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INFORMATION SECURITY POLICY COMPLIANCE: AN EMPIRICAL STUDY OF RATIONALITY-BASED BELIEFS AND INFORMATION SECURITY AWARENESS

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Appendix A

Sample Demographics

Table A1. Exclusion Criteria

	Frequency	Percentage
Has your employer established information security policies?		
Yes	464	100
No	0	0
To what extent are you aware of the regulations prescribed by the information security policy (ISP) of your organization?		
1 (Completely Unaware)	0	0
2	0	0
3	50	11
4	87	19
5	101	22
6	114	24
7 (Completely Aware)	112	24

Table A2. Profiles of Responding Participants

	Frequency	Percentage
Gender		
Men	221	48
Women	243	52
Highest Level of Education		
Less than high school	1	0
High school degree	114	25
College degree	106	23
Undergraduate degree	100	21
Graduate degree	117	25
Other	26	6
Age		
20–25	11	2
26–35	159	34
36–45	169	36
46–55	93	20
56–65	30	7
66–75	0	0
76–85	2	1
Knowledge of Computers and IT of the Participant		
1 (Very Low)	1	0
2	7	2
3	41	9
4	84	18
5	171	37
6	104	22
7 (Very High)	56	12
Size of the Company (# of Employees)		
Fewer than 500	100	21
500–999	47	10
1,000–4,999	100	22
5,000–10,000	70	15
More than 10,000	147	32
Annual Sales Revenue of the Company		
Less than 1 million	79	17
1 million–5 million	54	12
6 million–10 million	49	10
10 million–50 million	46	10
50 million–200 million	50	11
200 million–500 million	26	6
500 million–1 billion	37	8
1 billion–5 billion	63	13
More than 5 billion	60	13
Information Intensiveness of the Company		
1 (Not information intensive at all)	37	8
2	25	5
3	28	6
4	78	17
5	79	17
6	86	19
7 (Highly information intensive)	31	28

Table A2. Profiles of Responding Participants (Continued)

	Frequency	Percentage
Industry		
Education	63	14
Financial Services	45	10
Government	52	11
Food/Beverage/CPG	10	2
Health Care	65	14
Manufacturing	33	7
Nonprofit	23	5
Medical, Bio-Technology, Pharmacology	8	2
Real Estate	4	1
Services	13	3
Information Technology	16	3
Telecommunications	9	2
Travel	11	2
Wholesale/Retail	34	7
Other	79	17
	Mean	**STD**
Years of computer usage	17.60	6.46
Years of Internet usage	12.16	4.11
Hours of computer usage per day for work	7.06	6.56
Years of working time for the company	7.73	7.63
Years of working time in the current position in the company	4.71	5.14

Appendix B

Validity Analysis

Table B1. Composite Reliability, AVE, and Latent Variable Correlations

	CR	AVE	ITC	GISA	ISPA	A	NB	SE-C	IB	R	SR	BC	WI	CC	IC	S	VC	CNC
ITC	0.984	0.955	**0.977**															
GISA	0.912	0.775	0.554	**0.880**														
ISPA	0.958	0.882	0.437	0.661	**0.939**													
A	0.956	0.846	0.479	0.375	0.389	**0.920**												
NB	0.934	0.826	0.486	0.398	0.361	0.490	**0.909**											
SE-C	0.982	0.947	0.395	0.506	0.592	0.369	0.341	**0.973**										
IB	0.974	0.902	0.328	0.364	0.351	0.391	0.368	0.325	**0.950**									
R	0.947	0.816	-0.144	0.048	0.104	-0.018	0.027	-0.002	0.230	**0.903**								
SR	0.970	0.841	0.333	0.345	0.391	0.427	0.386	0.332	0.492	0.233	**0.917**							
BC	0.952	0.834	0.208	0.260	0.228	0.326	0.330	0.239	0.531	0.383	0.530	**0.913**						
WI	0.982	0.930	-0.352	-0.205	-0.220	-0.260	-0.308	-0.186	-0.217	0.274	-0.093	-0.126	**0.964**					
CC	0.948	0.859	-0.313	-0.160	-0.161	-0.207	-0.215	-0.203	-0.164	0.348	-0.059	-0.058	0.815	**0.927**				
IC	0.980	0.923	0.240	0.179	0.135	0.232	0.192	0.116	0.277	0.188	0.244	0.270	-0.065	-0.052	**0.961**			
S	0.929	0.767	0.203	0.298	0.296	0.295	0.312	0.227	0.338	0.332	0.335	0.394	-0.089	-0.042	0.409	**0.876**		
VR	0.979	0.904	0.363	0.340	0.350	0.392	0.382	0.286	0.415	0.184	0.638	0.526	-0.198	-0.165	0.326	0.465	**0.951**	
CNC	0.969	0.886	0.245	0.264	0.264	0.333	0.311	0.210	0.392	0.292	0.519	0.575	-0.092	-0.049	0.438	0.645	0.700	0.941

CR = Composite Reliability; AVE = Average Variance Extracted; ITC = Intention to Comply; GISA = General ISA; ISPA = ISP Awareness; A = Attitude; NB = Normative Beliefs; SE-C = Self-Efficacy to Comply; IB = Intrinsic Benefit; R = Rewards; SR = Safety of Resources; BC = Perceived Benefit of Compliance; WI = Work Impediment; CC = Perceived Cost of Compliance; IC = Intrinsic Cost; S = Sanctions; VR = Vulnerability of Resources; CNC = Perceived Cost of Noncompliance

Diagonal elements display the square root of AVE for factors measured with reflective items.

Table B2. Cross Loadings

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. a	**0.97**	0.52	0.40	0.48	0.48	0.40	0.34	-0.14	0.33	0.21	-0.36	-0.32	0.24	0.21	0.37	0.25
1. b	**0.98**	0.51	0.40	0.45	0.44	0.38	0.29	-0.15	0.32	0.19	-0.34	-0.30	0.22	0.19	0.34	0.22
1. c	**0.98**	0.52	0.39	0.47	0.50	0.38	0.33	-0.14	0.33	0.21	-0.34	-0.30	0.23	0.19	0.36	0.24
2. a	0.52	**0.90**	0.60	0.35	0.40	0.46	0.37	0.03	0.32	0.25	-0.21	-0.15	0.15	0.25	0.32	0.21
2. b	0.34	**0.84**	0.54	0.25	0.28	0.42	0.30	0.11	0.23	0.23	-0.08	-0.06	0.13	0.29	0.22	0.23
2. c	0.59	**0.85**	0.57	0.38	0.37	0.46	0.29	-0.03	0.35	0.21	-0.24	-0.21	0.19	0.26	0.35	0.25
3. a	0.42	0.67	**0.93**	0.35	0.33	0.54	0.33	0.07	0.35	0.18	-0.21	-0.15	0.13	0.27	0.31	0.23
3. b	0.45	0.69	**0.92**	0.36	0.33	0.57	0.32	0.05	0.36	0.19	-0.23	-0.18	0.11	0.23	0.34	0.22
3. c	0.36	0.60	**0.94**	0.38	0.36	0.56	0.34	0.19	0.39	0.27	-0.19	-0.12	0.14	0.34	0.34	0.30
4. a	0.50	0.39	0.39	**0.89**	0.43	0.36	0.37	-0.06	0.37	0.26	-0.26	-0.19	0.22	0.25	0.35	0.28
4. b	0.43	0.33	0.35	**0.94**	0.44	0.34	0.36	0.00	0.39	0.31	-0.25	-0.21	0.20	0.28	0.38	0.31
4. c	0.42	0.30	0.31	**0.93**	0.45	0.32	0.32	-0.04	0.40	0.29	-0.22	-0.18	0.19	0.25	0.33	0.28
4. d	0.41	0.32	0.35	**0.92**	0.49	0.32	0.39	0.03	0.41	0.35	-0.23	-0.18	0.24	0.30	0.38	0.35
5. a	0.36	0.37	0.37	0.41	**0.85**	0.29	0.40	0.14	0.37	0.37	-0.29	-0.17	0.18	0.32	0.35	0.31
5. b	0.49	0.37	0.32	0.47	**0.93**	0.32	0.29	-0.07	0.34	0.25	-0.27	-0.20	0.17	0.25	0.35	0.25
5. c	0.46	0.34	0.35	0.45	**0.95**	0.31	0.33	0.03	0.36	0.30	-0.28	-0.21	0.17	0.30	0.35	0.30
6. a	0.40	0.52	0.56	0.37	0.35	**0.97**	0.34	-0.01	0.32	0.23	-0.18	-0.20	0.12	0.22	0.29	0.21
6. b	0.38	0.54	0.58	0.35	0.33	**0.98**	0.32	0.01	0.34	0.25	-0.18	-0.19	0.11	0.23	0.29	0.22
6. c	0.37	0.53	0.56	0.36	0.32	**0.97**	0.30	-0.01	0.31	0.22	-0.18	-0.20	0.11	0.21	0.25	0.19
7. a	0.36	0.38	0.38	0.42	0.39	0.34	**0.95**	0.18	0.49	0.47	-0.22	-0.17	0.25	0.34	0.41	0.37
7. b	0.35	0.38	0.38	0.40	0.38	0.32	**0.96**	0.21	0.49	0.52	-0.22	-0.16	0.26	0.33	0.40	0.37
7. c	0.28	0.33	0.32	0.35	0.33	0.30	**0.96**	0.23	0.47	0.52	-0.20	-0.16	0.27	0.31	0.40	0.39
7. d	0.25	0.31	0.30	0.31	0.29	0.27	**0.94**	0.25	0.42	0.50	-0.19	-0.13	0.27	0.30	0.37	0.37
8. a	-0.07	0.10	0.20	0.04	0.10	0.05	0.23	**0.87**	0.25	0.37	0.15	0.25	0.18	0.35	0.20	0.29
8. b	-0.10	0.09	0.15	-0.02	0.04	0.03	0.24	**0.91**	0.21	0.37	0.24	0.31	0.16	0.29	0.17	0.27
8. c	-0.20	0.00	0.08	-0.04	-0.03	-0.07	0.18	**0.91**	0.19	0.31	0.31	0.34	0.17	0.28	0.13	0.24
8. d	-0.18	0.01	0.10	-0.06	-0.03	-0.04	0.17	**0.92**	0.18	0.33	0.32	0.38	0.17	0.28	0.15	0.25
9. a	0.26	0.31	0.34	0.37	0.30	0.29	0.41	0.28	**0.87**	0.45	-0.06	-0.01	0.21	0.28	0.50	0.45
9. b	0.32	0.34	0.36	0.40	0.34	0.27	0.44	0.21	**0.93**	0.51	-0.12	-0.07	0.22	0.29	0.62	0.48
9. c	0.33	0.35	0.38	0.39	0.35	0.33	0.44	0.22	**0.94**	0.47	-0.08	-0.06	0.21	0.29	0.60	0.47
9. d	0.28	0.28	0.33	0.37	0.36	0.28	0.46	0.20	**0.92**	0.48	-0.08	-0.05	0.24	0.32	0.56	0.48
9. e	0.33	0.34	0.36	0.39	0.38	0.31	0.47	0.17	**0.93**	0.49	-0.08	-0.05	0.23	0.32	0.62	0.49
9. f	0.31	0.34	0.39	0.43	0.39	0.34	0.48	0.22	**0.92**	0.52	-0.09	-0.08	0.23	0.34	0.60	0.48
10. a	0.30	0.31	0.28	0.36	0.45	0.30	0.57	0.23	0.53	**0.83**	-0.23	-0.18	0.28	0.36	0.51	0.49
10. b	0.19	0.24	0.23	0.29	0.28	0.21	0.46	0.35	0.46	**0.93**	-0.09	-0.02	0.23	0.34	0.48	0.52
10. c	0.13	0.21	0.20	0.27	0.24	0.18	0.46	0.42	0.46	**0.95**	-0.06	0.01	0.24	0.36	0.46	0.55
10. d	0.13	0.23	0.21	0.26	0.22	0.18	0.45	0.41	0.47	**0.93**	-0.07	-0.02	0.23	0.37	0.46	0.53
11. a	-0.37	-0.20	-0.21	-0.28	-0.35	-0.19	-0.22	0.26	-0.13	-0.13	**0.96**	0.79	-0.09	-0.10	-0.23	-0.12
11. b	-0.32	-0.19	-0.20	-0.22	-0.29	-0.17	-0.18	0.27	-0.07	-0.12	**0.96**	0.78	-0.05	-0.09	-0.18	-0.08
11. c	-0.34	-0.19	-0.19	-0.25	-0.28	-0.17	-0.22	0.27	-0.08	-0.12	**0.97**	0.78	-0.06	-0.08	-0.18	-0.08
11. d	-0.33	-0.19	-0.18	-0.25	-0.26	-0.18	-0.22	0.25	-0.07	-0.11	**0.97**	0.79	-0.06	-0.07	-0.18	-0.07
12. a	-0.25	-0.11	-0.12	-0.15	-0.16	-0.16	-0.14	0.31	0.01	-0.04	0.76	**0.93**	-0.07	-0.07	-0.12	-0.05
12. b	-0.33	-0.16	-0.16	-0.24	-0.25	-0.20	-0.22	0.27	-0.11	-0.12	0.79	**0.94**	-0.09	-0.07	-0.22	-0.09
12. c	-0.29	-0.12	-0.11	-0.19	-0.18	-0.20	-0.10	0.40	-0.06	0.01	0.71	**0.90**	0.02	0.03	-0.12	0.01

Table B2. Cross Loadings (Continued)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
13. a	0.27	0.19	0.15	0.23	0.20	0.11	0.24	0.15	0.24	0.26	-0.08	-0.06	**0.95**	0.35	0.31	0.38
13. b	0.24	0.17	0.15	0.23	0.20	0.12	0.28	0.20	0.24	0.26	-0.08	-0.06	**0.98**	0.41	0.30	0.42
13. c	0.22	0.17	0.16	0.22	0.16	0.11	0.28	0.19	0.23	0.27	-0.07	-0.06	**0.96**	0.42	0.31	0.45
13. d	0.20	0.17	0.13	0.21	0.18	0.11	0.26	0.18	0.23	0.25	-0.02	-0.02	**0.96**	0.39	0.32	0.43
14. a	0.25	0.31	0.32	0.33	0.32	0.23	0.31	0.22	0.31	0.34	-0.15	-0.12	0.41	**0.91**	0.45	0.57
14. b	0.24	0.34	0.36	0.31	0.32	0.28	0.31	0.24	0.34	0.36	-0.13	-0.08	0.37	**0.91**	0.46	0.60
14. c	0.06	0.17	0.21	0.14	0.17	0.11	0.26	0.43	0.21	0.33	0.03	0.06	0.33	**0.78**	0.32	0.50
14. d	0.14	0.23	0.26	0.23	0.26	0.16	0.30	0.32	0.29	0.35	-0.03	0.02	0.32	**0.90**	0.39	0.58
15. a	0.34	0.33	0.37	0.38	0.38	0.27	0.39	0.19	0.61	0.51	-0.20	-0.15	0.31	0.48	**0.94**	0.69
15. b	0.36	0.35	0.36	0.40	0.39	0.29	0.38	0.16	0.61	0.50	-0.22	-0.18	0.29	0.46	**0.95**	0.66
15. c	0.34	0.33	0.32	0.36	0.34	0.27	0.41	0.19	0.59	0.50	-0.17	-0.14	0.32	0.41	**0.95**	0.66
15. d	0.33	0.32	0.32	0.35	0.34	0.26	0.39	0.18	0.60	0.49	-0.18	-0.16	0.29	0.42	**0.96**	0.64
15. e	0.35	0.34	0.35	0.37	0.36	0.28	0.40	0.16	0.62	0.50	-0.18	-0.16	0.34	0.44	**0.96**	0.68
16. a	0.23	0.23	0.25	0.31	0.31	0.18	0.39	0.26	0.47	0.53	-0.10	-0.06	0.41	0.59	0.63	**0.92**
16. b	0.26	0.30	0.31	0.33	0.30	0.24	0.37	0.25	0.50	0.51	-0.10	-0.04	0.44	0.62	0.69	**0.95**
16. c	0.24	0.28	0.30	0.33	0.31	0.21	0.38	0.27	0.52	0.56	-0.10	-0.06	0.40	0.62	0.68	**0.96**
16. d	0.19	0.21	0.24	0.28	0.25	0.15	0.34	0.32	0.46	0.56	-0.05	-0.02	0.39	0.59	0.63	**0.92**

Table B3. Common Method Bias Analysis

	SC	PIC-SC	MF	PIC - MF		SC	PIC-SC	MF	PIC - MF
1. a	0.959*	0.919	0.026	0.001	**10. a**	0.636*	0.404	0.262*	0.068
1. b	0.980*	0.960	0.003	0.000	**10. b**	0.974*	0.949	-0.053	0.003
1. c	0.993*	0.986	-0.029	0.001	**10. c**	0.984*	1.048	-0.098	0.010
2. a	0.811*	0.657	0.021	0.000	**10. d**	0.995*	0.990	-0.083	0.007
2. b	0.779*	0.606	-0.059	0.003	**11. a**	0.944*	0.891	-0.045	0.002
2. c	0.754*	0.568	0.068	0.005	**11. b**	0.961*	0.924	0.017	0.000
3. a	0.921*	0.848	-0.056	0.003	**11. c**	0.975*	0.950	0.009	0.000
3. b	0.927*	0.859	-0.051	0.003	**11. d**	0.978*	0.956	0.018	0.000
3. c	0.780*	0.608	0.076	0.006	**12. a**	0.942*	0.888	0.035	0.001
4. a	0.868*	0.753	0.029	0.001	**12. b**	0.922*	0.851	-0.077	0.006
4. b	0.942*	0.888	-0.010	0.000	**12. c**	0.916*	0.840	0.045	0.002
4. c	0.968*	0.937	-0.058	0.003	**13. a**	0.949*	0.901	0.000	0.000
4. d	0.900*	0.810	0.040	0.002	**13. b**	0.974*	0.950	0.001	0.000
5. a	0.830*	0.689	0.062	0.004	**13. c**	0.957*	0.916	0.010	0.000
5. b	0.940*	0.883	-0.039	0.002	**13. d**	0.962*	0.925	-0.010	0.000
5. c	0.954*	0.910	-0.019	0.000	**14. a**	0.864*	0.747	0.061	0.004
6. a	0.962*	0.926	0.011	0.000	**14. b**	0.848*	0.719	0.083	0.007
6. b	0.969*	0.940	0.014	0.000	**14. c**	0.859*	0.738	-0.104	0.011
6. c	0.988*	0.977	-0.026	0.001	**14. d**	0.936*	0.875	-0.054	0.003
7. a	0.911*	0.829	0.049	0.002	**15. a**	0.888*	0.789	0.060	0.004
7. b	0.932*	0.869	0.037	0.001	**15. b**	0.933*	0.870	0.026	0.001
7. c	0.972*	0.945	-0.019	0.000	**15. c**	0.976*	0.952	-0.033	0.001

Table B3. Common Method Bias Analysis

	SC	PIC-SC	MF	PIC - MF		SC	PIC-SC	MF	PIC - MF
7. d	0.984*	0.969	-0.068	0.005	**15. d**	0.986*	1.020	-0.066	0.004
8. a	0.832*	0.692	0.091	0.008	**15. e**	0.947*	0.897	0.014	0.000
8. b	0.899*	0.809	0.023	0.001	**16. a**	0.928*	0.861	-0.004	0.000
8. c	0.936*	0.875	-0.057	0.003	**16. b**	0.921*	0.848	0.039	0.002
8. d	0.947*	0.897	-0.051	0.003	**16. c**	0.947*	0.897	0.023	0.001
9. a	0.910*	0.828	-0.052	0.003	**16. d**	0.970*	0.941	-0.061	0.004
9. b	0.919*	0.845	0.007	0.000	**Average**	0.923*	0.856	0.000	0.003
9. c	0.949*	0.901	-0.017	0.000					
9. d	0.948*	0.899	-0.036	0.001					
9. e	0.909*	0.826	0.026	0.001					
9. f	0.869*	0.755	0.067	0.005					

SC: Substantive Construct Loading; **PIC-SC:** Percent of Indicator Variance Caused by Substantive Construct (the squared loadings of substantive constructs); **MF:** Method Factor Loading; **PIC-MF:** Percent of Indicator Variance Caused by Method (the squared values of the method factor loadings)

*p < .01