8393	0.8265	0.8599	0.8146	0.7692	0.8814	0.7658
x_3	0.8581	0.8869	0.7877	0.8592	0.8561	0.8002	0.8110	0.8134	0.8177	0.8208	0.8814	0.8245	0.8445	0.7725	0.8342	0.8255	0.8537	0.8077	0.7687	0.8741	0.7685
x_4	0.8387	0.8627	0.8138	0.7867	0.8386	0.7704	0.7915	0.7914	0.7933	0.8015	0.8577	0.8002	0.8164	0.7459	0.8132	0.8013	0.8296	0.7927	0.7466	0.8492	0.7392
x_5	0.8381	0.8595	0.8098	0.8380	0.7825	0.7687	0.7877	0.7854	0.7935	0.7981	0.8541	0.7966	0.8125	0.7450	0.8122	0.8029	0.8286	0.7873	0.7455	0.8458	0.7373
x_6	0.7629	0.7895	0.7491	0.7619	0.7608	0.6752	0.7301	0.7293	0.7325	0.7351	0.7860	0.7422	0.7493	0.7012	0.7520	0.7363	0.7660	0.7225	0.6968	0.7781	0.6961
x_7	0.7926	0.8153	0.7681	0.7930	0.7898	0.7396	0.7113	0.7560	0.7583	0.7698	0.8122	0.7693	0.7751	0.7106	0.7763	0.7610	0.7886	0.7542	0.7159	0.8025	0.7077
x_8	0.8375	0.8649	0.8170	0.8395	0.8347	0.7831	0.8007	0.7499	0.8023	0.8045	0.8616	0.8088	0.8203	0.7536	0.8162	0.8054	0.8352	0.7948	0.7536	0.8510	0.7505
x_9	0.8253	0.8488	0.8006	0.8209	0.8214	0.7667	0.7833	0.7820	0.7408	0.7922	0.8457	0.7931	0.8087	0.7403	0.8072	0.7885	0.8210	0.7755	0.7355	0.8352	0.7324
x_{10}	0.7982	0.8215	0.7732	0.7984	0.7957	0.7404	0.7656	0.7545	0.7628	0.7217	0.8178	0.7689	0.7805	0.7133	0.7810	0.7623	0.7952	0.7552	0.7158	0.8087	0.7074
x_{11}	0.8601	0.8883	0.8361	0.8589	0.8560	0.7957	0.8118	0.8139	0.8191	0.8221	0.8292	0.8214	0.8405	0.7702	0.8335	0.8201	0.8542	0.8100	0.7676	0.8739	0.7625
x_{12}	0.7819	0.8049	0.7621	0.7815	0.7785	0.7327	0.7502	0.7442	0.7485	0.7538	0.8010	0.7111	0.7685	0.7054	0.7688	0.7520	0.7772	0.7419	0.7055	0.7921	0.7007
x_{13}	0.8617	0.8895	0.8445	0.8622	0.8592	0.8016	0.8178	0.8167	0.8257	0.8278	0.8858	0.8309	0.7960	0.7762	0.8435	0.8293	0.8566	0.8139	0.7732	0.8751	0.7709
x_{14}	0.7166	0.7425	0.7011	0.7156	0.7154	0.6811	0.6801	0.6802	0.6863	0.6867	0.7383	0.6934	0.7040	0.6111	0.7017	0.6908	0.7141	0.6787	0.6521	0.7315	0.6523
x_{15}	0.8128	0.8364	0.7875	0.8116	0.8112	0.7587	0.7733	0.7665	0.7790	0.7824	0.8307	0.7853	0.7974	0.7298	0.7476	0.7808	0.8119	0.7667	0.7277	0.8223	0.7222
x_{16}	0.8467	0.8694	0.8232	0.8443	0.8457	0.7852	0.8009	0.7996	0.8033	0.8073	0.8633	0.8115	0.8270	0.7593	0.8241	0.7640	0.8399	0.7978	0.7592	0.8554	0.7551
x_{17}	0.8317	0.8584	0.8081	0.8294	0.8290	0.7742	0.7869	0.7868	0.7937	0.7981	0.8529	0.7958	0.8107	0.7440	0.8133	0.7972	0.7787	0.7808	0.7425	0.8449	0.7379
x_{18}	0.7872	0.8106	0.7610	0.7900	0.7852	0.7280	0.7502	0.7466	0.7464	0.7555	0.8061	0.7570	0.7673	0.7049	0.7655	0.7543	0.7783	0.7000	0.7066	0.7973	0.6994
x_{19}	0.7359	0.7575	0.7162	0.7364	0.7359	0.6950	0.7049	0.6995	0.7003	0.7088	0.7561	0.7128	0.7204	0.6700	0.7192	0.7099	0.7326	0.6995	0.6256	0.7454	0.6693
x_{20}	0.8499	0.8805	0.8289	0.8496	0.8469	0.7870	0.8014	0.8027	0.8078	0.8122	0.8731	0.8116	0.8291	0.7623	0.8244	0.8120	0.8455	0.8004	0.7561	0.8112	0.7540
x_{21}	0.7660	0.7923	0.7528	0.7664	0.7650	0.7279	0.7319	0.7320	0.7330	0.7363	0.7890	0.7435	0.7550	0.7028	0.7500	0.7417	0.7649	0.7275	0.7019	0.7810	0.6493

Table A5. The weighted supermatrix for factors.

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	x_{17}	x_{18}	x_{19}	x_{20}	x_{21}
x_1	0.0459	0.0489	0.0487	0.0490	0.0491	0.0483	0.0486	0.0486	0.0488	0.0487	0.0489	0.0486	0.0487	0.0484	0.0487	0.0489	0.0488	0.0488	0.0485	0.0488	0.0483
x_2	0.0507	0.0477	0.0507	0.0507	0.0507	0.0503	0.0503	0.0506	0.0506	0.0505	0.0508	0.0503	0.0506	0.0505	0.0505	0.0505	0.0507	0.0506	0.0503	0.0509	0.0503
x_3	0.0503	0.0505	0.0475	0.0504	0.0503	0.0504	0.0501	0.0504	0.0503	0.0502	0.0504	0.0503	0.0506	0.0504	0.0502	0.0504	0.0503	0.0501	0.0502	0.0505	0.0505
x_4	0.0492	0.0491	0.0491	0.0462	0.0493	0.0485	0.0489	0.0490	0.0488	0.0490	0.0491	0.0488	0.0490	0.0486	0.0489	0.0490	0.0489	0.0492	0.0488	0.0491	0.0486
x_5	0.0492	0.0489	0.0488	0.0492	0.0460	0.0484	0.0486	0.0486	0.0488	0.0488	0.0488	0.0486	0.0487	0.0486	0.0488	0.0491	0.0489	0.0489	0.0487	0.0489	0.0485
x_6	0.0447	0.0449	0.0452	0.0447	0.0447	0.0425	0.0451	0.0451	0.0450	0.0449	0.0450	0.0453	0.0449	0.0457	0.0452	0.0450	0.0452	0.0449	0.0455	0.0450	0.0458
x_7	0.0465	0.0464	0.0463	0.0465	0.0465	0.0466	0.0439	0.0468	0.0466	0.0471	0.0465	0.0469	0.0465	0.0463	0.0467	0.0465	0.0465	0.0468	0.0468	0.0464	0.0465
x_8	0.0491	0.0492	0.0492	0.0493	0.0491	0.0493	0.0494	0.0464	0.0493	0.0492	0.0493	0.0493	0.0492	0.0491	0.0491	0.0492	0.0492	0.0493	0.0492	0.0492	0.0493
x_9	0.0484	0.0483	0.0483	0.0482	0.0483	0.0483	0.0484	0.0484	0.0456	0.0484	0.0484	0.0484	0.0485	0.0483	0.0485	0.0482	0.0484	0.0481	0.0480	0.0483	0.0481
x_{10}	0.0468	0.0467	0.0466	0.0468	0.0468	0.0466	0.0473	0.0467	0.0469	0.0441	0.0468	0.0469	0.0468	0.0465	0.0470	0.0466	0.0469	0.0469	0.0468	0.0467	0.0465
x_{11}	0.0504	0.0505	0.0504	0.0504	0.0503	0.0501	0.0501	0.0504	0.0504	0.0503	0.0474	0.0501	0.0504	0.0502	0.0501	0.0501	0.0504	0.0503	0.0501	0.0505	0.0501
x_{12}	0.0459	0.0458	0.0459	0.0459	0.0458	0.0461	0.0463	0.0461	0.0460	0.0461	0.0458	0.0434	0.0461	0.0460	0.0462	0.0460	0.0458	0.0461	0.0461	0.0458	0.0461
x_{13}	0.0505	0.0506	0.0509	0.0506	0.0505	0.0505	0.0505	0.0506	0.0508	0.0506	0.0507	0.0507	0.0477	0.0506	0.0507	0.0507	0.0505	0.0505	0.0505	0.0506	0.0507
x_{14}	0.0420	0.0422	0.0423	0.0420	0.0421	0.0429	0.0420	0.0421	0.0422	0.0420	0.0422	0.0423	0.0422	0.0398	0.0422	0.0422	0.0421	0.0421	0.0426	0.0423	0.0429
x_{15}	0.0477	0.0476	0.0475	0.0476	0.0477	0.0478	0.0478	0.0475	0.0479	0.0478	0.0475	0.0479	0.0478	0.0476	0.0449	0.0477	0.0479	0.0476	0.0475	0.0475	0.0475
x_{16}	0.0497	0.0495	0.0496	0.0495	0.0497	0.0495	0.0495	0.0495	0.0494	0.0494	0.0494	0.0495	0.0496	0.0495	0.0495	0.0467	0.0495	0.0495	0.0496	0.0494	0.0496
x_{17}	0.0488	0.0488	0.0487	0.0487	0.0488	0.0488	0.0486	0.0487	0.0488	0.0488	0.0488	0.0485	0.0486	0.0485	0.0489	0.0487	0.0459	0.0485	0.0485	0.0488	0.0485
x_{18}	0.0462	0.0461	0.0459	0.0464	0.0462	0.0458	0.0463	0.0462	0.0459	0.0462	0.0461	0.0462	0.0460	0.0460	0.0460	0.0461	0.0459	0.0435	0.0462	0.0461	0.0460
x_{19}	0.0432	0.0431	0.0432	0.0432	0.0433	0.0438	0.0435	0.0433	0.0431	0.0433	0.0432	0.0435	0.0432	0.0437	0.0432	0.0434	0.0432	0.0434	0.0409	0.0431	0.0440
x_{20}	0.0498	0.0501	0.0500	0.0499	0.0498	0.0496	0.0495	0.0497	0.0497	0.0497	0.0499	0.0495	0.0497	0.0497	0.0496	0.0496	0.0499	0.0497	0.0494	0.0469	0.0496
x_{21}	0.0449	0.0451	0.0454	0.0450	0.0450	0.0458	0.0452	0.0453	0.0451	0.0450	0.0451	0.0453	0.0453	0.0458	0.0451	0.0453	0.0451	0.0452	0.0459	0.0451	0.0427

Table A6. The limited supermatrix for factors.

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	x_{17}	x_{18}	x_{19}	x_{20}	x_{21}
x_1	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486
x_2	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504
x_3	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502	0.0502
x_4	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488	0.0488
x_5	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487	0.0487
x_6	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450	0.0450
x_7	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465	0.0465
x_8	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491	0.0491
x_9	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482	0.0482
x_{10}	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467
x_{11}	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501	0.0501
x_{12}	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459	0.0459
x_{13}	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505	0.0505
x_{14}	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421	0.0421
x_{15}	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475	0.0475
x_{16}	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494	0.0494
x_{17}	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486	0.0486
x_{18}	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460	0.0460
x_{19}	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432	0.0432
x_{20}	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496	0.0496
x_{21}	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451

Table A7. Collected data for relevant criteria.

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	x_{17}	x_{18}	x_{19}	x_{20}	x_{21}
Beijing	7465.315376	92	12.675	46	57.39	3567.665272	12,242	0.014	1237.8	54,547	58,935	3291.13	220,875.62	0.13	0.11	267,338	123,496	0.354851406	102.5	547,718	412,487,938
Tianjin	4143.667734	56	10.986	28	43.75	1782.131222	7074	0.035	896.56	597,144	17,450	1352.46	57,576.69	0.12	0.13	99,490	54,680	0.414056209	102	290,620	122,557,291
Shanghai	6277.378352	64	11.19396666	30	57.36	3214.763898	27,386	0.035	1375.66	24,209	15,845	3032	348,648.8	0.05	0.08	188,138	92,460	0.351792828	101.6	884,911	515,679,700
Chongqing	2000.769294	65	9.191	25	70.96	1095.268337	17,089	0.03	1709.51	475,245	60,587	2862.24	45,795.41	0.23	0.31	91,973	45,688	0.369497147	102	110,686	79,016,913
Hebei	1792.234864	122	9.094	28	55.84	894.2224817	204,868	0.033	4196.09	570,921	47,346	6505.32	174,136.22	0.74	0.73	103,275	51,894	0.508918248	102.4	108,665	53,900,873
Shanxi	1890.476217	83	9.771	27	56.03	1015.915538	51,671	0.033	1910.9	577,021	23,837	3086.33	30,332.87	0.54	0.56	44,593	15,060	0.459859645	101.8	63,011	20,762,372
Jilin	1969.457502	62	9.418	29	61.76	1077.908292	31,065	0.035	1474.24	314,157	31,956	2366.22	22,637.55	0.5	0.33	36,376	13,885	0.668253685	102.1	49,009	20,679,164
Liaoning	1559.859575	115	9.890	28	72.14	836.419472	31,354	0.039	2260.6	70,912	71,343	3905.94	65,363.68	0.65	0.43	95,317	35,149	0.601551474	102.5	377,494	114,601,136
Heilongjiang	1523.03692	81	9.472	24	66.29	842.1215195	36,645	0.04	1986.4	526,703	31,568	2894.93	30,177.15	0.69	0.45	37,155	19,435	0.725288172	102	42,747	26,437,359
Shaanxi	2166.189952	95	9.473	26	65.66	1131.790998	58,004	0.032	2071	334,641	71,583	3726.81	56,876.54	0.5	0.55	96,710	41,479	0.373333255	102.1	118,786	53,304,882
Gansu	2130.852054	49	8.398	23	61.71	1126.696648	139,984	0.028	1606.62	169,681	42,185	2210.61	8911.59	0.47	0.42	22,214	13,958	0.423034352	102	23,617	6,013,027
Qinghai	3390.897408	12	8.219	27	64.92	2411.607599	137,621	0.03	329.3	212,004	6443	558.97	1897.17	0.23	0.33	4301	2668	0.304075691	102.5	7874	727,175
Shandong	1987.492457	145	8.944342548	29	60.56	876.7649879	125,234	0.034	6180.6	905,057	67,443	8418.57	21,8701.1	0.63	0.61	308,339	132,382	0.504209599	102.5	345,229	292,397,074
Fujian	2395.712093	89	8.920	23	48.84	1143.910699	14,718	0.037	2791.37	300,805	48,105	3793.55	211,613.44	0.35	0.52	160,922	102,622	0.370075608	101.5	278,698	187,407,290
Zhejiang	3145.043157	108	9.173	33	57.88	1252.44108	31,834	0.026	3836	1,293,936	98,380	6833.64	1,011,050.65	0.28	0.44	458,038	284,621	0.431149578	102.3	445,788	432,360,099
Henan	1454.669643	139	8.927	25	63.35	811.7617093	84,250	0.03	6692	987,015	110,421	7766.49	152,631.61	0.54	0.66	166,807	82,318	0.412422726	102.3	105,408	82,813,633
Hubei	1726.315715	128	9.470	26	66.51	932.6874083	34,142	0.025	3580	981,430	98,350	4551.95	135,307.74	0.43	0.64	155,547	64,106	0.436286274	101.9	142,275	52,781,547
Hunan	1619.736435	124	9.316	26	69.93	855.9194404	146,687	0.036	3738.58	1,215,690	106,680	5226.59	78,932.57	0.51	0.67	146,948	48,957	0.430455209	102	183,185	46,474,201
Jiangxi	2097.877471	102	8.879	19	53.68	1164.864069	89,448	0.034	2636.1	499,939	60,686	3340.8	61929.5	0.43	0.59	85,255	52,819	0.333079333	102.1	87,720	48,187,584
Jiangsu	2624.614408	167	9.302	29	61.05	1079.335583	19,238	0.03	4750.9	244,7957	120,612	7979.54	438,935.42	0.31	0.47	560,263	306,996	0.356520475	102.3	1,056,042	663,913,736
Anhui	1571.758463	119	8.811	20	51.89	885.3724485	32,205	0.028	4385.3	831,378	63,347	4596.33	112,322.38	0.43	0.48	147,149	79,747	0.355771133	102	112,984	62,840,317
Guangdong	2939.238946	152	9.563	24	45.56	1481.258981	107,856	0.024	7132.99	843,232	142,144	14106.94	1,296,195.66	0.45	0.9	762,733	478,082	0.395227506	102.2	1,923,465	1,084,464,573
Hainan	2691.377733	20	9.732378386	24	47.97	1561.556861	9445	0.023	600.5	75,765	14,383	913.96	7107.05	0.1	0.09	8160	3292	0.349665729	102.5	92,793	12,733,530
Sichuan	1602.642605	119	8.612365356	25	71.8	965.7758653	84,735	0.035	4881	950,194	98,569	7332.03	145,991.66	0.5	0.71	158,847	87,372	0.425491992	101.7	125,557	89,921,137
Guizhou	2177.14893	72	8.030197705	23	68.23	1063.898123	28,251	0.032	2038.5	368,687	93,025	3323.1	21,193.68	0.36	0.65	33,357	19,456	0.258656007	101.8	45,303	7,602,857
Yunnan	2259.089416	79	8.205335666	21	60.29	1206.50551	41,980	0.034	2992.8	522,299	41,484	3918.88	33,999.1	0.38	0.52	49,667	20,340	0.326905845	101.6	54,369	29,857,965
Inner Mongolia	2361.507054	53	9.605043301	29	62.75	1293.250146	53,714	0.036	1348.6	165,721	13,268	2508.06	15,182.32	1.28	0.66	24,906	9625	0.452958845	101.8	44,853	15,690,267
Xinjiang	3559.864654	50	9.309061224	25	71.93	1253.099685	50,562	0.024	1303.97	725,934	21,204	1992.49	11,121.41	0.6	0.48	15,022	9658	0.248801856	102	21,151	19,999,747
Ningxia	2493.011758	19	8.656927245	28	59.6	1543.599408	98,690	0.039	380.9	38,282	6137	694.61	6771.33	0.14	0.17	11,077	5658	0.266593737	102.3	18,477	3,776,564
Guangxi	1649.038396	75	8.702824151	22	51.96	965.7234783	27,830	0.023	2848	579,092	47,931	4130.82	48,101.07	0.52	0.56	39,961	20,551	0.422441424	102.3	62,723	62,302,266
Tibet	6983.891473	7	5.721324399	24	48.8	3216.831855	2275	0.028	260.2	570,921	1399	260.23	725.8	0.08	0.38	1569	755	0.385949276	101.7	2639	723,178

Table A8. The normalized decision matrix.

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	x_{17}	x_{18}	x_{19}	x_{20}	x_{21}
Beijing	1.00000	0.55090	1.00000	1.00000	0.79554	1.00000	0.05976	1.00000	0.17353	0.02228	0.41461	0.23330	0.17040	0.10156	0.12222	0.35050	0.25832	0.48926	1.00000	0.28476	0.38036
Tianjin	0.55506	0.33533	0.86674	0.60870	0.60646	0.49952	0.03453	0.40000	0.12569	0.24394	0.12276	0.09587	0.04442	0.09375	0.14444	0.13044	0.11437	0.57089	0.99512	0.15109	0.11301
Shanghai	0.84087	0.38323	0.88313	0.65217	0.79512	0.90108	0.13368	0.40000	0.19286	0.00989	0.11147	0.21493	0.26898	0.03906	0.08889	0.24666	0.19340	0.48504	0.99122	0.46006	0.47552
Chongqing	0.26801	0.38922	0.72507	0.54348	0.98364	0.30700	0.08341	0.46667	0.23966	0.19414	0.42624	0.20290	0.03533	0.17969	0.34444	0.12058	0.09557	0.50945	0.99512	0.05755	0.07286
Hebei	0.24007	0.73054	0.71746	0.60870	0.77405	0.25065	1.00000	0.42424	0.58827	0.23322	0.33308	0.46114	0.13434	0.57813	0.81111	0.13540	0.10855	0.70168	0.99902	0.05649	0.04970
Shanxi	0.25323	0.49701	0.77089	0.58696	0.77668	0.28476	0.25222	0.42424	0.26790	0.23572	0.16770	0.21878	0.02340	0.42188	0.62222	0.05846	0.03150	0.63404	0.99317	0.03276	0.01915
Jilin	0.26381	0.37126	0.74302	0.63043	0.85611	0.30213	0.15163	0.40000	0.20668	0.12833	0.22481	0.16773	0.01746	0.39063	0.36667	0.04769	0.02904	0.92136	0.99610	0.02548	0.01907
Liaoning	0.20895	0.68862	0.78024	0.60870	1.00000	0.23444	0.15304	0.35897	0.31692	0.02897	0.50191	0.27688	0.05043	0.50781	0.47778	0.12497	0.07352	0.82940	1.00000	0.19626	0.10568
Heilongjiang	0.20402	0.48503	0.74731	0.52174	0.91891	0.23604	0.17887	0.35000	0.27848	0.21516	0.22208	0.20521	0.02328	0.53906	0.50000	0.04871	0.04065	1.00000	0.99512	0.02222	0.02438
Shaanxi	0.29017	0.56886	0.74733	0.56522	0.91017	0.31724	0.28313	0.43750	0.29034	0.13670	0.50359	0.26418	0.04388	0.39063	0.61111	0.12679	0.08676	0.51474	0.99610	0.06176	0.04915
Gansu	0.28543	0.29341	0.66258	0.50000	0.85542	0.31581	0.68329	0.50000	0.22524	0.06932	0.29678	0.15670	0.00688	0.36719	0.46667	0.02912	0.02920	0.58326	0.99512	0.01228	0.00554
Qinghai	0.45422	0.07186	0.64846	0.58696	0.89992	0.67596	0.67175	0.46667	0.04617	0.08660	0.04533	0.03962	0.00146	0.17969	0.36667	0.00564	0.00558	0.41925	1.00000	0.00409	0.00067
Shandong	0.26623	0.86826	0.70565	0.63043	0.83948	0.24575	0.61129	0.41176	0.86648	0.36972	0.47447	0.59677	0.16873	0.49219	0.67778	0.40426	0.27690	0.69519	1.00000	0.17948	0.26962
Fujian	0.32091	0.53293	0.70375	0.50000	0.67702	0.32063	0.07184	0.37838	0.39133	0.12288	0.33842	0.26891	0.16326	0.27344	0.57778	0.21098	0.21465	0.51025	0.99024	0.14489	0.17281
Zhejiang	0.42129	0.64671	0.72367	0.71739	0.80233	0.35105	0.15539	0.53846	0.53778	0.52858	0.69212	0.48442	0.78001	0.21875	0.48889	0.60052	0.59534	0.59445	0.99805	0.23176	0.39869
Henan	0.19486	0.83234	0.70426	0.54348	0.87815	0.22753	0.41124	0.46667	0.93818	0.40320	0.77682	0.55054	0.11775	0.42188	0.73333	0.21870	0.17218	0.56863	0.99805	0.05480	0.07636
Hubei	0.23124	0.76647	0.74715	0.56522	0.92196	0.26143	0.16665	0.56000	0.50189	0.40092	0.69190	0.32267	0.10439	0.33594	0.71111	0.20393	0.13409	0.60154	0.99415	0.07397	0.04867
Hunan	0.21697	0.74251	0.73497	0.56522	0.96937	0.23991	0.71601	0.38889	0.52413	0.49661	0.75051	0.37050	0.06090	0.39844	0.74444	0.19266	0.10240	0.59350	0.99512	0.09524	0.04285
Jiangxi	0.28102	0.61078	0.70052	0.41304	0.74411	0.32651	0.43661	0.41176	0.36956	0.20423	0.42693	0.23682	0.04778	0.33594	0.65556	0.11178	0.11048	0.45924	0.99610	0.04561	0.04443
Jiangsu	0.35157	1.00000	0.73389	0.63043	0.84627	0.30253	0.09390	0.46667	0.66605	1.00000	0.84852	0.56565	0.33863	0.24219	0.52222	0.73455	0.64214	0.49156	0.99805	0.54903	0.61220
Anhui	0.21054	0.71257	0.69510	0.43478	0.71930	0.24817	0.15720	0.50000	0.61479	0.33962	0.44565	0.32582	0.08666	0.33594	0.53333	0.19292	0.16681	0.49052	0.99512	0.05874	0.05795
Guangdong	0.39372	0.91018	0.75446	0.52174	0.63155	0.41519	0.52647	0.58333	1.00000	0.34446	1.00000	1.00000	1.00000	0.35156	1.00000	1.00000	1.00000	0.54492	0.99707	1.00000	1.00000
Hainan	0.36052	0.11976	0.76782	0.52174	0.66496	0.43770	0.04610	0.60870	0.08419	0.03095	0.10119	0.06479	0.00548	0.07813	0.10000	0.01070	0.00689	0.48211	1.00000	0.04824	0.01174
Sichuan	0.21468	0.71257	0.67946	0.54348	0.99529	0.27070	0.41361	0.40000	0.68429	0.38816	0.69344	0.51975	0.11263	0.39063	0.78889	0.20826	0.18276	0.58665	0.99220	0.06528	0.08292
Guizhou	0.29164	0.43114	0.63353	0.50000	0.94580	0.29821	0.13790	0.43750	0.28578	0.15061	0.65444	0.23556	0.01635	0.28125	0.72222	0.04373	0.04070	0.35663	0.99317	0.02355	0.00701
Yunnan	0.30261	0.47305	0.64734	0.45652	0.83574	0.33818	0.20491	0.41176	0.41957	0.21336	0.29184	0.27780	0.02623	0.29688	0.57778	0.06512	0.04255	0.45073	0.99122	0.02827	0.02753
Inner Mongolia	0.31633	0.31737	0.75777	0.63043	0.86984	0.36249	0.26219	0.38889	0.18907	0.06770	0.09334	0.17779	0.01171	1.00000	0.73333	0.03265	0.02013	0.62452	0.99317	0.02332	0.01447
Xinjiang	0.47685	0.29940	0.73442	0.54348	0.99709	0.35124	0.24680	0.58333	0.18281	0.29655	0.14917	0.14124	0.00858	0.46875	0.53333	0.01969	0.02020	0.34304	0.99512	0.01100	0.01844
Ningxia	0.33395	0.11377	0.68297	0.60870	0.82617	0.43266	0.48172	0.35897	0.05340	0.01564	0.04317	0.04924	0.00522	0.10938	0.18889	0.01452	0.01183	0.36757	0.99805	0.00961	0.00348
Guangxi	0.22089	0.44910	0.68659	0.47826	0.72027	0.27069	0.13584	0.60870	0.39927	0.23656	0.33720	0.29282	0.03711	0.40625	0.62222	0.05239	0.04299	0.58245	0.99805	0.03261	0.05745
Tibet	0.93551	0.04192	0.45137	0.52174	0.67646	0.90166	0.01110	0.50000	0.03648	0.23322	0.00984	0.01845	0.00056	0.06250	0.42222	0.00206	0.00158	0.53213	0.99220	0.00137	0.00067

Table A9. The weighted normalized decision matrix.

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	x_{17}	x_{18}	x_{19}	x_{20}	x_{21}
Beijing	0.04857	0.02778	0.05020	0.04881	0.03871	0.04497	0.00278	0.04910	0.00836	0.00104	0.02079	0.01070	0.00860	0.00428	0.00581	0.01731	0.01254	0.02249	0.04323	0.01412	0.01716
Tianjin	0.02696	0.01691	0.04351	0.02971	0.02951	0.02246	0.00160	0.01964	0.00606	0.01138	0.00616	0.00440	0.00224	0.00395	0.00687	0.00644	0.00555	0.02624	0.04302	0.00749	0.00510
Shanghai	0.04084	0.01932	0.04434	0.03183	0.03869	0.04052	0.00621	0.01964	0.00929	0.00046	0.00559	0.00986	0.01357	0.00165	0.00423	0.01218	0.00939	0.02229	0.04285	0.02281	0.02146
Chongqing	0.01302	0.01962	0.03640	0.02652	0.04786	0.01380	0.00387	0.02291	0.01155	0.00906	0.02138	0.00931	0.00178	0.00757	0.01637	0.00595	0.00464	0.02342	0.04302	0.00285	0.00329
Hebei	0.01166	0.03683	0.03602	0.02971	0.03766	0.01127	0.04645	0.02083	0.02834	0.01088	0.01670	0.02115	0.00678	0.02436	0.03856	0.00669	0.00527	0.03225	0.04318	0.00280	0.00224
Shanxi	0.01230	0.02506	0.03870	0.02865	0.03779	0.01280	0.01172	0.02083	0.01291	0.01100	0.00841	0.01003	0.00118	0.01778	0.02958	0.00289	0.00153	0.02914	0.04293	0.00162	0.00086
Jilin	0.01281	0.01872	0.03730	0.03077	0.04166	0.01359	0.00704	0.01964	0.00996	0.00599	0.01127	0.00769	0.00088	0.01646	0.01743	0.00236	0.00141	0.04235	0.04306	0.00126	0.00086
Liaoning	0.01015	0.03472	0.03917	0.02971	0.04866	0.01054	0.00711	0.01763	0.01527	0.00135	0.02517	0.01270	0.00254	0.02140	0.02271	0.00617	0.00357	0.03812	0.04323	0.00973	0.00477
Heilongjiang	0.00991	0.02445	0.03752	0.02546	0.04471	0.01061	0.00831	0.01718	0.01342	0.01004	0.01114	0.00941	0.00117	0.02272	0.02377	0.00241	0.00197	0.04596	0.04302	0.00110	0.00110
Shaanxi	0.01409	0.02868	0.03752	0.02759	0.04429	0.01427	0.01315	0.02148	0.01399	0.00638	0.02525	0.01212	0.00221	0.01646	0.02905	0.00626	0.00421	0.02366	0.04306	0.00306	0.00222
Gansu	0.01386	0.01479	0.03326	0.02440	0.04162	0.01420	0.03174	0.02455	0.01085	0.00323	0.01488	0.00719	0.00035	0.01547	0.02218	0.00144	0.00142	0.02681	0.04302	0.00061	0.00025
Qinghai	0.02206	0.00362	0.03255	0.02865	0.04379	0.03040	0.03120	0.02291	0.00222	0.00404	0.00227	0.00182	0.00007	0.00757	0.01743	0.00028	0.00027	0.01927	0.04323	0.00020	0.00003
Shandong	0.01293	0.04378	0.03543	0.03077	0.04085	0.01105	0.02840	0.02022	0.04175	0.01725	0.02379	0.02737	0.00852	0.02074	0.03222	0.01996	0.01345	0.03195	0.04323	0.00890	0.01217
Fujian	0.01559	0.02687	0.03533	0.02440	0.03294	0.01442	0.00334	0.01858	0.01885	0.00573	0.01697	0.01233	0.00824	0.01152	0.02747	0.01042	0.01042	0.02345	0.04280	0.00718	0.00780
Zhejiang	0.02046	0.03261	0.03633	0.03501	0.03904	0.01579	0.00722	0.02644	0.02591	0.02466	0.03471	0.02222	0.03937	0.00922	0.02324	0.02965	0.02891	0.02732	0.04314	0.01149	0.01799
Henan	0.00946	0.04197	0.03536	0.02652	0.04273	0.01023	0.01910	0.02291	0.04520	0.01881	0.03896	0.02525	0.00594	0.01778	0.03486	0.01080	0.00836	0.02614	0.04314	0.00272	0.00345
Hubei	0.01123	0.03864	0.03751	0.02759	0.04486	0.01176	0.00774	0.02750	0.02418	0.01871	0.03470	0.01480	0.00527	0.01416	0.03380	0.01007	0.00651	0.02765	0.04297	0.00367	0.00220
Hunan	0.01054	0.03744	0.03690	0.02759	0.04717	0.01079	0.03326	0.01909	0.02525	0.02317	0.03764	0.01699	0.00307	0.01679	0.03539	0.00951	0.00497	0.02728	0.04302	0.00472	0.00193
Jiangxi	0.01365	0.03079	0.03517	0.02016	0.03621	0.01468	0.02028	0.02022	0.01780	0.00953	0.02141	0.01086	0.00241	0.01416	0.03116	0.00552	0.00536	0.02111	0.04306	0.00226	0.00201
Jiangsu	0.01708	0.05042	0.03684	0.03077	0.04118	0.01360	0.00436	0.02291	0.03209	0.04666	0.04255	0.02594	0.01709	0.01021	0.02482	0.03627	0.03118	0.02259	0.04314	0.02722	0.02763
Anhui	0.01023	0.03593	0.03490	0.02122	0.03500	0.01116	0.00730	0.02455	0.02962	0.01585	0.02235	0.01494	0.00437	0.01416	0.02535	0.00953	0.00810	0.02255	0.04302	0.00291	0.00261
Guangdong	0.01912	0.04589	0.03788	0.02546	0.03073	0.01867	0.02446	0.02864	0.04818	0.01607	0.05015	0.04586	0.05047	0.01481	0.04754	0.04938	0.04856	0.02505	0.04310	0.04957	0.04513
Hainan	0.01751	0.00604	0.03855	0.02546	0.03236	0.01968	0.00214	0.02989	0.00406	0.00144	0.00507	0.00297	0.00028	0.00329	0.00475	0.00053	0.00033	0.02216	0.04323	0.00239	0.00053
Sichuan	0.01043	0.03593	0.03411	0.02652	0.04843	0.01217	0.01921	0.01964	0.03297	0.01811	0.03478	0.02384	0.00568	0.01646	0.03750	0.01028	0.00887	0.02696	0.04289	0.00324	0.00374
Guizhou	0.01417	0.02174	0.03181	0.02440	0.04602	0.01341	0.00641	0.02148	0.01377	0.00703	0.03282	0.01080	0.00083	0.01185	0.03433	0.00216	0.00198	0.01639	0.04293	0.00117	0.00032
Yunnan	0.01470	0.02385	0.03250	0.02228	0.04066	0.01521	0.00952	0.02022	0.02021	0.00996	0.01464	0.01274	0.00132	0.01251	0.02747	0.00322	0.00207	0.02072	0.04285	0.00140	0.00124
Inner Mongolia	0.01537	0.01600	0.03804	0.03077	0.04232	0.01630	0.01218	0.01909	0.00911	0.00316	0.00468	0.00815	0.00059	0.04214	0.03486	0.00161	0.00098	0.02870	0.04293	0.00116	0.00065
Xinjiang	0.02316	0.01510	0.03687	0.02652	0.04852	0.01579	0.01146	0.02864	0.00881	0.01384	0.00748	0.00648	0.00043	0.01975	0.02535	0.00097	0.00098	0.01577	0.04302	0.00055	0.00083
Ningxia	0.01622	0.00574	0.03429	0.02971	0.04020	0.01946	0.02238	0.01763	0.00257	0.00073	0.00217	0.00226	0.00026	0.00461	0.00898	0.00072	0.00057	0.01689	0.04314	0.00048	0.00016
Guangxi	0.01073	0.02264	0.03447	0.02334	0.03505	0.01217	0.00631	0.02989	0.01924	0.01104	0.01691	0.01343	0.00187	0.01712	0.02958	0.00259	0.00209	0.02677	0.04314	0.00162	0.00259
Tibet	0.04544	0.00211	0.02266	0.02546	0.03291	0.04055	0.00052	0.02455	0.00176	0.01088	0.00049	0.00085	0.00003	0.00263	0.02007	0.00010	0.00008	0.02446	0.04289	0.00007	0.00003
V^*	0.04857	0.02778	0.05020	0.04881	0.03871	0.04497	0.00278	0.04910	0.00836	0.00104	0.02079	0.01070	0.00860	0.00428	0.00581	0.01731	0.01254	0.02249	0.04323	0.01412	0.01716
V^-	0.02696	0.01691	0.04351	0.02971	0.02951	0.02246	0.00160	0.01964	0.00606	0.01138	0.00616	0.00440	0.00224	0.00395	0.00687	0.00644	0.00555	0.02624	0.04302	0.00749	0.00510

Table A10. The relative distance from the positive ideal solution alternative.

Province	D_J*	D_J^-	C_J*	Rank
Beijing	0.13464	0.08778	0.39467	6
Tianjin	0.15912	0.04084	0.20425	29
Shanghai	0.14323	0.06727	0.31958	11
Chongqing	0.15519	0.04402	0.22096	27
Hebei	0.13337	0.08518	0.38975	8
Shanxi	0.15316	0.05056	0.24819	21
Jilin	0.15836	0.04682	0.22820	26
Liaoning	0.14596	0.06460	0.30681	12
Heilongjiang	0.15486	0.05661	0.26770	18
Shaanxi	0.14599	0.05755	0.28276	15
Gansu	0.15606	0.04980	0.24189	22
Qinghai	0.16581	0.04642	0.21874	28
Shandong	0.11688	0.09136	0.43874	4
Fujian	0.14486	0.05177	0.26330	19
Zhejiang	0.10664	0.09362	0.46750	3
Henan	0.12843	0.09047	0.41329	5
Hubei	0.13565	0.07462	0.35488	10
Hunan	0.13156	0.08416	0.39014	7
Jiangxi	0.14650	0.05763	0.28232	16
Jiangsu	0.10090	0.11386	0.53015	2
Anhui	0.14255	0.06286	0.30601	13
Guangdong	0.07496	0.15453	0.67336	1
Hainan	0.17340	0.02653	0.13269	31
Sichuan	0.13025	0.08192	0.38613	9
Guizhou	0.15419	0.05654	0.26831	17
Yunnan	0.15290	0.04811	0.23932	23
Inner Mongolia	0.15627	0.06165	0.28289	14
Xinjiang	0.15634	0.04825	0.23583	24
Ningxia	0.17237	0.03165	0.15514	30
Guangxi	0.15080	0.05170	0.25532	20
Tibet	0.17070	0.05238	0.23479	25

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