Engineering Leadership Orientation and Perceived Organizational Enablement for Responsible AI Use in Iraq

Supplementary Materials | 144 engineers | 39 substantive items | 5,616 item responses

Supplementary Methods

All supplementary analyses used the final sample of 144 engineers and 39 substantive items. The three negatively phrased Systems Thinking items were reverse-scored so that higher analyzed values indicated stronger Systems Thinking. Gender Barrier items retained their original direction. The dataset contained no missing item responses or exact duplicate records.

Internal consistency was assessed using Cronbach's alpha with bootstrap confidence intervals. Exploratory measurement diagnostics used Spearman correlations, the Kaiser–Meyer–Olkin statistic, parallel analysis, and a rotated three-factor solution. Domain-level comparisons with Organizational Enablement used paired differences, 10,000-resample bootstrap confidence intervals, and Wilcoxon signed-rank tests. An exact sign test and an equal-domain-weighted comparison were used as sensitivity checks.

Supplementary Tables

Table S1. English item wording and descriptive results for all 39 items

Item	Construct	English Wording	Mean	SD	Agree %	Neutral %	Disagree %
FEL1	Future Engineering Leadership	I anticipate how emerging technologies, such as artificial intelligence, will affect engineering leadership before they become part of everyday practice.	3.646	0.848	64.6	26.4	9.0
FEL2	Future Engineering Leadership	When setting project priorities, I consider technological developments that may affect future success, not only current requirements.	4.132	0.821	84.0	13.2	2.8
FEL3	Future Engineering Leadership	I may support allocating resources to test new technologies when evidence suggests they will become important to future projects.	4.007	0.695	85.4	11.1	3.5
FEL4	Future Engineering Leadership	When indicators suggest future technological or regulatory changes, I reassess current plans even before those changes are certain.	3.736	0.828	70.8	21.5	7.6
DC1	Digital Collaboration and AI Teaming	I integrate AI outputs with team members' expertise when coordinating engineering work.	3.799	0.979	69.4	22.2	8.3
DC2	Digital Collaboration and AI Teaming	When AI-generated data differ from information held by team members, I clarify the reasons before making a decision.	4.007	0.824	79.9	16.7	3.5
DC3	Digital Collaboration and AI Teaming	I lead collaboration across engineering disciplines to combine human expertise and AI-supported analysis when developing solutions.	4.049	0.839	83.3	11.8	4.9
DC4	Digital Collaboration and AI Teaming	When AI recommendations conflict with expert opinion, my decision depends on the quality of the evidence rather than its source alone.	3.778	0.856	69.4	22.9	7.6
AL1	Adaptive Leadership	When new information may affect project outcomes, I am willing to reconsider earlier decisions.	4.028	0.869	83.3	11.1	5.6
AL2	Adaptive Leadership	I adjust my leadership approach when digital technologies or AI require new ways of managing a project.	3.875	0.844	72.9	21.5	5.6
AL3	Adaptive Leadership	When a project requires new technologies or engineering methods, I take the initiative to learn and apply them.	4.312	0.752	91.0	6.9	2.1
AL4	Adaptive Leadership	When circumstances change unexpectedly, I help my team adapt its work methods without compromising performance quality.	4.139	0.898	85.4	9.0	5.6
ST1R	Systems Thinking	Under time pressure, I tend to focus on the technical aspect of a problem more than its effects on other project elements.	2.507	1.090	22.2	20.1	57.6
ST2R	Systems Thinking	If analyzing every possible consequence would delay the project, I may focus on the aspects I consider most influential.	2.257	0.875	9.0	22.9	68.1
ST3R	Systems Thinking	When making complex engineering decisions, I may be unable to anticipate every consequence from the outset.	2.396	0.895	11.8	27.8	60.4
RAI1	Responsible AI Leadership	Even under time pressure, I verify the reliability of AI outputs before using them in important engineering decisions.	4.111	0.886	82.6	11.1	6.2
RAI2	Responsible AI Leadership	If AI outputs cannot be fully verified, I assess the decision risk before determining whether they can be used.	3.861	0.841	71.5	22.2	6.2
RAI3	Responsible AI Leadership	When AI recommendations are persuasive but conflict with my engineering experience, I seek additional evidence before deciding.	4.222	0.832	84.7	11.1	4.2
RAI4	Responsible AI Leadership	For complex engineering decisions, I vary the degree of reliance on AI according to the situation and level of risk.	3.819	0.951	70.8	20.1	9.0
RAI5	Responsible AI Leadership	When AI is used in engineering projects, I remain responsible for reviewing the final decision even when the recommendation is generated automatically.	3.889	1.059	73.6	16.0	10.4
EJ1	Evidence-Based Judgment	When engineering evidence is insufficient, I rely on my professional experience to varying degrees when making a decision.	3.986	0.885	80.6	12.5	6.9
EJ2	Evidence-Based Judgment	Before using data in a decision, I assess their quality and the uncertainty associated with them.	4.118	0.734	88.9	6.9	4.2
EJ3	Evidence-Based Judgment	In engineering decisions, the weight I give digital analysis, AI recommendations, and professional experience varies with the nature of the decision.	3.854	0.810	76.4	18.1	5.6
LSE1	Leadership Self-Efficacy	I am confident in my ability to lead engineering teams working in environments that depend on digital technologies and AI.	3.729	0.895	60.4	31.9	7.6
LSE2	Leadership Self-Efficacy	I can make effective engineering decisions even when information is incomplete or changing.	3.493	1.017	56.2	27.1	16.7
LSE3	Leadership Self-Efficacy	I am confident in my ability to help my team adapt to new technologies and work methods.	4.000	0.748	81.9	13.2	4.9
OE1	Organizational Enablement	My organization provides the training needed to use digital technologies and AI in engineering work.	3.507	1.010	52.1	33.3	14.6
OE2	Organizational Enablement	My organization provides the data and digital tools needed for reliable engineering decisions.	3.493	1.010	52.1	32.6	15.3
OE3	Organizational Enablement	Management encourages experimentation with new technological solutions when the associated risk is reasonable.	3.542	0.989	60.4	23.6	16.0
OE4	Organizational Enablement	My organization provides clear guidance for the responsible use of AI in engineering work.	3.375	0.981	52.1	29.9	18.1
GE1	Gender Equality Beliefs	Future engineering leadership depends more on competence and experience than on an engineer's gender.	4.056	0.914	83.3	7.6	9.0
GE2	Gender Equality Beliefs	Leadership-development opportunities should depend on competence and readiness, not on an engineer's gender.	4.132	0.778	84.0	11.8	4.2
GE3	Gender Equality Beliefs	Women and men engineers can achieve the same success in leading technology- enabled projects when given equal opportunities.	3.868	1.012	69.4	20.8	9.7
GB1	Perceived Gender Barriers	Some engineering workplaces still regard men as more suitable for leadership positions.	3.875	0.967	74.3	18.1	7.6
GB2	Perceived Gender Barriers	Gender stereotypes may affect opportunities to participate in projects or assume leadership responsibilities.	3.819	0.958	68.8	22.9	8.3
GB3	Perceived Gender Barriers	At times, leadership competence is evaluated differently for women and men engineers even when their experience and qualifications are similar.	3.736	0.908	68.1	22.2	9.7

Item	Construct	English Wording	Mean	SD	Agree %	Neutral %	Disagree %
TC1	Technical Credibility	I can use my technical experience to guide the team when evaluating engineering alternatives.	4.104	0.655	87.5	10.4	2.1
TC2	Technical Credibility	I can explain the technical aspects of engineering decisions in a way that helps the team make better decisions.	4.028	0.766	82.6	13.2	4.2
TC3	Technical Credibility	When opinions differ about engineering solutions, I can use my technical experience to explain the advantages and limitations of the alternatives.	3.986	0.784	86.1	8.3	5.6

Note: N = 144 for every item. Agree combines agree and strongly agree. For ST1R–ST3R, descriptive means and response percentages use reverse-scored values so that higher analyzed scores indicate stronger Systems Thinking. All other items retain their original direction. AI = artificial intelligence; SD = standard deviation; N = number of respondents; R = reverse-scored (in item codes). FEL = Future Engineering Leadership; DC = Digital Collaboration and AI Teaming; AL = Adaptive Leadership; ST = Systems Thinking; RAI = Responsible AI Leadership; EJ = Evidence-Based Judgment; LSE = Leadership Self-Efficacy; OE = Organizational Enablement; GE = Gender Equality Beliefs; GB = Perceived Gender Barriers; TC = Technical Credibility.

Table S2. Internal-consistency diagnostics for theory-guided domains and analytical families

Construct or Family	Code/Type	Items	Cronbach's α	95% CI	Minimum Corrected Item–Total r / Note
Future Engineering Leadership	FEL	4	0.619	[0.361, 0.759]	0.279
Digital Collaboration and AI Teaming	DC	4	0.770	[0.692, 0.826]	0.463
Adaptive Leadership	AL	4	0.779	[0.670, 0.848]	0.552
Systems Thinking	ST	3	0.497	[0.332, 0.622]	0.288
Responsible AI Leadership	RAI	5	0.835	[0.771, 0.877]	0.580
Evidence-Based Judgment	EJ	3	0.742	[0.630, 0.820]	0.543
Leadership Self-Efficacy	LSE	3	0.694	[0.551, 0.787]	0.441
Organizational Enablement	OE	4	0.872	[0.810, 0.911]	0.666
Gender Equality Beliefs	GE	3	0.835	[0.757, 0.892]	0.648
Perceived Gender Barriers	GB	3	0.747	[0.633, 0.824]	0.455
Technical Credibility	TC	3	0.818	[0.716, 0.886]	0.625

Note: Confidence intervals for the 11 theory-guided domains were obtained by respondent bootstrap. The 29-item Individual Leadership Orientation aggregate had a Cronbach's alpha of 0.896, as reported in Section 3.4 of the main manuscript. This coefficient describes aggregate consistency and does not establish unidimensionality. AI = artificial intelligence; CI = confidence interval; α = Cronbach's alpha; r = corrected item–total correlation. FEL = Future Engineering Leadership; DC = Digital Collaboration and AI Teaming; AL = Adaptive Leadership; ST = Systems Thinking; RAI = Responsible AI Leadership; EJ = Evidence-Based Judgment; LSE = Leadership Self-Efficacy; OE = Organizational Enablement; GE = Gender Equality Beliefs; GB = Perceived Gender Barriers; TC = Technical Credibility.

Table S3A. Parallel-analysis results

Component	Observed Eigenvalue	Random 95th Percentile	Decision
1	12.537	2.319	Retain
2	2.690	2.124	Retain
3	1.993	1.992	Retain
4	1.814	1.890	Do not retain
5	1.528	1.796	Do not retain
6	1.408	1.712	Do not retain
7	1.175	1.639	Do not retain
8	1.067	1.566	Do not retain
9	1.034	1.504	Do not retain
10	0.962	1.444	Do not retain
11	0.864	1.385	Do not retain
12	0.804	1.331	Do not retain
13	0.781	1.276	Do not retain
14	0.754	1.224	Do not retain
15	0.742	1.177	Do not retain
16	0.700	1.126	Do not retain
17	0.675	1.082	Do not retain
18	0.666	1.041	Do not retain
19	0.591	0.997	Do not retain
20	0.572	0.954	Do not retain
21	0.553	0.912	Do not retain
22	0.483	0.872	Do not retain
23	0.457	0.836	Do not retain
24	0.432	0.796	Do not retain

Component	Observed Eigenvalue	Random 95th Percentile	Decision
25	0.400	0.761	Do not retain
26	0.387	0.725	Do not retain
27	0.366	0.690	Do not retain
28	0.332	0.655	Do not retain
29	0.284	0.622	Do not retain
30	0.274	0.589	Do not retain
31	0.254	0.555	Do not retain
32	0.238	0.524	Do not retain
33	0.228	0.492	Do not retain
34	0.217	0.461	Do not retain
35	0.184	0.430	Do not retain
36	0.166	0.398	Do not retain
37	0.152	0.367	Do not retain
38	0.121	0.333	Do not retain
39	0.115	0.297	Do not retain

Note: Spearman KMO = 0.874. Three components exceeded the 95th percentile of eigenvalues from random data. KMO = Kaiser–Meyer–Olkin.

Table S3B. Diagnostic rotated three-factor loadings

Item	MSA	Factor 1	Factor 2	Factor 3	Primary Factor	Primary Loading
FEL1	0.768	-0.134	-0.078	-0.366	3	-0.366
FEL2	0.805	-0.258	-0.160	-0.432	3	-0.432
FEL3	0.878	-0.277	-0.226	-0.400	3	-0.400
FEL4	0.847	-0.180	-0.214	-0.375	3	-0.375
DC1	0.898	-0.244	-0.175	-0.652	3	-0.652
DC2	0.921	-0.413	-0.034	-0.456	3	-0.456
DC3	0.893	-0.429	-0.025	-0.641	3	-0.641
DC4	0.878	-0.412	0.020	-0.312	1	-0.412
AL1	0.888	-0.515	-0.194	-0.322	1	-0.515
AL2	0.946	-0.472	-0.282	-0.376	1	-0.472
AL3	0.964	-0.591	-0.141	-0.410	1	-0.591
AL4	0.921	-0.563	-0.201	-0.399	1	-0.563
ST1R	0.722	0.328	0.031	0.023	1	0.328
ST2R	0.920	0.460	0.242	0.230	1	0.460
ST3R	0.727	0.202	0.093	0.333	3	0.333
RAI1	0.905	-0.462	-0.210	-0.391	1	-0.462
RAI2	0.930	-0.568	-0.201	-0.295	1	-0.568
RAI3	0.908	-0.699	-0.072	-0.267	1	-0.699
RAI4	0.911	-0.563	-0.060	-0.278	1	-0.563
RAI5	0.927	-0.490	-0.169	-0.463	1	-0.490
EJ1	0.839	-0.564	-0.053	-0.096	1	-0.564
EJ2	0.898	-0.691	-0.144	-0.242	1	-0.691
EJ3	0.892	-0.529	-0.107	-0.395	1	-0.529
LSE1	0.892	-0.554	-0.283	-0.140	1	-0.554
LSE2	0.811	-0.278	-0.346	0.025	2	-0.346
LSE3	0.912	-0.637	-0.253	-0.112	1	-0.637
OE1	0.835	-0.115	-0.816	-0.066	2	-0.816
OE2	0.767	-0.059	-0.879	-0.149	2	-0.879
OE3	0.828	-0.211	-0.661	-0.052	2	-0.661
OE4	0.837	-0.202	-0.729	-0.013	2	-0.729
GE1	0.851	-0.397	-0.250	-0.478	3	-0.478
GE2	0.856	-0.443	-0.249	-0.276	1	-0.443
GE3	0.787	-0.291	-0.303	-0.311	3	-0.311

Item	MSA	Factor 1	Factor 2	Factor 3	Primary Factor	Primary Loading
GB1	0.800	-0.222	-0.022	-0.388	3	-0.388
GB2	0.753	-0.209	-0.133	-0.457	3	-0.457
GB3	0.806	-0.225	-0.195	-0.329	3	-0.329
TC1	0.904	-0.791	-0.198	-0.068	1	-0.791
TC2	0.867	-0.761	-0.053	-0.183	1	-0.761
TC3	0.863	-0.649	-0.114	-0.157	1	-0.649

Note: Exploratory loadings are reported as measurement diagnostics. Factor signs are arbitrary. The three-factor pattern did not reproduce the proposed 11-domain organization and was not used to redefine the theory-guided analytical families. MSA = measure of sampling adequacy. FEL = Future Engineering Leadership; DC = Digital Collaboration and AI Teaming; AL = Adaptive Leadership; ST = Systems Thinking; RAI = Responsible AI Leadership; EJ = Evidence-Based Judgment; LSE = Leadership Self-Efficacy; OE = Organizational Enablement; GE = Gender Equality Beliefs; GB = Perceived Gender Barriers; TC = Technical Credibility.

Table S4. Domain-level sensitivity analyses against Organizational Enablement

Capability Domain	Code	Items	Domain Mean	SD	OE Mean	Mean Gap	95% Bootstrap CI	Wilcoxon W	p	α
Future Engineering Leadership	FEL	4	3.880	0.547	3.479	0.401	[0.259, 0.540]	1450.000	<.001	0.619
Digital Collaboration and AI Teaming	DC	4	3.908	0.675	3.479	0.429	[0.273, 0.589]	1673.500	<.001	0.770
Adaptive Leadership	AL	4	4.089	0.653	3.479	0.609	[0.476, 0.750]	544.500	<.001	0.779
Systems Thinking	ST	3	2.387	0.677	3.479	-1.093	[-1.288, -0.893]	864.000	<.001	0.497
Responsible AI Leadership	RAI	5	3.981	0.712	3.479	0.501	[0.358, 0.654]	1715.500	<.001	0.835
Evidence-Based Judgment	EJ	3	3.986	0.659	3.479	0.507	[0.358, 0.661]	1293.000	<.001	0.742
Leadership Self-Efficacy	LSE	3	3.741	0.703	3.479	0.262	[0.129, 0.401]	2119.500	<.001	0.694
Technical Credibility	TC	3	4.039	0.631	3.479	0.560	[0.418, 0.713]	929.500	<.001	0.818

Note: Gap = capability-domain mean minus Organizational Enablement mean. Positive values indicate more favorable ratings for the capability domain. Confidence intervals used 10,000 respondent-bootstrap resamples. Two-sided Wilcoxon p values are unadjusted because this analysis was prespecified as a domain-level sensitivity check. Seven of eight domains had positive, statistically supported gaps; Systems Thinking was the exception. AI = artificial intelligence; OE = Organizational Enablement; SD = standard deviation; CI = confidence interval; W = Wilcoxon signed-rank statistic; α = Cronbach's alpha. FEL = Future Engineering Leadership; DC = Digital Collaboration and AI Teaming; AL = Adaptive Leadership; ST = Systems Thinking; RAI = Responsible AI Leadership; EJ = Evidence-Based Judgment; LSE = Leadership Self-Efficacy; TC = Technical Credibility.

Table S4B. Assumption and weighting sensitivity analyses for the principal comparison

Analysis	Quantity	Result	95% Percentile Bootstrap CI	p
Paired-difference distribution	Skewness	1.172	—	—
Exact sign test	Positive / negative / tied	86 / 56 / 2	—	.015
Equal-domain-weighted comparison	Mean ILO minus OE	0.272	[0.144, 0.401]	.001

Note: The exact sign test excludes the 2 tied responses and does not require symmetry of paired differences. The equal-domain-weighted score assigned one-eighth weight to each capability domain, regardless of its item count (Wilcoxon W = 3510.0). Its positive gap shows that the principal direction was not dependent on longer domains receiving greater weight. ILO = Individual Leadership Orientation; OE = Organizational Enablement; CI = confidence interval; W = Wilcoxon signed-rank statistic.

Table S5A. Complete HC3 models for the principal respondent-level outcomes

Outcome	Predictor	b	HC3 SE	95% CI	p
Individual leadership orientation	Intercept	3.521	0.137	[3.250, 3.791]	<.001
Individual leadership orientation	AI use	0.101	0.035	[0.032, 0.171]	.005
Individual leadership orientation	Formal training	0.066	0.141	[-0.214, 0.346]	.640
Individual leadership orientation	Digital-tool use	-0.028	0.029	[-0.084, 0.029]	.334
Individual leadership orientation	Woman	-0.053	0.092	[-0.235, 0.129]	.563
Individual leadership orientation	Engineering experience	-0.026	0.029	[-0.084, 0.031]	.360
Individual leadership orientation	Education	0.148	0.051	[0.048, 0.248]	.004
Individual leadership orientation	Leadership responsibility	0.061	0.031	[-0.000, 0.123]	.051
Individual leadership orientation	Non-public sector	-0.011	0.090	[-0.188, 0.167]	.907
Organizational enablement	Intercept	3.562	0.214	[3.139, 3.984]	<.001
Organizational enablement	AI use	0.027	0.074	[-0.121, 0.174]	.722
Organizational enablement	Formal training	0.040	0.264	[-0.482, 0.563]	.879
Organizational enablement	Digital-tool use	0.083	0.069	[-0.053, 0.219]	.228
Organizational enablement	Woman	-0.055	0.163	[-0.376, 0.267]	.738
Organizational enablement	Engineering experience	-0.144	0.064	[-0.271, -0.016]	.027
Organizational enablement	Education	-0.073	0.108	[-0.286, 0.140]	.501

Outcome	Predictor	b	HC3 SE	95% CI	p
Organizational enablement	Leadership responsibility	0.115	0.073	[-0.030, 0.260]	.120
Organizational enablement	Non-public sector	-0.183	0.150	[-0.479, 0.113]	.223
Enablement gap	Intercept	-0.041	0.162	[-0.361, 0.279]	.800
Enablement gap	AI use	0.075	0.064	[-0.051, 0.201]	.242
Enablement gap	Formal training	0.026	0.239	[-0.446, 0.498]	.914
Enablement gap	Digital-tool use	-0.111	0.061	[-0.232, 0.010]	.072
Enablement gap	Woman	0.001	0.147	[-0.289, 0.291]	.993
Enablement gap	Engineering experience	0.117	0.061	[-0.003, 0.237]	.055
Enablement gap	Education	0.221	0.098	[0.027, 0.415]	.026
Enablement gap	Leadership responsibility	-0.054	0.071	[-0.194, 0.086]	.449
Enablement gap	Non-public sector	0.172	0.125	[-0.075, 0.419]	.170

Note: All eight respondent characteristics were entered simultaneously in each model. Reference categories and ordinal coding follow Section 3.4 of the main manuscript. AI = artificial intelligence; HC3 = heteroskedasticity-consistent type 3 standard errors; SE = standard error; CI = confidence interval; b = unstandardized regression coefficient.

Table S5B. Adjusted complete-profile permutation tests

Predictor	Pseudo-F	Partial R^2	Permutation p	Permutations
Woman	0.759	0.006	.657	9999
AI use	3.019	0.022	.007	9999
Formal training	0.788	0.006	.609	9999

Note: Freedman–Lane tests used the complete standardized 39-item response profile and adjusted each focal predictor for the remaining prespecified respondent characteristics. AI = artificial intelligence; R^2 = coefficient of determination.

Table S5C. Joint robust tests and model fit for principal outcomes

Outcome	Robust F	df	p	Adjusted R^2
Individual Leadership Orientation	3.481	8, 135	.001	0.116
Organizational Enablement	1.728	8, 135	.097	0.041
Capability–enablement difference	3.752	8, 135	<.001	0.093

Note: The joint null hypothesis was that all eight non-intercept coefficients equaled zero. Adjusted R^2 is reported from the corresponding OLS point-estimate model; inference used HC3 covariance estimates. HC3 = heteroskedasticity-consistent type 3; OLS = ordinary least squares; df = degrees of freedom; R^2 = coefficient of determination.

Table S6. Gender-context summary and adjusted family-level contrasts

Outcome	Women–Men b	HC3 SE	95% CI	p
Individual leadership orientation	-0.053	0.092	[-0.235, 0.129]	.563
Organizational enablement	-0.055	0.163	[-0.376, 0.267]	.738
Gender equality beliefs	0.273	0.174	[-0.070, 0.617]	.118
Perceived gender barriers	0.022	0.161	[-0.296, 0.340]	.891

Note: Gender Equality Beliefs mean = 4.019; Perceived Gender Barriers mean = 3.810. Their paired mean difference was 0.208 (Wilcoxon W = 3609.5, p = 0.011); Spearman ρ = 0.228, p = 0.006. Positive regression coefficients indicate higher adjusted scores among women. The adjusted global gender-profile test was nonsignificant (pseudo-F = 0.759, partial R^2 = 0.006, permutation p = 0.657). HC3 = heteroskedasticity-consistent type 3 standard errors; SE = standard error; CI = confidence interval; b = unstandardized regression coefficient; ρ = Spearman's rank correlation coefficient; R^2 = coefficient of determination.

Table S7. Descriptive comparisons corresponding to Table 5 in the main manuscript

Characteristic	Group	n	ILO Mean	OE Mean	Difference
Leadership responsibility	No leadership decision role	57	3.722	3.421	0.301
	Any leadership decision role	87	3.832	3.517	0.315
Employment sector	Public	92	3.792	3.467	0.325
	Private	39	3.752	3.583	0.169
Education	Bachelor's	85	3.718	3.609	0.110
	Postgraduate (master's or doctorate)	58	3.912	3.319	0.593

Note: ILO = Individual Leadership Orientation; OE = Organizational Enablement. Difference = ILO minus OE. Values are unadjusted group means on the five-point scale. n = number of respondents in each subgroup. The mixed-sector (n = 7) and academic (n = 6) respondents are omitted from the sector comparison, and one respondent reporting another education category is omitted from the education comparison. These respondents remain included in the overall analyses. No inferential subgroup comparisons were conducted. The results reproduce Table 5 of the main manuscript.

Supplementary Figures

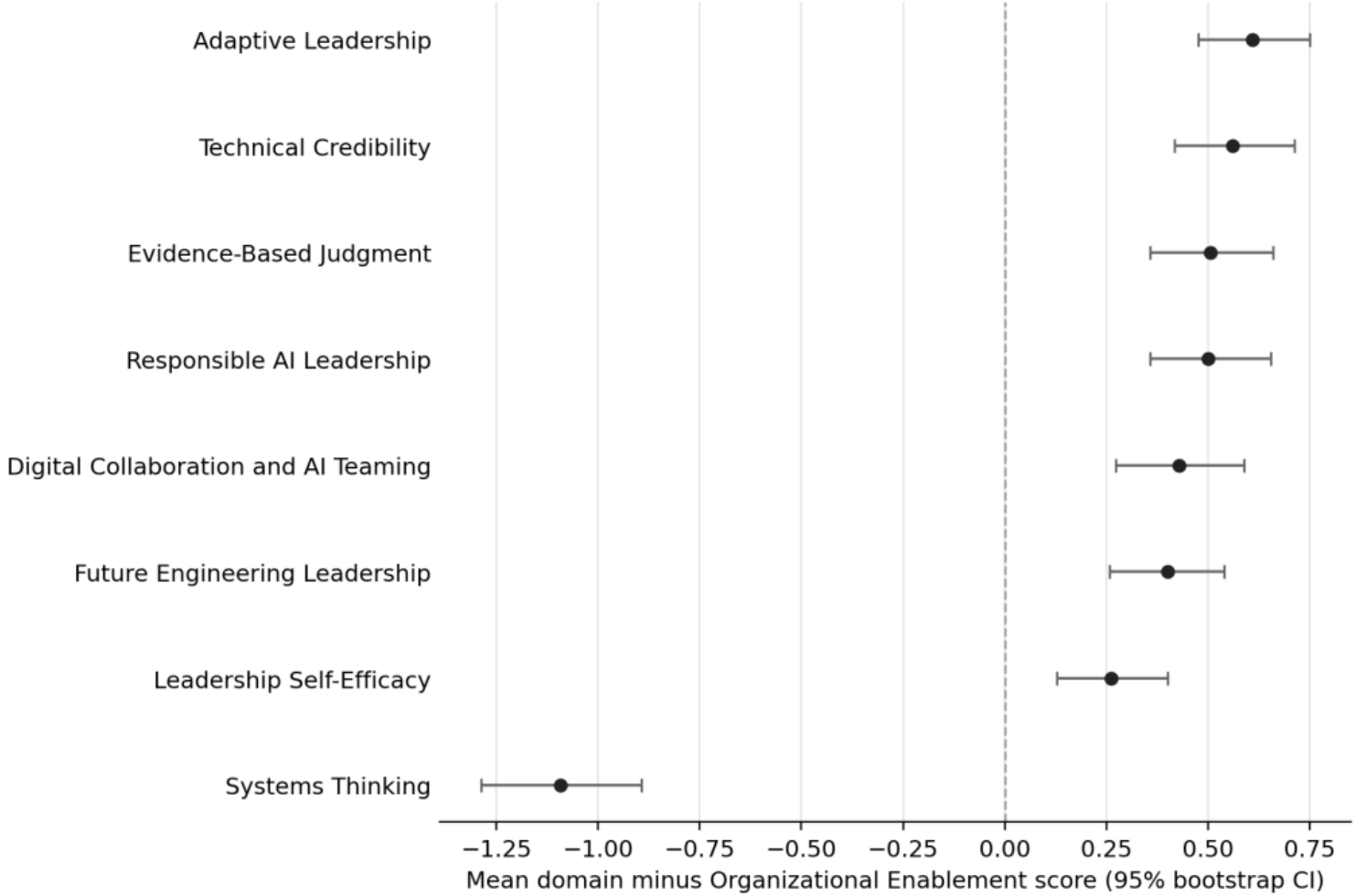


Figure S1. Domain-level capability–enablement gaps. Points show the mean difference between each theory-guided capability domain and Organizational Enablement; horizontal lines show 95% respondent-bootstrap confidence intervals. Positive values favor the capability domain. Seven domains were rated more favorably than Organizational Enablement; Systems Thinking was rated less favorably.

Note: AI = artificial intelligence; CI = confidence interval.

Abbreviations and Reporting Notes

AI = artificial intelligence; CI = confidence interval; GE = Gender Equality Beliefs; GB = Perceived Gender Barriers; HC3 = heteroskedasticity-consistent covariance estimator; ILO = Individual Leadership Orientation; KMO = Kaiser–Meyer–Olkin; MSA = measure of sampling adequacy; OE = Organizational Enablement; OR = odds ratio; PA = parallel analysis.

All p values are two-sided. Values are rounded for presentation, so totals or derived quantities may differ slightly because of rounding.