

The Determinants of Trust and Credibility in Environmental Risk Communication:

An Empirical Study

[Abbreviated Title: A Study of Trust and Credibility Factors]

Tables

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Table 1
Community Composition of Respondents

<u>Community</u>	<u>Industry</u>	<u>Government</u>	<u>Citizen Groups</u>
Albuquerque	97	97	101
Cincinnati	46	45	44
Middlesex Cty	38	33	36
Racine Cty	96	93	94
Raleigh/Durham	68	62	63
Richmond	<u>59</u>	<u>55</u>	<u>55</u>
Total	404	384	393

Table 2
Multiple Linear Regression
Dependent Variable: Trust and Credibility

	<u>Industry</u>	<u>Government</u>	<u>Citizen Groups</u>
Multiple R	0.450	0.535	0.623
R Square	0.203	0.286	0.389
F (3, 400)	33.891	50.860	82.420
Significance (p)	<.0001	<.0001	<.0001

<u>Independent Variable</u>	<u>Industry</u>		<u>Government</u>		<u>Citizen Groups</u>	
	<u>Estimate of β ($\hat{\beta}$)</u>	<u>Standard Error of $\hat{\beta}$</u>	<u>Estimate of β ($\hat{\beta}$)</u>	<u>Standard Error of $\hat{\beta}$</u>	<u>Estimate of β ($\hat{\beta}$)</u>	<u>Standard Error of $\hat{\beta}$</u>
Concern and Care	.415****	.051	.333****	.042	.116*	.038
Openness and Honesty	.169***	.048	.131**	.059	.113**	.057
Knowledge and Expertise	.028	.052	.423****	.050	.688****	.058
Constant	1.436	.183	.507	.147	.498	.115

Significance of t-test for parameter estimate:
 (Industry df = 402; Government df=382; Citizen Groups df=402)

- * .01 < p < .05
- ** .001 < p < .01
- *** .0001 < p < .001
- **** p < .0001

Table 3
Association of Perceptions of Concern and Care and Perceptions of Commitment

A. Summary of Concern and Care by Level of Commitment - Industry

<u>Level of Commitment</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (387)</u>
High	1.714 (1.254)	7
Medium High	1.912 (0.746)	102
Medium Low	2.289 (0.683)	201
Low	2.896 (0.836)	77

Correlation Coefficient = .410, $t = 8.818$, $p < .001$, $df = 385$

B. Summary of Concern and Care by Level of Commitment - Government

<u>Level of Commitment</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (378)</u>
High	1.250 (0.762)	32
Medium High	1.675 (0.693)	163
Medium Low	2.052 (0.686)	153
Low	2.767 (1.104)	30

Correlation Coefficient = .428, $t = 9.177$, $p < .001$, $df = 376$

C. Summary of Concern and Care by Level of Commitment - Citizen Groups

<u>Level of Commitment</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (384)</u>
High	1.208 (.415)	24
Medium High	1.440 (.590)	200
Medium Low	1.699 (.707)	133
Low	2.556 (.934)	27

Correlation Coefficient = .383, $t = 8.112$, $p < .001$, $df = 382$

Table 4
Effect of Perceived Knowledge of Disclosure of
Risk Management Activities on Perceptions of Trust and Credibility

A. Summary of Trust and Credibility of Industry by Knowledge of Active Disclosure of Information

<u>Level of Knowledge</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (404)</u>
Yes	2.547 (.896)	95
No	3.099 (.870)	223
Don't Know	2.954 (.839)	86

Analysis of Variance

F (2, 401) = 13.407, p < .0001

B. Summary of Trust and Credibility of Government by Knowledge of Reduced Use, Storage or Release of Toxic Materials

<u>Level of Knowledge</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (384)</u>
Yes	1.991 (.840)	225
No	2.316 (.925)	114
Don't Know	2.133 (.869)	45

Analysis of Variance

F (2, 381) = 5.308, p = .0053

Table 5
Effect of Level of Information Received from a Source on
Perceptions of Trust and Credibility of the Source

A. Summary of Trust and Credibility of Industry by Level of Information Received

<u>Level of Information</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (400)</u>
A Lot	2.286 (.995)	14
Some	2.413 (.796)	63
Not Too Much	2.932 (.737)	118
No Information	3.166 (.909)	205

Correlation Coefficient = .319, $t = 6.705$, $p < .001$, $df = 398$

B. Summary of Trust and Credibility of Government by Level of Information Received

<u>Level of Information</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (376)</u>
A Lot	1.629 (.808)	35
Some	1.964 (.787)	138
Not Too Much	2.279 (.835)	86
No Information	2.299 (.976)	117

Correlation Coefficient = .229, $t = 4.551$, $p < .001$, $df = 374$

C. Summary of Trust and Credibility of Citizen Groups by Level of Information Received

<u>Level of Information</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (390)</u>
A Lot	1.677 (0.919)	62
Some	1.886 (0.732)	176
Not Too Much	2.305 (0.815)	59
No Information	2.430 (1.077)	93

Correlation Coefficient = .303, $t = 6.262$, $p < .001$, $df = 388$

Table 6
Effect of Concern with Environmental Health Risks on
Perceptions of Trust and Credibility

A. Summary of Trust and Credibility of Industry by Perceived Presence of Facilities or Locations Posing Environmental Health Threat

<u>Facilities or Location Present</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (392)</u>
Yes	3.066 (.852)	197
No	2.774 (.920)	195

t = 3.258, p = .001, df = 390

B. Summary of Trust and Credibility of Industry by Comparative Ranking of Environmental Health Risk

<u>Level of Risk</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (391)</u>
None	2.671 (0.906)	88
Minor	2.882 (0.888)	153
Slightly Serious	3.010 (0.851)	99
Serious	3.421 (0.683)	38
Very Serious	2.923 (1.188)	13

Correlation Coefficient = .192, t = 3.848, p < .001, df = 389

C. Summary of Trust and Credibility of Government by Perceived Presence of Facilities or Locations Posing Environmental Health Threat

<u>Facilities or Location Present</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (370)</u>
Yes	2.235 (.881)	179
No	1.979 (.870)	191

t = 2.805, p = .005, df = 368

Table 7
Effect of Media Sensitization on Perceptions of Trust and Credibility

A. Summary of Trust and Credibility of Industry by Media Sensitization

<u>Recency of Sensitization</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (396)</u>
< 1 Week	3.189 (.786)	53
> 1 Week, < 3 Months	3.028 (.866)	109
> 3 Months	2.833 (.918)	234

Correlation Coefficient = -.146, t = 2.930, p = .0036, df = 394

B. Summary of Trust and Credibility of Government by Media Sensitization

<u>Recency of Sensitization</u>	<u>Mean (Std. Dev.)</u>	<u>Cases (380)</u>
< 1 Week	2.375 (.959)	48
> 1 Week, < 3 Months	2.093 (.849)	108
> 3 Months	2.058 (.874)	224

Correlation Coefficient = -.101, t = 1.979, p = .0485, df = 378

Table 8
Summary Equation Variables

A. Industry

<u>Hypothesis</u>	<u>Variable Name</u>
I	Concern and Care
I	Openness and Honesty
I	Knowledge and Expertise
II	Commitment
III	Information Disclosure
IV	Information Receipt
V	Comparative Risk Ranking
V	Threatening Facilities
VI	Media Sensitization

B. Government

<u>Hypothesis</u>	<u>Variable Name</u>
I	Concern and Care
I	Openness and Honesty
I	Knowledge and Expertise
II	Commitment
III	Reduced Industrial Use, Storage, or Release of Toxics
IV	Information Receipt
V	Threatening Facilities
Pre-testing	Income

C. Citizen Groups

<u>Hypothesis</u>	<u>Variable Name</u>
I	Concern and Care
I	Openness and Honesty
I	Knowledge and Expertise
II	Commitment
IV	Information Receipt

Table 9
Multiple Linear Regression - Forward, Backward and Stepwise Selection
Summary Equation
Dependent Variable: Trust and Credibility

	<u>Industry</u>	<u>Government</u>	<u>Citizen Groups</u>
Multiple R	0.55	.630	.659
R Square	0.303	.397	.434
F (5, 348)	30.244	45.521	72.214
Significance (p)	<.0001	<.0001	<.0001

A. Industry

<u>Independent Variable</u>	<u>Estimate of B ($\hat{\beta}$)</u>	<u>Standard Error of $\hat{\beta}$</u>
Concern and Care	.325****	.052
Information Receipt	.286****	.050
Information Disclosure	.288**	.098
Openness and Honesty	.127**	.048
Media Sensitization	-.139*	.056
Constant	.328	

B. Government

<u>Independent Variable</u>	<u>Estimate of B ($\hat{\beta}$)</u>	<u>Standard Error of $\hat{\beta}$</u>
Commitment	.382****	.055
Knowledge and Expertise	.352****	.058
Concern and Care	.198***	.052
Income	-.086*	.035
Information Receipt	.080*	.038
Constant	.274	.196

Table 9
Multiple Linear Regression - Forward, Backward and Stepwise Selection
Summary Equation
Dependent Variable: Trust and Credibility

C. Citizen Groups

<u>Independent Variable</u>	<u>Estimate of B ($\hat{\beta}$)</u>	<u>Standard Error of $\hat{\beta}$</u>
Knowledge and Expertise	.615****	.054
Commitment	.251****	.053
Information Receipt	.120**	.036
Openness and Honesty	.093*	.037
Constant	-.064	.149

Significance of t-test for parameter estimate:
(Industry df = 352; Government df = 350; Citizen Groups df = 352)

- * $.01 \leq p < .05$
- ** $.001 \leq p < .01$
- *** $.0001 \leq p < .001$
- **** $p < .0001$

Table 10
Survey Mean Responses on Leading Independent Variables

A. Knowledge and Expertise

	<u>Mean</u>	<u>Std. Dev.</u>	<u>Cases</u>
Industry	1.488	.780	404
Government	1.560	.675	384
Citizen Groups	1.672	.715	393

B. Concern and Care

	<u>Mean</u>	<u>Std. Dev.</u>	<u>Cases</u>
Citizen Groups	1.595	.723	393
Government	1.878	.810	384
Industry	2.307	.818	404

Note: All measurements made on four point Likert-type scales, to which numeric values were assigned such that 1 was the highest rating and 4 was the lowest.