

Supplementary information

A NOVEL DECISION-MAKING FRAMEWORK BASED ON PROBABILISTIC LINGUISTIC TERM SET FOR SELECTING SUSTAINABLE SUPPLIER CONSIDERING SOCIAL CREDIT

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Questionnaire for assigning interactive influence between sustainable supplier selection factors

Dear Sir/Madam,

We are currently conducting a survey to understand the interactive influence between sustainable supplier selection factors for the determination of critical success factors. It plays an important role in our research, and it also directly affects the final result. We sincerely invite you to participate in this research project.

Attached to the email is a questionnaire that requires you to evaluate the degree of interaction between the factors. We hope that you can carefully read the questionnaire and make a deliberate decision based on your professional knowledge and experience. This questionnaire may take you 10–15 minutes.

We guarantee that all answers will be confidential and all identifying information will remain anonymous. There are no right or wrong answers in the option settings. Please fill in this questionnaire according to your own understanding and judgment. If you have any questions about this questionnaire or our study, please contact us by email.

Thank you for your understanding and cooperation.

In this part, there is a questionnaire that requires you to use linguistic terms for evaluating the degree of interaction between the factors. Our research contains factors in three aspects, and each aspect includes five factors. Details can be seen in the following Table S1. Linguistic variables are used to evaluate the influence between SSS factors. For ease of representation, we provide abbreviated forms of language variables (see Table S2).

Table S1. Sustainable supplier selection factors

Criterion	factors
Economic	Technology capability (K_1)
	Confidence in a durable product (K_2)
	Price of product (K_3)
	Financial capability (K_4)
	Increase in supply flexibility (K_5)
Environmental	Energy usage (K_6)
	Pollution reduction (K_7)
	Environmental skill (K_8)
	Eco-design (K_9)
	Environmental awareness (K_{10})
Credit	Administrative reward and punishment (K_{11})
	Quality commitment performance (K_{12})
	Contract compliance (K_{13})
	Enterprise overall management quality credit (K_{14})
	Tax-paying credit level (K_{15})

Table S2. Linguistic variables for sustainable supplier selection factors' pair-wise comparisons

Linguistic variables	Abbreviation
no	N
very low	VL
low	L
high	H
very high	VH

Rate the interactive influence between sustainable supplier selection factors. Based on your experience and understanding, please fill in the following table with abbreviations corresponding to the linguistic variables:

No.	k_1	k_2	k_3	k_4	k_5	k_6	k_7	k_8	k_9	k_{10}	k_{11}	k_{12}	k_{13}	k_{14}	k_{15}
k_1	0														
k_2		0													
k_3			0												
k_4				0											
k_5					0										
k_6						0									
k_7							0								
k_8								0							
k_9									0						

No.	k_1	k_2	k_3	k_4	k_5	k_6	k_7	k_8	k_9	k_{10}	k_{11}	k_{12}	k_{13}	k_{14}	k_{15}
k_{10}										0					
k_{11}											0				
k_{12}												0			
k_{13}													0		
k_{14}														0	
k_{15}															0

Questionnaire for evaluating potential sustainable suppliers

Dear Sir/Madam,

We are conducting a questionnaire to evaluate potential sustainable suppliers to select the best sustainable suppliers.

Evaluation of potential sustainable suppliers is an important part of our decision-making research and has a significant impact on the final outcome. We have identified critical success factors and we make them as the indicators to select sustainable suppliers. The main purpose is to obtain the performance of potential suppliers under indicators. We are very pleased to invite you to participate in this research project.

The attached questionnaire requiring you to use given linguistic terms to evaluate the potential sustainable suppliers specific under specific indicators. We hope you read the questionnaire carefully and make a considered decision based on your professional knowledge and experience. This questionnaire may take 10–15 minutes of your time.

We guarantee that all the answers will be correctly used and accessed by researchers only, and they will be remained confidential and private. We promise not to disclose your identity, address and other working organization information. There is no right or wrong answers in the option settings. Please fill in this questionnaire according to your own understanding and judgment. If you have any questions about this questionnaire or our study, please contact us by email.

Thank you for your understanding and cooperation.

In this part, we need you to use linguistic terms for evaluating potential sustainable suppliers under specific indicators. The linguistic terms and variables are shown in the following table. And then please evaluate potential sustainable supplier considering each given indicator.

Based on your experience and understanding, please evaluate the performance of the five potential sustainable suppliers under given indicators:

(1) Evaluate the performance of potential suppliers in terms of technology capability:

Supplier 1: pretty bad bad a little bad middle a little good good pretty good

Supplier 2: pretty bad bad a little bad middle a little good good pretty good

Supplier 3: pretty bad bad a little bad middle a little good good pretty good

Supplier 4: pretty bad bad a little bad middle a little good good pretty good

Supplier 5: pretty bad bad a little bad middle a little good good pretty good

(2) As for financial capability, evaluate the performance of potential suppliers:

Supplier 1: pretty bad bad a little bad middle a little good good pretty good

Supplier 2: pretty bad bad a little bad middle a little good good pretty good

Supplier 3: pretty bad bad a little bad middle a little good good pretty good

Supplier 4: pretty bad bad a little bad middle a little good good pretty good

Supplier 5: pretty bad bad a little bad middle a little good good pretty good

(3) Evaluate the performance of potential suppliers with respect to pollution reduction:

Supplier 1: pretty bad bad a little bad middle a little good good pretty good

Supplier 2: pretty bad bad a little bad middle a little good good pretty good

Supplier 3: pretty bad bad a little bad middle a little good good pretty good

Supplier 4: pretty bad bad a little bad middle a little good good pretty good

Supplier 5: pretty bad bad a little bad middle a little good good pretty good

(4) Considering Eco-design, evaluate the performance of potential suppliers:

Supplier 1: pretty bad bad a little bad middle a little good good pretty good

Supplier 2: pretty bad bad a little bad middle a little good good pretty good

Supplier 3: pretty bad bad a little bad middle a little good good pretty good

Supplier 4: pretty bad bad a little bad middle a little good good pretty good

Supplier 5: pretty bad bad a little bad middle a little good good pretty good

(5) Evaluate the performance of potential suppliers in terms of quality commitment performance:

Supplier 1: pretty bad bad a little bad middle a little good good pretty good

Supplier 2: pretty bad bad a little bad middle a little good good pretty good

Supplier 3: pretty bad bad a little bad middle a little good good pretty good

Supplier 4: pretty bad bad a little bad middle a little good good pretty good

Supplier 5: pretty bad bad a little bad middle a little good good pretty good

(6) Evaluate the performance of potential suppliers in consideration of enterprise overall management quality credit:

Supplier 1: pretty bad bad a little bad middle a little good good pretty good

Supplier 2: pretty bad bad a little bad middle a little good good pretty good

Supplier 3: pretty bad bad a little bad middle a little good good pretty good

Supplier 4: pretty bad bad a little bad middle a little good good pretty good

Supplier 5: pretty bad bad a little bad middle a little good good pretty good

Table S3. Initial evaluation matrix of PLTSs

No.	k_1	k_2	k_3	k_4	k_5	k_6
k_1	0	$\{S_1, S_3, S_4, S_1, S_3\}$	$\{S_2, S_3, S_0, S_2\}$	$\{S_2, S_3, S_4, S_3, S_4\}$	$\{S_1, S_2, S_1, S_3, S_1\}$	$\{S_3, S_2, S_3, S_4, S_2\}$
k_2	$\{S_3, S_3, S_2, S_1, S_2\}$	0	$\{S_3, S_2, S_3, S_1, S_0\}$	$\{S_2, S_2, S_1, S_0\}$	$\{S_3, S_2, S_4, S_0, S_0\}$	$\{S_2, S_1, S_0, S_1\}$
k_3	$\{S_0, S_2, S_1, S_2, S_1\}$	$\{S_2, S_1, S_2, S_3, S_2\}$	0	$\{S_3, S_2, S_3, S_0, S_1\}$	$\{S_3, S_2, S_1, S_2, S_3\}$	$\{S_3, S_2, S_3, S_0, S_1\}$
k_4	$\{S_2, S_1, S_0, S_0, S_1\}$	$\{S_3, S_2, S_3, S_4, S_2\}$	$\{S_2, S_2, S_3, S_0, S_1\}$	0	$\{S_3, S_2, S_3, S_3, S_1\}$	$\{S_3, S_4, S_4, S_2, S_3\}$
k_5	$\{S_4, S_3, S_2, S_2, S_4\}$	$\{S_3, S_2, S_2, S_3\}$	$\{S_2, S_3, S_2, S_4, S_2\}$	$\{S_3, S_3, S_2, S_4, S_1\}$	0	$\{S_2, S_2, S_1, S_3, S_1\}$
k_6	$\{S_2, S_1, S_1, S_2, S_0\}$	$\{S_0, S_0, S_1, S_0, S_2\}$	$\{S_1, S_0, S_0, S_2, S_0\}$	$\{S_2, S_1, S_0, S_2, S_1\}$	$\{S_0, S_2, S_1, S_0, S_1\}$	0
k_7	$\{S_3, S_4, S_2, S_2, S_1\}$	$\{S_2, S_1, S_1, S_1, S_0\}$	$\{S_0, S_3, S_1, S_1, S_2\}$	$\{S_4, S_2, S_3, S_4, S_3\}$	$\{S_3, S_1, S_1, S_0, S_2\}$	$\{S_2, S_3, S_3, S_2, S_0\}$
k_8	$\{S_4, S_3, S_4, S_2, S_2\}$	$\{S_3, S_3, S_2, S_4, S_2\}$	$\{S_3, S_4, S_2, S_3, S_2\}$	$\{S_1, S_2, S_1, S_1, S_0\}$	$\{S_2, S_3, S_2, S_1, S_1\}$	$\{S_2, S_1, S_1, S_3, S_0\}$
k_9	$\{S_2, S_1, S_1, S_0\}$	$\{S_1, S_3, S_2, S_1, S_0\}$	$\{S_2, S_1, S_2, S_0, S_0\}$	$\{S_4, S_3, S_4, S_1, S_2\}$	$\{S_3, S_2, S_1, S_1, S_1\}$	$\{S_3, S_2, S_1, S_0, S_3\}$
k_{10}	$\{S_1, S_4, S_3, S_2, S_1\}$	$\{S_2, S_3, S_2, S_1, S_2\}$	$\{S_1, S_1, S_0, S_2, S_1\}$	$\{S_3, S_2, S_3, S_2, S_3\}$	$\{S_1, S_3, S_1, S_2, S_3\}$	$\{S_2, S_2, S_1, S_0, S_1\}$
k_{11}	$\{S_1, S_2, S_0, S_1, S_1\}$	$\{S_0, S_0, S_2, S_2, S_1\}$	$\{S_0, S_0, S_2, S_2\}$	$\{S_0, S_0, S_1, S_2, S_0\}$	$\{S_2, S_3, S_2, S_1, S_1\}$	$\{S_2, S_3, S_3, S_3, S_2\}$
k_{12}	$\{S_2, S_3, S_2, S_1, S_3\}$	$\{S_3, S_3, S_2, S_1, S_2\}$	$\{S_2, S_3, S_2, S_1\}$	$\{S_1, S_3, S_3, S_2, S_2\}$	$\{S_0, S_0, S_1, S_1, S_2\}$	$\{S_2, S_1, S_3, S_2, S_1\}$
k_{13}	$\{S_2, S_3, S_2, S_3, S_1\}$	$\{S_1, S_1, S_0, S_0, S_0\}$	$\{S_2, S_0, S_2, S_1, S_1\}$	$\{S_1, S_0, S_2, S_3, S_3\}$	$\{S_2, S_2, S_3, S_2, S_3\}$	$\{S_0, S_2, S_1, S_1, S_0\}$
k_{14}	$\{S_2, S_1, S_1, S_1, S_1\}$	$\{S_2, S_3, S_3, S_1, S_2\}$	$\{S_1, S_2, S_0, S_2, S_1\}$	$\{S_2, S_1, S_2, S_0, S_1\}$	$\{S_2, S_2, S_3, S_1, S_3\}$	$\{S_2, S_1, S_2, S_0, S_1\}$
k_{15}	$\{S_2, S_2, S_1, S_3, S_1\}$	$\{S_1, S_0, S_2, S_1, S_0\}$	$\{S_2, S_1, S_1, S_0, S_2\}$	$\{S_1, S_0, S_0, S_2, S_0\}$	$\{S_1, S_2, S_0, S_2, S_0\}$	$\{S_3, S_2, S_1, S_1, S_2\}$
No.	k_7	k_8	k_9	k_{10}	k_{11}	k_{12}
k_1	$\{S_4, S_3, S_1, S_2, S_1\}$	$\{S_3, S_4, S_2, S_3\}$	$\{S_1, S_2, S_0, S_3, S_2\}$	$\{S_0, S_1, S_0, S_2, S_0\}$	$\{S_3, S_2, S_2, S_4, S_2\}$	$\{S_2, S_2, S_4, S_1, S_1\}$
k_2	$\{S_3, S_1, S_4, S_2, S_1\}$	$\{S_1, S_0, S_1, S_2, S_1\}$	$\{S_1, S_2, S_2, S_1, S_2\}$	$\{S_3, S_2, S_0, S_1, S_2\}$	$\{S_3, S_3, S_2, S_1, S_2\}$	$\{S_2, S_1, S_2, S_0, S_0\}$
k_3	$\{S_1, S_2, S_0, S_2\}$	$\{S_1, S_1, S_1, S_0, S_1\}$	$\{S_2, S_3, S_2, S_2, S_4\}$	$\{S_0, S_2, S_1, S_2, S_1\}$	$\{S_1, S_2, S_1, S_1\}$	$\{S_2, S_1, S_1, S_0, S_2\}$
k_4	$\{S_4, S_2, S_3, S_1, S_0\}$	$\{S_2, S_3, S_2, S_1, S_3\}$	$\{S_2, S_4, S_2, S_3, S_1\}$	$\{S_4, S_3, S_4, S_2, S_3\}$	$\{S_3, S_4, S_3, S_3, S_2\}$	$\{S_3, S_2, S_3, S_1, S_0\}$
k_5	$\{S_1, S_2, S_3, S_2, S_1\}$	$\{S_1, S_1, S_2, S_0, S_2\}$	$\{S_1, S_1, S_0, S_2, S_0\}$	$\{S_3, S_2, S_0, S_1, S_0\}$	$\{S_1, S_3, S_3, S_2, S_1\}$	$\{S_2, S_2, S_1, S_0, S_1\}$
k_6	$\{S_3, S_2, S_2, S_3, S_1\}$	$\{S_2, S_3, S_4, S_4, S_3\}$	$\{S_0, S_1, S_1, S_2, S_0\}$	$\{S_3, S_4, S_3, S_2, S_3\}$	$\{S_2, S_3, S_1, S_0, S_2\}$	$\{S_2, S_1, S_0, S_1, S_1\}$
k_7	0	$\{S_3, S_2, S_2, S_3, S_4\}$	$\{S_2, S_3, S_1, S_1, S_2\}$	$\{S_3, S_2, S_2, S_1, S_4\}$	$\{S_3, S_3, S_2, S_4, S_2\}$	$\{S_0, S_1, S_1, S_0, S_2\}$
k_8	$\{S_4, S_4, S_3, S_2, S_1\}$	0	$\{S_2, S_3, S_1, S_1\}$	$\{S_4, S_2, S_3, S_2, S_2\}$	$\{S_2, S_3, S_0, S_1, S_1\}$	$\{S_4, S_3, S_2, S_1, S_3\}$
k_9	$\{S_2, S_1, S_2, S_0, S_1\}$	$\{S_1, S_3, S_4, S_3, S_2\}$	0	$\{S_3, S_3, S_2, S_1, S_2\}$	$\{S_1, S_0, S_1, S_0, S_2\}$	$\{S_1, S_0, S_1, S_2, S_0\}$
k_{10}	$\{S_2, S_3, S_2, S_1, S_0\}$	$\{S_2, S_1, S_1, S_0\}$	$\{S_2, S_2, S_4, S_1, S_2\}$	0	$\{S_1, S_2, S_2, S_1\}$	$\{S_3, S_4, S_2, S_3, S_1\}$
k_{11}	$\{S_0, S_0, S_1, S_2, S_0\}$	$\{S_3, S_2, S_3, S_4, S_3\}$	$\{S_0, S_3, S_0, S_1, S_0\}$	$\{S_2, S_1, S_2, S_3, S_3\}$	0	$\{S_1, S_1, S_0, S_0\}$
k_{12}	$\{S_1, S_0, S_1, S_2, S_2\}$	$\{S_1, S_1, S_1, S_0, S_2\}$	$\{S_3, S_4, S_4, S_2, S_3\}$	$\{S_0, S_1, S_2, S_1, S_1\}$	$\{S_2, S_0, S_1, S_1, S_2\}$	0
k_{13}	$\{S_0, S_0, S_2, S_1, S_2\}$	$\{S_1, S_2, S_2, S_3, S_1\}$	$\{S_0, S_0, S_2, S_1, S_2\}$	$\{S_1, S_2, S_0, S_1, S_2\}$	$\{S_0, S_0, S_2, S_1, S_1\}$	$\{S_1, S_0, S_0, S_1, S_0\}$
k_{14}	$\{S_3, S_2, S_2, S_1, S_2\}$	$\{S_0, S_2, S_1, S_1, S_1\}$	$\{S_3, S_0, S_2, S_2, S_1\}$	$\{S_2, S_0, S_0, S_1, S_1\}$	$\{S_3, S_3, S_4, S_2, S_3\}$	$\{S_2, S_2, S_1, S_0, S_1\}$
k_{15}	$\{S_0, S_1, S_0, S_1, S_2\}$	$\{S_1, S_0, S_2, S_0, S_2\}$	$\{S_0, S_2, S_2, S_1, S_2\}$	$\{S_2, S_0, S_0, S_1, S_0\}$	$\{S_2, S_1, S_2, S_2, S_0\}$	$\{S_1, S_0, S_1, S_2, S_1\}$
No.	k_{13}	k_{14}	k_{15}			
k_1	$\{S_1, S_0, S_0, S_2, S_1\}$	$\{S_0, S_1, S_1, S_0, S_1\}$	$\{S_3, S_2, S_1, S_0, S_4\}$			
k_2	$\{S_3, S_3, S_2, S_1, S_1\}$	$\{S_0, S_1, S_2, S_2, S_1\}$	$\{S_3, S_4, S_2, S_3, S_2\}$			
k_3	$\{S_0, S_2, S_1, S_2, S_1\}$	$\{S_0, S_2, S_1, S_0, S_0\}$	$\{S_2, S_1, S_2, S_1, S_2\}$			
k_4	$\{S_2, S_0, S_3, S_1, S_1\}$	$\{S_2, S_1, S_2, S_2, S_1\}$	$\{S_4, S_3, S_4, S_2, S_3\}$			
k_5	$\{S_0, S_0, S_2, S_1, S_2\}$	$\{S_2, S_1, S_1, S_0, S_0\}$	$\{S_2, S_1, S_2, S_3, S_2\}$			
k_6	$\{S_2, S_1, S_3, S_2, S_1\}$	$\{S_2, S_1, S_0, S_1, S_1\}$	$\{S_3, S_3, S_2, S_1, S_2\}$			

End of Table S3

No.	k_{13}	k_{14}	k_{15}
k_7	$\{S_0, S_2, S_1, S_2, S_0\}$	$\{S_0, S_0, S_0, S_2, S_1\}$	$\{S_4, S_4, S_3, S_2, S_4\}$
k_8	$\{S_1, S_0, S_3, S_0, S_2\}$	$\{S_2, S_2, S_3, S_4, S_3\}$	$\{S_2, S_1, S_0, S_0\}$
k_9	$\{S_3, S_2, S_1, S_3, S_2\}$	$\{S_3, S_4, S_2, S_3, S_2\}$	$\{S_2, S_3, S_2, S_1\}$
k_{10}	$\{S_0, S_0, S_1, S_2, S_1\}$	$\{S_2, S_1, S_2, S_0, S_1\}$	$\{S_0, S_0, S_1, S_2, S_0\}$
k_{11}	$\{S_2, S_1, S_1, S_0, S_0\}$	$\{S_3, S_3, S_2, S_4, S_2\}$	$\{S_1, S_2, S_2, S_2, S_1\}$
k_{12}	$\{S_2, S_1, S_2, S_1\}$	$\{S_4, S_2, S_1, S_3, S_3\}$	$\{S_1, S_2, S_2, S_1, S_0\}$
k_{13}	0	$\{S_0, S_0, S_0, S_1, S_1\}$	$\{S_0, S_1, S_1, S_1, S_2\}$
k_{14}	$\{S_3, S_2, S_1, S_0, S_2\}$	0	$\{S_3, S_2, S_2, S_2, S_1\}$
k_{15}	$\{S_0, S_1, S_1, S_2\}$	$\{S_0, S_2, S_1, S_2, S_3\}$	0

Table S4. Initial evaluation matrix of PLTSs

No.	k_1	k_2	k_3	k_4
k_1	0	$\{S_1(0.4), S_2(0.2), S_3(0.2), S_4(0.2)\}$	$\{S_0(0.25), S_2(0.5), S_3(0.25)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4)\}$
k_2	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_1(0.4), S_2(0.2), S_3(0.2), S_4(0.2)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4)\}$	$\{S_0(0.25), S_1(0.25), S_2(0.5)\}$
k_3	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_0(0.25), S_1(0.25), S_2(0.5)\}$	0	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4)\}$
k_4	$\{S_2(0.4), S_3(0.2), S_4(0.4)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.2), S_4(0.2)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2)\}$	0
k_5	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_1(0.4), S_2(0.4), S_3(0.2)\}$	$\{S_2(0.6), S_3(0.2), S_4(0.2)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.4), S_4(0.2)\}$
k_6	$\{S_1(0.2), S_2(0.4), S_3(0.2), S_4(0.2)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	$\{S_0(0.6), S_1(0.4), S_2(0.4)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$
k_7	$\{S_2(0.4), S_3(0.2), S_4(0.4)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.2)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4)\}$
k_8	$\{S_0(0.25), S_1(0.5), S_2(0.25)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$
k_9	$\{S_1(0.4), S_2(0.2), S_3(0.2), S_4(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.2)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.2), S_4(0.4)\}$
k_{10}	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$	$\{S_2(0.4), S_3(0.6)\}$
k_{11}	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.4), S_4(0.2)\}$	$\{S_0(0.5), S_2(0.5)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2)\}$
k_{12}	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_1(0.25), S_2(0.5), S_3(0.25)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$
k_{13}	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	0	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4)\}$
k_{14}	$\{S_1(0.8), S_2(0.2)\}$	$\{S_1(0.2), S_2(0.6), S_3(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_4(0.4)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$
k_{15}	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.2), S_4(0.2)\}$
No.	k_5	k_6	k_7	k_8
k_1	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.2), S_4(0.2)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_1(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_2(0.25), S_3(0.5), S_4(0.25)\}$
k_2	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_0(0.25), S_1(0.5), S_2(0.25)\}$	$\{S_1(0.4), S_2(0.2), S_3(0.4)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$
k_3	$\{S_1(0.4), S_2(0.6)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4)\}$	$\{S_1(0.2), S_2(0.6), S_3(0.2)\}$	$\{S_0(0.2), S_1(0.8)\}$
k_4	$\{S_2(0.2), S_3(0.4), S_4(0.4)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$
k_5	0	$\{S_1(0.4), S_2(0.4), S_3(0.2)\}$	$\{S_2(0.5), S_3(0.5)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$
k_6	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	0	$\{S_0(0.6), S_1(0.2), S_2(0.2)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4)\}$
k_7	$\{S_2(0.2), S_3(0.2), S_4(0.6)\}$	$\{S_0(0.2), S_2(0.4), S_3(0.4)\}$	0	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$
k_8	$\{S_1(0.4), S_2(0.4), S_3(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_3(0.2)\}$	$\{S_0(0.5), S_1(0.25), S_2(0.25)\}$	0
k_9	$\{S_1(0.25), S_2(0.5), S_3(0.25)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_3(0.2)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.4), S_4(0.2)\}$
k_{10}	$\{S_0(0.6), S_1(0.2), S_2(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_1(0.2), S_2(0.6), S_3(0.2)\}$	$\{S_0(0.25), S_1(0.5), S_2(0.25)\}$

End of Table S4

No.	k_5	k_6	k_7	k_8
k_{11}	$\{S_1(0.4), S_2(0.6)\}$	$\{S_2(0.4), S_3(0.6)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.4)\}$	$\{S_2(0.2), S_3(0.6), S_4(0.2)\}$
k_{12}	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_1(0.4), S_2(0.4), S_3(0.2)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$
k_{13}	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_1(0.4), S_2(0.4), S_3(0.2)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.4)\}$
k_{14}	$\{S_1(0.2), S_2(0.6), S_3(0.2)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$
k_{15}	$\{S_0(0.4), S_1(0.2), S_2(0.4)\}$	$\{S_1(0.4), S_2(0.4), S_3(0.2)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.4)\}$
No.	k_9	k_{10}	k_{11}	k_{12}
k_1	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2)\}$	$\{S_2(0.6), S_3(0.2), S_4(0.2)\}$	$\{S_1(0.4), S_2(0.4), S_4(0.2)\}$
k_2	$\{S_1(0.4), S_2(0.6)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.4)\}$
k_3	$\{S_2(0.6), S_3(0.2), S_4(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_1(0.75), S_2(0.25)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$
k_4	$\{S_1(0.2), S_2(0.4), S_3(0.2), S_4(0.2)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4)\}$	$\{S_2(0.2), S_3(0.6), S_4(0.2)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4)\}$
k_5	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.2), S_3(0.2)\}$	$\{S_0(0.4), S_2(0.2), S_3(0.4)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$
k_6	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_2(0.2), S_3(0.6), S_4(0.2)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$
k_7	$\{S_1(0.4), S_2(0.4), S_3(0.2)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.2), S_4(0.2)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$
k_8	$\{S_1(0.5), S_2(0.25), S_3(0.25)\}$	$\{S_2(0.6), S_3(0.2), S_3(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_3(0.2)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.4), S_4(0.2)\}$
k_9	0	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$
k_{10}	$\{S_1(0.2), S_2(0.6), S_4(0.2)\}$	0	$\{S_1(0.5), S_2(0.5)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.4), S_4(0.2)\}$
k_{11}	$\{S_0(0.6), S_1(0.2), S_2(0.2)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	0	$\{S_0(0.5), S_1(0.5)\}$
k_{12}	$\{S_2(0.2), S_3(0.4), S_4(0.4)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	0
k_{13}	$\{S_0(0.4), S_1(0.2), S_2(0.4)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_0(0.6), S_1(0.4)\}$
k_{14}	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_2(0.2), S_3(0.6), S_4(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$
k_{15}	$\{S_0(0.2), S_1(0.2), S_2(0.6)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.6)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$
No.	k_{13}	k_{14}	k_{15}	
k_1	$\{S_0(0.4), S_1(0.4), S_2(0.4)\}$	$\{S_0(0.4), S_1(0.6)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.4)\}$	
k_2	$\{S_1(0.4), S_2(0.2), S_3(0.2), S_4(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_0(0.4), S_2(0.2), S_3(0.2), S_4(0.2)\}$	
k_3	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	
k_4	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_3(0.2)\}$	$\{S_1(0.4), S_2(0.6)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.6)\}$	
k_5	$\{S_0(0.4), S_1(0.2), S_2(0.4)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_1(0.2), S_2(0.6), S_3(0.2)\}$	
k_6	$\{S_1(0.4), S_2(0.4), S_3(0.2)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	
k_7	$\{S_0(0.4), S_1(0.2), S_2(0.4)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_3(0.2)\}$	
k_8	$\{S_0(0.4), S_1(0.2), S_2(0.2), S_3(0.2)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.2), S_4(0.4)\}$	
k_9	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_1(0.6), S_2(0.4)\}$	
k_{10}	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_1(0.4), S_2(0.2), S_3(0.2)\}$	
k_{11}	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2)\}$	$\{S_3(0.2), S_1(0.4), S_2(0.4)\}$	
k_{12}	$\{S_1(0.5), S_2(0.5)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.4), S_4(0.2)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2)\}$	
k_{13}	0	$\{S_0(0.6), S_1(0.4)\}$	$\{S_2(0.6), S_3(0.4)\}$	
k_{14}	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2)\}$	0	$\{S_1(0.2), S_2(0.4), S_3(0.4)\}$	
k_{15}	$\{S_0(0.25), S_1(0.5), S_2(0.25)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2)\}$	0	

Table S5. Normalized evaluation matrix of PLTSs

No.	k_1	k_2	k_3	k_4
k_1	0	$\{S_1(0.4), S_3(0.4), S_4(0.2), S_1(0), S_1(0)\}$	$\{S_0(0.25), S_2(0.5), S_3(0.25), S_0(0), S_0(0)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4), S_2(0), S_2(0)\}$
k_2	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	0	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4), S_0(0)\}$	$\{S_0(0.25), S_1(0.25), S_2(0.5), S_0(0), S_0(0)\}$
k_3	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_1(0.2), S_2(0.6), S_3(0.2), S_1(0), S_1(0)\}$	0	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4), S_0(0)\}$
k_4	$\{S_2(0.4), S_3(0.2), S_4(0.4), S_2(0), S_2(0)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2), S_0(0)\}$	0
k_5	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_2(0.5), S_3(0.5), S_2(0), S_2(0), S_2(0)\}$	$\{S_2(0.6), S_3(0.2), S_4(0.20), S_2(0), S_2(0)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.4), S_4(0.2), S_1(0)\}$
k_6	$\{S_1(0.2), S_2(0.4), S_3(0.2), S_4(0.2), S_1(0)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.6), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$
k_7	$\{S_2(0.4), S_3(0.2), S_4(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4), S_2(0), S_2(0)\}$
k_8	$\{S_0(0.25), S_1(0.5), S_2(0.25), S_0(0), S_0(0)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$
k_9	$\{S_1(0.4), S_2(0.2), S_3(0.2), S_4(0.2), S_1(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_3(0.2), S_0(0)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.2), S_4(0.4), S_1(0)\}$
k_{10}	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_1(0.2), S_2(0.6), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_2(0.4), S_3(0.6), S_2(0), S_2(0), S_2(0)\}$
k_{11}	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.5), S_2(0.5), S_0(0), S_0(0), S_0(0)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2), S_0(0), S_0(0)\}$
k_{12}	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	$\{S_1(0.25), S_2(0.5), S_3(0.25), S_1(0), S_1(0)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$
k_{13}	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	$\{S_0(0.6), S_1(0.4), S_0(0), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4), S_0(0)\}$
k_{14}	$\{S_1(0.8), S_2(0.2), S_1(0), S_1(0)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.4), S_4(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$
k_{15}	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.2), S_4(0.2), S_1(0)\}$
No.	k_5	k_6	k_7	k_8
k_1	$\{S_1(0.6), S_2(0.4), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_1(0.4), S_2(0.2), S_3(0.2), S_4(0.2), S_1(0)\}$	$\{S_2(0.25), S_3(0.5), S_4(0.25), S_2(0), S_2(0)\}$
k_2	$\{S_0(0.4), S_2(0.2), S_3(0.2), S_4(0.2), S_0(0)\}$	$\{S_0(0.25), S_1(0.5), S_2(0.25), S_0(0), S_0(0)\}$	$\{S_1(0.4), S_2(0.2), S_3(0.2), S_4(0.2), S_1(0)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$
k_3	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4), S_0(0)\}$	$\{S_0(0.25), S_1(0.25), S_2(0.5), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.8), S_0(0), S_0(0), S_0(0)\}$
k_4	$\{S_1(0.2), S_2(0.2), S_3(0.6), S_1(0), S_1(0)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4), S_2(0), S_2(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.2), S_4(0.2)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$
k_5	0	$\{S_1(0.4), S_2(0.4), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_1(0.4), S_2(0.4), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4), S_2(0), S_0(0)\}$
k_6	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	0	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4), S_2(0), S_2(0)\}$
k_7	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_3(0.2), S_0(0)\}$	$\{S_0(0.2), S_2(0.4), S_3(0.4), S_0(0), S_0(0)\}$	0	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$
k_8	$\{S_1(0.4), S_2(0.4), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_3(0.2), S_0(0)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.2), S_4(0.4), S_1(0)\}$	0

Continue of Table S5

No.	k_5	k_6	k_7	k_8
k_9	$\{S_1(0.6), S_2(0.4), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.4), S_0(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.4), S_4(0.2), S_1(0)\}$
k_{10}	$\{S_1(0.4), S_2(0.2), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.2), S_0(0)\}$	$\{S_0(0.25), S_1(0.5), S_2(0.25), S_0(0), S_0(0)\}$
k_{11}	$\{S_1(0.4), S_2(0.4), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_2(0.4), S_3(0.6), S_2(0), S_2(0), S_2(0)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.4), S_4(0.2), S_1(0)\}$	$\{S_2(0.2), S_3(0.6), S_4(0.2), S_2(0), S_2(0)\}$
k_{12}	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_1(0.4), S_2(0.4), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$
k_{13}	$\{S_2(0.6), S_3(0.4), S_2(0), S_2(0)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_1(0.4), S_2(0.4), S_3(0.2), S_1(0), S_1(0)\}$
k_{14}	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_1(0.2), S_2(0.6), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$
k_{15}	$\{S_0(0.4), S_1(0.2), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_1(0.4), S_2(0.4), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.4), S_0(0), S_0(0)\}$
No.	k_9	k_{10}	k_{11}	k_{12}
k_1	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2), S_0(0)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_2(0.6), S_3(0.2), S_4(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$
k_2	$\{S_1(0.4), S_2(0.6), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2), S_0(0)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_0(0)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.4), S_0(0), S_0(0)\}$
k_3	$\{S_2(0.6), S_3(0.2), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_1(0.75), S_2(0.25), S_1(0), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$
k_4	$\{S_1(0.2), S_2(0.4), S_3(0.2), S_4(0.2), S_1(0)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4), S_2(0), S_2(0)\}$	$\{S_2(0.2), S_3(0.6), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_3(0.2), S_5(0.2), S_0(0)\}$
k_5	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.2), S_3(0.2), S_0(0)\}$	$\{S_0(0.4), S_2(0.2), S_3(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.4), S_0(0), S_0(0)\}$
k_6	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_2(0.2), S_3(0.6), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2), S_0(0)\}$	$\{S_1(0.4), S_2(0.4), S_3(0.2), S_1(0), S_1(0)\}$
k_7	$\{S_1(0.4), S_2(0.4), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.2), S_4(0.2), S_1(0)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.4), S_0(0), S_0(0)\}$
k_8	$\{S_1(0.5), S_2(0.25), S_3(0.25), S_1(0), S_1(0)\}$	$\{S_2(0.6), S_3(0.2), S_3(0.2), S_2(0), S_2(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.4), S_1(0.2), S_2(0.2), S_3(0.2), S_0(0)\}$
k_9	0	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$
k_{10}	$\{S_1(0.2), S_2(0.6), S_4(0.2), S_1(0), S_1(0)\}$	0	$\{S_1(0.5), S_2(0.5), S_1(0), S_1(0), S_1(0)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$
k_{11}	$\{S_0(0.6), S_1(0.2), S_3(0.2), S_0(0), S_0(0)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	0	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$
k_{12}	$\{S_2(0.2), S_3(0.4), S_4(0.4), S_2(0), S_2(0)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	0
k_{13}	$\{S_0(0.4), S_1(0.2), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.6), S_1(0.4), S_0(0), S_0(0), S_0(0)\}$
k_{14}	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2), S_0(0)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_2(0.2), S_3(0.6), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2), S_0(0)\}$
k_{15}	$\{S_0(0.2), S_1(0.2), S_2(0.6), S_0(0), S_0(0)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.6), S_0(0), S_0(0)\}$	$\{S_0(0.25), S_1(0.5), S_2(0.25), S_0(0), S_0(0)\}$

End of Table S5

No.	k_{13}	k_{14}	k_{15}
k_1	$\{S_1(0.4), S_3(0.4), S_4(0.2), S_1(0), S_1(0)\}$	$\{S_0(0.4), S_1(0.6), S_0(0), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.2), S_3(0.2), S_4(0.2)\}$
k_2	$\{S_1(0.4), S_2(0.2), S_3(0.4), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$
k_3	$\{S_1(0.2), S_2(0.6), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_1(0.4), S_2(0.6), S_1(0), S_1(0), S_1(0)\}$
k_4	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_1(0.4), S_2(0.6), S_1(0), S_1(0), S_1(0)\}$	$\{S_2(0.2), S_3(0.4), S_4(0.4), S_2(0), S_2(0)\}$
k_5	$\{S_2(0.5), S_3(0.5), S_2(0), S_2(0), S_2(0)\}$	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_1(0.2), S_2(0.6), S_3(0.2), S_1(0), S_1(0)\}$
k_6	$\{S_0(0.6), S_1(0.2), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$
k_7	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_2(0.2), S_3(0.2), S_4(0.6), S_2(0), S_2(0)\}$
k_8	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_0(0.5), S_1(0.25), S_2(0.25), S_0(0), S_0(0)\}$
k_9	$\{S_0(0.2), S_1(0.4), S_2(0.2), S_3(0.2), S_0(0)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_1(0.25), S_2(0.5), S_3(0.25), S_1(0), S_1(0)\}$
k_{10}	$\{S_1(0.2), S_2(0.6), S_3(0.2), S_1(0), S_1(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_0(0.6), S_1(0.2), S_2(0.2), S_0(0), S_0(0)\}$
k_{11}	$\{S_0(0.4), S_1(0.2), S_2(0.4), S_0(0), S_0(0)\}$	$\{S_2(0.4), S_3(0.4), S_4(0.2), S_2(0), S_2(0)\}$	$\{S_1(0.4), S_2(0.6), S_1(0), S_1(0), S_1(0)\}$
k_{12}	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	$\{S_1(0.2), S_2(0.2), S_3(0.4), S_4(0.2), S_1(0)\}$	$\{S_0(0.2), S_1(0.4), S_2(0.4), S_0(0), S_0(0)\}$
k_{13}	0	$\{S_0(0.6), S_1(0.4), S_0(0), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.6), S_2(0.2), S_0(0), S_0(0)\}$
k_{14}	$\{S_1(0.2), S_2(0.4), S_3(0.4), S_1(0), S_1(0)\}$	0	$\{S_1(0.2), S_2(0.6), S_3(0.2), S_1(0), S_1(0)\}$
k_{15}	$\{S_0(0.4), S_1(0.4), S_2(0.2), S_0(0), S_0(0)\}$	$\{S_0(0.2), S_1(0.2), S_2(0.4), S_3(0.2), S_0(0)\}$	0