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RESEARCH ARTICLE

A picture fuzzy decision-based support model for the holistic assessment of cruise port tourism performance

Supplementary file

Table S1. The importance levels determined by the expert panel and the score function values

Experts	Linguistic variables	Picture fuzzy sets	$\mathcal{S}\left(\widetilde{\Omega}_{\mathfrak{x}}\right)$
Ω_1	VI	(0.700, 0.010, 0.010)	0.893
Ω_2	I	(0.600, 0.040, 0.030)	0.843
Ω_3	I	(0.600, 0.040, 0.030)	0.843
Ω_4	VI	(0.700, 0.010, 0.010)	0.893
Ω_5	MI	(0.260, 0.260, 0.260)	0.580
Ω_6	MI	(0.260, 0.260, 0.260)	0.580
Ω_7	VI	(0.700, 0.010, 0.010)	0.893
Ω_8	MI	(0.260, 0.260, 0.260)	0.580

Table S2. The initial decision matrices $\left(\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}=\left[\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}\right]_{\mathfrak{Z}x\mathfrak{Y}^{(ql)}}\right)$ for qualitative criteria with linguistic variables

Experts	Alternatives	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$
Ω_1	X_1	M	MG	MG	M	G	VG	MG
	X_2	MB	MB	MB	B	VVG	B	M
	X_3	MG	MG	VG	VG	MG	VVG	MG
	X_4	VVG	MG	VVG	G	M	VG	MG
	X_5	MB	MG	M	VB	G	G	M
	X_6	M	MG	M	M	G	MG	M
	X_7	MG	MG	G	MG	MG	G	MG
	X_8	M	M	M	M	VG	M	MG
	X_9	MB	MG	M	M	M	G	M
	X_{10}	MB	MG	M	M	M	G	M
	X_{11}	EG	VG	EG	VVG	MB	EG	VG
	X_{12}	M	M	M	MG	VVG	G	G
	X_{13}	M	MG	M	B	VG	G	G
	X_{14}	VVG	VG	EG	VVG	MG	VVG	G
	X_{15}	MG	MG	VG	MG	MG	VG	MG
	X_{16}	MB	M	MB	MG	VG	MB	M
	X_{17}	MB	MB	MB	M	VG	B	MG
	X_{18}	M	M	MB	MG	VG	G	MG
	X_{19}	MB	MB	B	M	VG	B	MG
Ω_2	X_1	M	G	G	MG	VG	VVG	G
	X_2	M	M	MG	M	VVG	M	MG
	X_3	M	MG	G	VVG	G	VVG	G
	X_4	VG	G	VVG	VG	MG	VVG	MG
	X_5	MB	G	M	MB	G	G	MG

Table S2. (*Continued*)

Experts	Alternatives	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$
Ω_1	X_1	M	MG	MG	M	G	VG	MG
	X_6	MB	MG	MG	MG	G	MG	MG
	X_7	MG	G	MG	G	G	VG	G
	X_8	MG	MG	MG	MG	VG	MG	MG
	X_9	M	G	G	MG	MG	G	MG
	X_{10}	MB	G	MG	MG	MG	VG	M
	X_{11}	VVG	G	VVG	VVG	MG	VVG	VVG
	X_{12}	MG	MG	MG	G	VVG	VG	VG
Ω_2	X_{13}	MG	MG	MG	M	VVG	G	G
	X_{14}	VVG	G	VVG	VVG	MG	VVG	G
	X_{15}	MG	G	VVG	G	MG	VVG	G
	X_{16}	M	MG	M	G	G	M	MG
	X_{17}	M	M	M	MG	VG	M	G
	X_{18}	MG	MG	MB	MG	VVG	G	MG
	X_{19}	MB	M	MB	MG	VG	M	G
Ω_3	X_1	MG	MG	G	MG	VG	VG	MG
	X_2	MG	MG	MB	B	VVG	M	MG
	X_3	MG	MG	VVG	VVG	G	VVG	MG
	X_4	VVG	G	VVG	G	M	VVG	G
	X_5	MB	G	M	VB	G	G	MG
	X_6	MG	MG	MG	MG	G	MG	MG
	X_7	MG	MG	G	MG	MG	G	G
	X_8	M	MG	M	M	VVG	M	G
	X_9	MB	MG	MG	M	M	VG	M
	X_{10}	M	G	MG	MG	MG	G	MG
	X_{11}	EG	VG	EG	VVG	MB	EG	VG
	X_{12}	M	M	M	MG	VVG	MG	G
	X_{13}	M	MG	MG	B	VG	G	VG
	X_{14}	EG	VVG	EG	VVG	VG	VVG	G
	X_{15}	MG	MG	VG	MG	MG	VVG	MG
	X_{16}	MB	M	MB	G	VG	MB	MG
	X_{17}	MB	MB	M	M	VG	M	MG
	X_{18}	MG	MG	M	MG	VVG	VG	G
	X_{19}	MB	M	M	MG	VG	M	G
Ω_4	X_1	MB	MG	M	M	M	G	MB
	X_2	MB	M	M	MB	G	B	M
	X_3	MB	MG	G	MG	MG	G	MB
	X_4	VVG	M	G	MG	M	G	MG
	X_5	B	M	MB	VB	G	M	M
	X_6	M	MG	MB	MG	MG	MG	MB
	X_7	M	MG	G	MG	MG	M	M
	X_8	M	MB	M	M	VG	MB	MG
	X_9	MB	MG	M	MB	MG	G	MB
	X_{10}	MB	MG	MB	M	M	MG	M
	X_{11}	VG	G	VG	G	MB	VG	G
	X_{12}	M	M	M	MG	G	G	G
	X_{13}	M	MG	M	B	MG	G	MG
	X_{14}	VG	G	VG	G	MG	VG	MG
	X_{15}	MG	MG	G	MG	M	G	M
	X_{16}	B	MB	MB	M	MG	MB	M
	X_{17}	MB	MB	MB	M	MG	B	MG
	X_{18}	M	M	M	M	M	MG	M
	X_{19}	B	M	MB	M	MG	B	M
Ω_5	X_1	M	MG	M	MB	MG	G	M
	X_2	MB	MB	M	B	G	B	M
	X_3	M	M	VG	G	MG	G	MG
	X_4	G	MG	G	G	M	VG	M

Table S2. (*Continued*)

Experts	Alternatives	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$
Ω_1	X_1	M	MG	MG	M	G	VG	MG
	X_5	MB	MG	M	VB	G	G	MG
	X_6	M	M	M	M	MG	G	M
	X_7	M	M	G	M	MG	MG	M
	X_8	M	MG	M	M	G	M	MG
	X_9	MB	MG	MB	MG	M	G	M
	X_{10}	MB	M	M	M	M	MG	MB
	X_{11}	VG	G	VG	G	MB	VG	G
	X_{12}	M	M	M	MG	G	G	G
	X_{13}	M	MG	M	B	VG	G	MG
	X_{14}	VG	VG	VG	VG	MG	G	MG
	X_{15}	MG	G	MG	MG	MG	VG	MG
	X_{16}	MB	M	MB	MG	VG	MB	M
	X_{17}	MB	M	MB	MB	MG	B	MG
	X_{18}	MB	MB	MB	MG	VG	MG	M
	X_{19}	MB	MB	MB	MG	MG	MB	M
Ω_6	X_1	MB	G	MG	MB	VG	G	M
	X_2	MB	MB	M	MB	VVG	MB	MG
	X_3	G	MG	VG	VG	MG	G	MG
	X_4	VVG	G	VVG	G	MG	G	MG
	X_5	M	MG	MG	B	G	MG	MG
	X_6	M	MG	M	M	G	G	M
	X_7	MG	M	MG	MG	MG	G	M
	X_8	MB	M	M	MB	G	MG	M
	X_9	M	MG	M	M	M	G	MG
	X_{10}	MB	M	MG	M	MB	G	M
	X_{11}	EG	VG	EG	VVG	MB	EG	G
	X_{12}	M	M	M	MG	VVG	VG	G
	X_{13}	MG	MG	MB	MB	G	G	VG
	X_{14}	VVG	G	EG	VVG	MG	VVG	G
	X_{15}	M	MG	G	MG	G	VG	M
	X_{16}	MB	MG	MB	MG	VG	M	M
	X_{17}	MB	MB	M	MB	MG	MB	MG
	X_{18}	M	MB	MB	MG	VG	G	M
	X_{19}	M	MB	MB	M	MG	MB	MG
Ω_7	X_1	MG	G	G	MG	VG	VG	G
	X_2	MG	MB	MB	M	EG	M	G
	X_3	MG	G	VG	VVG	MG	VVG	MG
	X_4	EG	G	EG	G	M	VG	MG
	X_5	MB	MG	M	VB	VG	VG	M
	X_6	M	MG	MG	MG	G	MG	MG
	X_7	G	G	G	MG	MG	G	MG
	X_8	M	MG	M	M	VG	M	MG
	X_9	M	MG	MG	MG	M	G	M
	X_{10}	MB	MG	MG	M	MG	VG	MG
	X_{11}	EG	VVG	EG	VVG	MB	EG	VVG
	X_{12}	M	M	M	MG	EG	G	G
	X_{13}	M	MG	MG	B	VG	G	G
	X_{14}	VVG	VVG	EG	EG	MG	EG	VG
	X_{15}	G	MG	VVG	MG	G	VG	MG
	X_{16}	M	M	MB	MG	VG	MB	M
	X_{17}	M	M	M	M	VG	M	G
	X_{18}	M	M	MB	MG	VVG	MG	MG
	X_{19}	M	MG	M	MG	VG	M	G

Table S2. (*Continued*)

Experts	Alternatives	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$
Ω_1	X_1	M	MG	MG	M	G	VG	MG
Ω_8	X_1	M	M	MG	MB	G	G	M
	X_2	B	MB	B	B	G	MB	MB
	X_3	M	M	G	MG	G	VG	M
	X_4	MG	MG	G	G	MB	G	M
	X_5	MB	M	MB	B	MG	G	M
	X_6	MB	M	MB	MB	M	MG	MB
	X_7	M	MG	G	MG	M	MG	MG
	X_8	MB	MB	M	M	G	M	M
	X_9	B	M	MB	MB	MB	G	M
	X_{10}	B	MG	M	M	M	MG	MB
	X_{11}	VG	G	VG	G	M	VG	G
	X_{12}	M	M	MB	MG	G	MG	G
	X_{13}	MB	MG	M	MB	VG	G	M
	X_{14}	VG	MG	VG	G	M	G	G
	X_{15}	MG	MG	M	MG	M	G	M
	X_{16}	B	MB	B	M	MG	M	M
	X_{17}	MB	MB	MB	MB	G	B	M
	X_{18}	M	M	MB	M	MG	M	MG
	X_{19}	B	B	MB	M	MG	B	M

Abbreviations: B, b: Bad; EG, e: Extremely good; G, g: Good; M, m: Medium; MB, m: Medium bad; MG, m: Medium good; VB, v: Very bad; VG, v: Very good; VVG, v: Very very good; VVB, v: Very very bad.

Table S3. The initial decision matrices $\left(\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}=\left[\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}\right]_{\mathfrak{Z}x\mathfrak{Y}^{(ql)}}\right)$ with picture fuzzy sets for the qualitative criteria[a]

Experts	Alternatives	$\Psi_{1^{(ql)}}$			$\Psi_{2^{(ql)}}$		
		$\theta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\theta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$
Ω_1	X_1	0.260	0.260	0.260	0.510	0.135	0.250
	X_2	0.225	0.390	0.263	0.225	0.390	0.263
	X_3	0.510	0.135	0.250	0.510	0.135	0.250
	X_4	0.825	0.015	0.015	0.510	0.135	0.250
	X_5	0.225	0.390	0.263	0.510	0.135	0.250
	X_6	0.260	0.260	0.260	0.510	0.135	0.250
	X_7	0.510	0.135	0.250	0.510	0.135	0.250
	X_8	0.260	0.260	0.260	0.260	0.260	0.260
	X_9	0.225	0.390	0.263	0.510	0.135	0.250
	X_{10}	0.225	0.390	0.263	0.510	0.135	0.250
	X_{11}	0.995	0.000	0.000	0.755	0.043	0.050
	X_{12}	0.260	0.260	0.260	0.260	0.260	0.260
	X_{13}	0.260	0.260	0.260	0.510	0.135	0.250
	X_{14}	0.825	0.015	0.015	0.755	0.043	0.050
	X_{15}	0.510	0.135	0.250	0.510	0.135	0.250
	X_{16}	0.225	0.390	0.263	0.260	0.260	0.260
	X_{17}	0.225	0.390	0.263	0.225	0.390	0.263
	X_{18}	0.260	0.260	0.260	0.260	0.260	0.260
	X_{19}	0.225	0.390	0.263	0.225	0.390	0.263

Table S3. (*Continued*)

Alternatives	$\Psi_{3(ql)}$			$\Psi_{4(ql)}$		
	$\theta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\theta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$
X_1	0.510	0.135	0.250	0.260	0.260	0.260
X_2	0.225	0.390	0.263	0.150	0.400	0.295
X_3	0.755	0.043	0.050	0.755	0.043	0.050
X_4	0.825	0.015	0.015	0.650	0.131	0.137
X_5	0.260	0.260	0.260	0.060	0.410	0.400
X_6	0.260	0.260	0.260	0.260	0.260	0.260
X_7	0.650	0.131	0.137	0.510	0.135	0.250
X_8	0.260	0.260	0.260	0.260	0.260	0.260
X_9	0.260	0.260	0.260	0.260	0.260	0.260
X_{10}	0.260	0.260	0.260	0.260	0.260	0.260
X_{11}	0.995	0.000	0.000	0.825	0.015	0.015
X_{12}	0.260	0.260	0.260	0.510	0.135	0.250
X_{13}	0.260	0.260	0.260	0.150	0.400	0.295
X_{14}	0.995	0.000	0.000	0.825	0.015	0.015
X_{15}	0.755	0.043	0.050	0.510	0.135	0.250
X_{16}	0.225	0.390	0.263	0.510	0.135	0.250
X_{17}	0.225	0.390	0.263	0.260	0.260	0.260
X_{18}	0.225	0.390	0.263	0.510	0.135	0.250
X_{19}	0.150	0.400	0.295	0.260	0.260	0.260

Alternatives	$\Psi_{5(ql)}$			$\Psi_{6(ql)}$		
	$\theta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\theta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\theta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$
X_1	0.650	0.131	0.137	0.755	0.043	0.050
X_2	0.825	0.015	0.015	0.150	0.400	0.295
X_3	0.510	0.135	0.250	0.825	0.015	0.015
X_4	0.260	0.260	0.260	0.755	0.043	0.050
X_5	0.650	0.131	0.137	0.650	0.131	0.137
X_6	0.650	0.131	0.137	0.510	0.135	0.250
X_7	0.510	0.135	0.250	0.650	0.131	0.137
X_8	0.755	0.043	0.050	0.260	0.260	0.260
X_9	0.260	0.260	0.260	0.650	0.131	0.137
X_{10}	0.260	0.260	0.260	0.650	0.131	0.137
X_{11}	0.225	0.390	0.263	0.995	0.000	0.000
X_{12}	0.825	0.015	0.015	0.650	0.131	0.137
X_{13}	0.755	0.043	0.050	0.650	0.131	0.137
X_{14}	0.510	0.135	0.250	0.825	0.015	0.015
X_{15}	0.510	0.135	0.250	0.755	0.043	0.050
X_{16}	0.755	0.043	0.050	0.225	0.390	0.263
X_{17}	0.755	0.043	0.050	0.150	0.400	0.295
X_{18}	0.755	0.043	0.050	0.650	0.131	0.137
X_{19}	0.755	0.043	0.050	0.150	0.400	0.295

Alternatives	$\Psi_{7(ql)}$		
	$\theta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}^{(\tilde{\Omega}_{\mathfrak{r}})}_{\mathfrak{z}\mathfrak{y}(ql)}}(\mathfrak{s})$
X_1	0.510	0.135	0.250
X_2	0.260	0.260	0.260
X_3	0.510	0.135	0.250
X_4	0.510	0.135	0.250
X_5	0.260	0.260	0.260
X_6	0.260	0.260	0.260
X_7	0.510	0.135	0.250
X_8	0.510	0.135	0.250
X_9	0.260	0.260	0.260
X_{10}	0.260	0.260	0.260
X_{11}	0.755	0.043	0.050
X_{12}	0.650	0.131	0.137

Table S3. (*Continued*)

X_{13}	0.650	0.131	0.137
X_{14}	0.650	0.131	0.137
X_{15}	0.510	0.135	0.250
X_{16}	0.260	0.260	0.260
X_{17}	0.510	0.135	0.250
X_{18}	0.510	0.135	0.250
X_{19}	0.510	0.135	0.250

Note: [a]This is shown for only the first expert. The same procedure was applied to the other experts as well.

Table S4. The aggregated decision matrix $\left(\widetilde{\mathfrak{P}}=\left[\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}\right]_{\mathfrak{Z}x\mathfrak{Y}^{(ql)}}\right)$

Alternatives	$\Psi_{1^{(ql)}}$			$\Psi_{2^{(ql)}}$		
	$\theta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$	$\theta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$
X_1	0.3225	0.2448	0.2583	0.5435	0.1461	0.2001
X_2	0.3017	0.2865	0.2635	0.2830	0.3038	0.2604
X_3	0.4201	0.1961	0.2339	0.4664	0.1622	0.2388
X_4	0.8331	0.0000	0.0000	0.5730	0.1414	0.1829
X_5	0.2234	0.3684	0.2654	0.5098	0.1559	0.2126
X_6	0.2944	0.2642	0.2593	0.4491	0.1627	0.2528
X_7	0.4451	0.1726	0.2397	0.4889	0.1624	0.2198
X_8	0.2917	0.2665	0.2594	0.3977	0.2025	0.2554
X_9	0.2287	0.3356	0.2660	0.5048	0.1472	0.2313
X_{10}	0.2203	0.3688	0.2668	0.4976	0.1621	0.2131
X_{11}	0.9642	0.0000	0.0000	0.7146	0.0692	0.0751
X_{12}	0.3010	0.2375	0.2586	0.3010	0.2375	0.2586
X_{13}	0.3376	0.2282	0.2575	0.5100	0.1350	0.2500
X_{14}	0.8818	0.0000	0.0000	0.7154	0.0596	0.0685
X_{15}	0.4959	0.1482	0.2375	0.5547	0.1339	0.2107
X_{16}	0.2166	0.3569	0.2694	0.3347	0.2372	0.2578
X_{17}	0.2333	0.3548	0.2623	0.2385	0.3344	0.2619
X_{18}	0.3374	0.2290	0.2575	0.3329	0.2430	0.2580
X_{19}	0.2169	0.3557	0.2694	0.2616	0.3034	0.2648
Alternatives	$\Psi_{3^{(ql)}}$			$\Psi_{4^{(ql)}}$		
	$\theta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$	$\theta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}^{(\widetilde{\Omega}_{\mathfrak{x}})}_{\mathfrak{z}\mathfrak{y}^{(ql)}}}(\mathfrak{s})$
X_1	0.5236	0.1563	0.2009	0.3544	0.2415	0.2574
X_2	0.2763	0.2889	0.2642	0.1952	0.3596	0.2786
X_3	0.7338	0.0557	0.0609	0.7330	0.0443	0.0534
X_4	0.8376	0.0000	0.0000	0.6560	0.1126	0.1262
X_5	0.2958	0.2596	0.2592	0.1106	0.4043	0.3462
X_6	0.3603	0.2229	0.2568	0.3875	0.2015	0.2556
X_7	0.6149	0.1321	0.1626	0.5032	0.1480	0.2314
X_8	0.3010	0.2375	0.2586	0.2962	0.2520	0.2590
X_9	0.3879	0.2266	0.2365	0.3603	0.2229	0.2568
X_{10}	0.4016	0.1915	0.2550	0.3419	0.2158	0.2571
X_{11}	0.9642	0.0000	0.0000	0.7724	0.0341	0.0347
X_{12}	0.2965	0.2512	0.2590	0.5322	0.1344	0.2301
X_{13}	0.3628	0.2152	0.2566	0.1877	0.3742	0.2806
X_{14}	0.9642	0.0000	0.0000	0.8459	0.0000	0.0000
X_{15}	0.6817	0.0667	0.0765	0.5322	0.1344	0.2301
X_{16}	0.2200	0.3701	0.2668	0.5098	0.1559	0.2126
X_{17}	0.2436	0.3151	0.2614	0.2869	0.2828	0.2599
X_{18}	0.2336	0.3537	0.2623	0.4606	0.1573	0.2523
X_{19}	0.2268	0.3545	0.2651	0.4042	0.1842	0.2547

Table S4. (*Continued*)

Alternatives	$\Psi_{5^{(ql)}}$			$\Psi_{6^{(ql)}}$		
	$\theta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\theta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$
X_1	0.6727	0.0782	0.0936	0.7179	0.0668	0.0719
X_2	0.8376	0.0000	0.0000	0.2144	0.3373	0.2722
X_3	0.5749	0.1333	0.1939	0.7602	0.0402	0.0417
X_4	0.3376	0.2282	0.2575	0.7451	0.0486	0.0520
X_5	0.6456	0.1183	0.1353	0.6184	0.1263	0.1445
X_6	0.5791	0.1451	0.1730	0.5559	0.1338	0.2097
X_7	0.5048	0.1472	0.2313	0.6063	0.1209	0.1503
X_8	0.7280	0.0596	0.0647	0.3390	0.2243	0.2574
X_9	0.3235	0.2360	0.2580	0.6678	0.1113	0.1182
X_{10}	0.3628	0.2152	0.2566	0.6341	0.1022	0.1361
X_{11}	0.2772	0.3185	0.2608	0.9642	0.0000	0.0000
X_{12}	0.8376	0.0000	0.0000	0.6520	0.0962	0.1220
X_{13}	0.7368	0.0488	0.0572	0.6500	0.1310	0.1370
X_{14}	0.5313	0.1250	0.1986	0.8430	0.0000	0.0000
X_{15}	0.5026	0.1561	0.2182	0.7581	0.0413	0.0449
X_{16}	0.6975	0.0655	0.0836	0.2400	0.3286	0.2617
X_{17}	0.6633	0.0781	0.1072	0.2044	0.3384	0.2765
X_{18}	0.7364	0.0401	0.0463	0.5875	0.1236	0.1581
X_{19}	0.6473	0.0785	0.1165	0.2150	0.3372	0.2719

Alternatives	$\Psi_{7^{(ql)}}$		
	$\theta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\eta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$	$\zeta_{\widetilde{\mathfrak{P}}_{\mathfrak{z}\mathfrak{y}^{(ql)}}^{(\widetilde{\Omega}_{\mathfrak{x}})}}(\mathfrak{s})$
X_1	0.4349	0.1966	0.2221
X_2	0.4192	0.1943	0.2409
X_3	0.4828	0.1628	0.2324
X_4	0.4755	0.1619	0.2315
X_5	0.4166	0.1781	0.2542
X_6	0.3603	0.2229	0.2568
X_7	0.4776	0.1726	0.2139
X_8	0.4755	0.1619	0.2315
X_9	0.3390	0.2243	0.2574
X_{10}	0.3212	0.2491	0.2584
X_{11}	0.7268	0.0604	0.0642
X_{12}	0.6668	0.1123	0.1192
X_{13}	0.6208	0.1047	0.1289
X_{14}	0.6330	0.1187	0.1439
X_{15}	0.4531	0.1724	0.2335
X_{16}	0.3419	0.2158	0.2571
X_{17}	0.5204	0.1468	0.2185
X_{18}	0.4527	0.1733	0.2324
X_{19}	0.4957	0.1711	0.2020

Table S5. The crisp initial decision matrix for the qualitative criteria $\left(\mathfrak{P} = \left[\mathfrak{P}_{\mathfrak{z}\mathfrak{y}^{(ql)}}\right]_{\mathfrak{Z}x\mathfrak{Y}^{(ql)}}\right)$

Alternatives	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$
X_1	0.6065	0.7324	0.7221	0.6185	0.8336	0.8597	0.6721
X_2	0.5839	0.5730	0.5744	0.5190	0.9459	0.5350	0.6613
X_3	0.6634	0.6885	0.8724	0.8784	0.7492	0.8928	0.6959
X_4	0.9444	0.7496	0.9459	0.8057	0.6173	0.8815	0.6940
X_5	0.5299	0.7137	0.5923	0.4533	0.7973	0.7825	0.6614
X_6	0.5903	0.6779	0.6269	0.6435	0.7536	0.7375	0.6269
X_7	0.6776	0.7022	0.7734	0.7079	0.7088	0.7784	0.6970
X_8	0.5886	0.6466	0.6016	0.5951	0.8679	0.6191	0.6940
X_9	0.5424	0.7088	0.6416	0.6269	0.6098	0.8128	0.6191
X_{10}	0.5283	0.7075	0.6517	0.6230	0.6304	0.7986	0.6046
X_{11}	0.9881	0.8567	0.9881	0.9012	0.5660	0.9881	0.8674
X_{12}	0.6016	0.6016	0.5954	0.7226	0.9459	0.8112	0.8118
X_{13}	0.6173	0.7083	0.6304	0.5110	0.8770	0.7940	0.7957
X_{14}	0.9606	0.8624	0.9881	0.9486	0.7359	0.9477	0.7901
X_{15}	0.7034	0.7367	0.8462	0.7226	0.7094	0.8906	0.6824
X_{16}	0.5301	0.6133	0.5277	0.7137	0.8495	0.5499	0.6230
X_{17}	0.5387	0.5474	0.5557	0.5814	0.8260	0.5298	0.7184
X_{18}	0.6170	0.6107	0.5392	0.6837	0.8834	0.7686	0.6823
X_{19}	0.5306	0.5645	0.5357	0.6551	0.8174	0.5353	0.7075

Table S6. The initial decision matrix for the overall criteria $\left(\mathfrak{K}=[\mathfrak{K}_{\mathfrak{z}\mathfrak{y}}]_{\mathfrak{Z}x\mathfrak{Y}}\right)$

Alternatives	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$	$\Psi_{8^{(qn)}}$	$\Psi_{9^{(qn)}}$
X_1	0.6065	0.7324	0.7221	0.6185	0.8336	0.8597	0.6721	18	19,119
X_2	0.5839	0.5730	0.5744	0.5190	0.9459	0.5350	0.6613	19	14,359
X_3	0.6634	0.6885	0.8724	0.8784	0.7492	0.8928	0.6959	24	33,825
X_4	0.9444	0.7496	0.9459	0.8057	0.6173	0.8815	0.6940	97	101,159
X_5	0.5299	0.7137	0.5923	0.4533	0.7973	0.7825	0.6614	19	6311
X_6	0.5903	0.6779	0.6269	0.6435	0.7536	0.7375	0.6269	40	19,672
X_7	0.6776	0.7022	0.7734	0.7079	0.7088	0.7784	0.6970	76	52,030
X_8	0.5886	0.6466	0.6016	0.5951	0.8679	0.6191	0.6940	25	6530
X_9	0.5424	0.7088	0.6416	0.6269	0.6098	0.8128	0.6191	1	68
X_{10}	0.5283	0.7075	0.6517	0.6230	0.6304	0.7986	0.6046	5	691
X_{11}	0.9881	0.8567	0.9881	0.9012	0.5660	0.9881	0.8674	219	392,382
X_{12}	0.6016	0.6016	0.5954	0.7226	0.9459	0.8112	0.8118	28	34,023
X_{13}	0.6173	0.7083	0.6304	0.5110	0.8770	0.7940	0.7957	4	1777
X_{14}	0.9606	0.8624	0.9881	0.9486	0.7359	0.9477	0.7901	523	774,884
X_{15}	0.7034	0.7367	0.8462	0.7226	0.7094	0.8906	0.6824	23	26,347
X_{16}	0.5301	0.6133	0.5277	0.7137	0.8495	0.5499	0.6230	2	1723
X_{17}	0.5387	0.5474	0.5557	0.5814	0.8260	0.5298	0.7184	12	9554
X_{18}	0.6170	0.6107	0.5392	0.6837	0.8834	0.7686	0.6823	18	13,311
X_{19}	0.5306	0.5645	0.5357	0.6551	0.8174	0.5353	0.7075	14	10,168

Table S7. The normalization decision matrix $\left(\mathfrak{N}=[\mathfrak{N}_{\mathfrak{z}\mathfrak{y}}]_{\mathfrak{Z}x\mathfrak{Y}}\right)$ for criteria weighting

Alternatives	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$	$\Psi_{8^{(qn)}}$	$\Psi_{9^{(qn)}}$
X_1	0.0491	0.0563	0.0547	0.0479	0.0566	0.0592	0.0505	0.0154	0.0126
X_2	0.0473	0.0441	0.0435	0.0402	0.0642	0.0369	0.0497	0.0163	0.0095
X_3	0.0537	0.0530	0.0660	0.0680	0.0509	0.0615	0.0523	0.0206	0.0223
X_4	0.0765	0.0577	0.0716	0.0624	0.0419	0.0607	0.0522	0.0831	0.0666
X_5	0.0429	0.0549	0.0448	0.0351	0.0541	0.0539	0.0497	0.0163	0.0042
X_6	0.0478	0.0521	0.0475	0.0498	0.0512	0.0508	0.0471	0.0343	0.0130
X_7	0.0549	0.0540	0.0586	0.0548	0.0481	0.0536	0.0524	0.0651	0.0343
X_8	0.0477	0.0497	0.0455	0.0461	0.0589	0.0427	0.0522	0.0214	0.0043
X_9	0.0439	0.0545	0.0486	0.0486	0.0414	0.0560	0.0465	0.0009	0.0000
X_{10}	0.0428	0.0544	0.0493	0.0483	0.0428	0.0550	0.0454	0.0043	0.0005
X_{11}	0.0801	0.0659	0.0748	0.0698	0.0384	0.0681	0.0652	0.1877	0.2585
X_{12}	0.0487	0.0463	0.0451	0.0560	0.0642	0.0559	0.0610	0.0240	0.0224
X_{13}	0.0500	0.0545	0.0477	0.0396	0.0596	0.0547	0.0598	0.0034	0.0012
X_{14}	0.0778	0.0663	0.0748	0.0735	0.0500	0.0653	0.0594	0.4482	0.5105
X_{15}	0.0570	0.0567	0.0641	0.0560	0.0482	0.0614	0.0513	0.0197	0.0174
X_{16}	0.0429	0.0472	0.0400	0.0553	0.0577	0.0379	0.0468	0.0017	0.0011
X_{17}	0.0436	0.0421	0.0421	0.0450	0.0561	0.0365	0.0540	0.0103	0.0063
X_{18}	0.0500	0.0470	0.0408	0.0530	0.0600	0.0530	0.0513	0.0154	0.0088
X_{19}	0.0430	0.0434	0.0406	0.0507	0.0555	0.0369	0.0532	0.0120	0.0067

Table S8. The criterion class intervals, the criterion slopes, the criterion envelopes, and envelope–slope ratios

Values	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$	$\Psi_{8^{(qn)}}$	$\Psi_{9^{(qn)}}$
$\Delta\mathfrak{N}_{\mathfrak{y}}$	0.0071	0.0046	0.0066	0.0073	0.0049	0.0060	0.0038	0.0852	0.0973
$tan\sigma_{\mathfrak{y}}$	7.8258	12.0326	8.3657	7.6005	11.3004	9.2332	14.7590	0.6518	0.5712
$E_{\mathfrak{y}}$	0.2894	0.1583	0.2712	0.2769	0.1778	0.2289	0.1074	2.5387	2.9540
$ES_{\mathfrak{y}}$	0.0370	0.0132	0.0324	0.0364	0.0157	0.0248	0.0073	3.8948	5.1716

Table S9. The normalization decision matrix $\left(\mathfrak{N}=[\mathfrak{N}_{\mathfrak{z}\mathfrak{y}}]_{\mathfrak{Z}x\mathfrak{Y}}\right)$ for alternatives ranking

Alternatives	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$	$\Psi_{8^{(qn)}}$	$\Psi_{9^{(qn)}}$
X_1	0.1702	0.5873	0.4223	0.3335	0.2954	0.7199	0.2568	0.0326	0.0246
X_2	0.1210	0.0811	0.1014	0.1325	0.0000	0.0114	0.2160	0.0345	0.0184
X_3	0.2938	0.4478	0.7486	0.8583	0.5176	0.7920	0.3474	0.0441	0.0436
X_4	0.9050	0.6417	0.9083	0.7115	0.8649	0.7674	0.3403	0.1839	0.1305
X_5	0.0035	0.5280	0.1403	0.0000	0.3910	0.5515	0.2164	0.0345	0.0081
X_6	0.1349	0.4141	0.2153	0.3839	0.5060	0.4532	0.0848	0.0747	0.0253
X_7	0.3248	0.4914	0.5336	0.5140	0.6241	0.5424	0.3518	0.1437	0.0671
X_8	0.1312	0.3149	0.1605	0.2861	0.2052	0.1949	0.3403	0.0460	0.0083
X_9	0.0307	0.5122	0.2473	0.3503	0.8846	0.6174	0.0553	0.0000	0.0000
X_{10}	0.0000	0.5080	0.2693	0.3425	0.8305	0.5865	0.0000	0.0077	0.0008
X_{11}	1.0000	0.9819	1.0000	0.9042	1.0000	1.0000	1.0000	0.4176	0.5063
X_{12}	0.1596	0.1721	0.1471	0.5436	0.0000	0.6141	0.7883	0.0517	0.0438
X_{13}	0.1937	0.5108	0.2229	0.1164	0.1814	0.5765	0.7273	0.0057	0.0022
X_{14}	0.9402	1.0000	1.0000	1.0000	0.5527	0.9118	0.7060	1.0000	1.0000
X_{15}	0.3810	0.6009	0.6917	0.5436	0.6224	0.7873	0.2961	0.0421	0.0339
X_{16}	0.0040	0.2090	0.0000	0.5258	0.2538	0.0438	0.0701	0.0019	0.0021
X_{17}	0.0228	0.0000	0.0607	0.2586	0.3156	0.0000	0.4331	0.0211	0.0122
X_{18}	0.1929	0.2008	0.0249	0.4650	0.1645	0.5211	0.2959	0.0326	0.0171
X_{19}	0.0051	0.0541	0.0174	0.4073	0.3381	0.0120	0.3917	0.0249	0.0130

Table S10. The weighted decision matrix $\left(\mathfrak{H}=[\mathfrak{H}_{\mathfrak{z}\mathfrak{y}}]_{\mathfrak{Z}x\mathfrak{Y}}\right)$ for alternatives ranking

Alternatives	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$	$\Psi_{8^{(qn)}}$	$\Psi_{9^{(qn)}}$
X_1	0.0047	0.0023	0.0050	0.0053	0.0022	0.0046	0.0010	0.4356	0.5739
X_2	0.0045	0.0015	0.0039	0.0045	0.0017	0.0027	0.0010	0.4364	0.5704
X_3	0.0052	0.0021	0.0061	0.0073	0.0026	0.0048	0.0011	0.4404	0.5845
X_4	0.0076	0.0023	0.0067	0.0068	0.0032	0.0047	0.0011	0.4994	0.6332
X_5	0.0040	0.0022	0.0040	0.0039	0.0024	0.0042	0.0010	0.4364	0.5646
X_6	0.0045	0.0020	0.0043	0.0055	0.0026	0.0039	0.0009	0.4533	0.5743
X_7	0.0053	0.0021	0.0054	0.0060	0.0028	0.0041	0.0011	0.4824	0.5977
X_8	0.0045	0.0019	0.0041	0.0051	0.0021	0.0032	0.0011	0.4412	0.5648
X_9	0.0041	0.0022	0.0044	0.0053	0.0032	0.0043	0.0008	0.4218	0.5601
X_{10}	0.0040	0.0021	0.0045	0.0053	0.0031	0.0043	0.0008	0.4251	0.5606
X_{11}	0.0080	0.0028	0.0070	0.0075	0.0034	0.0054	0.0016	0.5980	0.8437
X_{12}	0.0046	0.0017	0.0040	0.0061	0.0017	0.0043	0.0014	0.4436	0.5847
X_{13}	0.0048	0.0022	0.0043	0.0044	0.0020	0.0042	0.0014	0.4242	0.5613
X_{14}	0.0078	0.0029	0.0070	0.0079	0.0026	0.0051	0.0013	0.8436	1.1202
X_{15}	0.0055	0.0023	0.0059	0.0061	0.0028	0.0048	0.0010	0.4396	0.5791
X_{16}	0.0040	0.0017	0.0035	0.0060	0.0021	0.0028	0.0008	0.4226	0.5613
X_{17}	0.0041	0.0014	0.0037	0.0050	0.0022	0.0027	0.0011	0.4307	0.5670
X_{18}	0.0048	0.0017	0.0036	0.0058	0.0020	0.0041	0.0010	0.4356	0.5697
X_{19}	0.0040	0.0015	0.0036	0.0056	0.0023	0.0027	0.0011	0.4323	0.5674

Table S11. The boundary proximity area matrix $\left(\mathfrak{F}=[\mathfrak{F}_{\mathfrak{z}}]_{\mathfrak{Z}}\right)$ for alternatives ranking

Criteria	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$	$\Psi_{8^{(qn)}}$	$\Psi_{9^{(qn)}}$
$\mathfrak{F}_{\mathfrak{z}}$	0.0049	0.0020	0.0047	0.0057	0.0024	0.0040	0.0011	0.4635	0.6074

Table S12. The distance matrix of alternatives $\left(\mathfrak{E}=[\mathfrak{E}_{\mathfrak{z}\mathfrak{y}}]_{\mathfrak{Z}x\mathfrak{Y}}\right)$

Alternatives	$\Psi_{1^{(ql)}}$	$\Psi_{2^{(ql)}}$	$\Psi_{3^{(ql)}}$	$\Psi_{4^{(ql)}}$	$\Psi_{5^{(ql)}}$	$\Psi_{6^{(ql)}}$	$\Psi_{7^{(ql)}}$	$\Psi_{8^{(qn)}}$	$\Psi_{9^{(qn)}}$
X_1	−0.0002	0.0003	0.0003	−0.0004	−0.0002	0.0007	−0.0001	−0.0279	−0.0335
X_2	−0.0004	−0.0005	−0.0008	−0.0012	−0.0007	−0.0012	−0.0001	−0.0271	−0.0370
X_3	0.0003	0.0001	0.0015	0.0017	0.0002	0.0008	0.0000	−0.0231	−0.0229
X_4	0.0027	0.0003	0.0020	0.0011	0.0008	0.0008	0.0000	0.0359	0.0258
X_5	−0.0009	0.0002	−0.0007	−0.0017	−0.0001	0.0002	−0.0001	−0.0271	−0.0428
X_6	−0.0004	0.0000	−0.0004	−0.0002	0.0001	−0.0001	−0.0002	−0.0101	−0.0331
X_7	0.0004	0.0001	0.0007	0.0003	0.0003	0.0002	0.0000	0.0189	−0.0097
X_8	−0.0004	−0.0001	−0.0006	−0.0006	−0.0004	−0.0008	0.0000	−0.0223	−0.0426
X_9	−0.0008	0.0001	−0.0003	−0.0003	0.0008	0.0004	−0.0002	−0.0417	−0.0473
X_{10}	−0.0009	0.0001	−0.0002	−0.0004	0.0007	0.0003	−0.0003	−0.0384	−0.0468
X_{11}	0.0031	0.0008	0.0024	0.0019	0.0010	0.0014	0.0005	0.1345	0.2363
X_{12}	−0.0003	−0.0003	−0.0006	0.0004	−0.0007	0.0004	0.0004	−0.0198	−0.0228
X_{13}	−0.0001	0.0001	−0.0004	−0.0013	−0.0004	0.0003	0.0003	−0.0392	−0.0461
X_{14}	0.0028	0.0008	0.0024	0.0022	0.0002	0.0012	0.0003	0.3802	0.5128
X_{15}	0.0006	0.0003	0.0013	0.0004	0.0003	0.0008	0.0000	−0.0239	−0.0283
X_{16}	−0.0009	−0.0003	−0.0011	0.0004	−0.0003	−0.0012	−0.0002	−0.0409	−0.0461
X_{17}	−0.0008	−0.0006	−0.0009	−0.0007	−0.0002	−0.0013	0.0001	−0.0328	−0.0404
X_{18}	−0.0002	−0.0003	−0.0011	0.0001	−0.0004	0.0001	0.0000	−0.0279	−0.0377
X_{19}	−0.0009	−0.0005	−0.0011	−0.0001	−0.0001	−0.0012	0.0000	−0.0312	−0.0400