

Online Appendices – Supplementary Materials

Table A1. Review of Previous Research Comparing Contributors and Lurkers

Author(s)	Research Focus	Theory and variables	Context	Nature of Study	Major Propositions or Findings	Comparison with our work
Bishop (2007)	Proposes a conceptual framework to understand what drives lurkers and contributors, and how they chose whether or not to participate	Ecological cognition framework Variables: Motivations, means to interpret and interact with environment (e.g., abilities), tools/affordances of the environment	Virtual communities in general	Conceptual	<ul style="list-style-type: none"> - For lurkers to contribute, there needs to be a desire to do so that is consistent with their goals, plans, values, beliefs and interests; and they need to have the ability and tools to do so - Persuasive text (message devised to counter the beliefs of actors and provide them with new information) and mediating technologies (that can lead them to start participating) may be used to change the beliefs of lurkers - Lurkers may be persuaded by a community member to change their beliefs if they consider him/her as credible, and if changing their belief would be consistent with their goals - To change the beliefs of lurkers, one should nurture novices in the community so that lurkers can see that those who are new to a community are treated well 	<p>Our work explicates the specific antecedents related to motivations (collective, persuasion, and political career benefits; political efficacy), ability (civic skills), and environmental affordances (connectivity and communality) that are relevant to participation in OPDFs.</p> <p>Compared to Bishop (2007) that conceptually discusses the factors, our work provides empirical evidence of what influences contributors' and lurkers' participation.</p>
Farzan et al. (2010)	Explores how lurkers can be encouraged to contribute their knowledge and social resources to the community in comparison to existing contributors	No clear theoretical basis specified Variables: Design factors (designing the community system such that it assigns tasks of promoting content in the	A social network site deployed in IBM called Beehive for employees to socialize and connect with their coworkers	Field experiment based on the community system, analyzed the resultant archival data collected from	<ul style="list-style-type: none"> - Despite the relatively lower participation rate among lurkers in the Honeybee system compared to contributors, still a substantial number of them took up the initiative to share their knowledge about content on the site, for the greater benefit of the community - Lurkers, compared to contributors, 	<p>Our work models and tests a comprehensive set of participation antecedents for contributors and lurkers based on the civic voluntarism model and IT-enabled public goods perspective as compared to the design factors examined in this study.</p> <p>Also our comparative model provides a more comprehensive, theory-grounded</p>

	A system called Honeybee was designed where members are selected to promote content in the community	community to the lurkers, and provides recognition for their effort)	by sharing photos, lists, and events	the system	<p>promote a more diverse and less popular set of content, and are more likely to promote content from their network</p> <ul style="list-style-type: none"> - Lurkers who promoted content under the Honeybee system were twice as likely to contribute new content to the site in the following month, compared to the lurkers who did not choose to participate in promoting content 	(construal level theory) understanding of the differences in the factors influencing contributors' and lurkers' participation. But this study provides a more in-depth comparison of contributors and lurkers' actual behaviors (including those who have been converted).
Marett and Joshi (2009)	Examines the impacts of several motivational and social influences on information sharing behaviors of contributors and lurkers	<p>Theory of extrinsic and intrinsic motivations</p> <p>Variables: Interest- enjoyment, status/reputation, normative influence</p>	A recreational online discussion forum for sports fans of a local university's athletic program	Survey of 471 community members (280 contributors and 191 lurkers)	<ul style="list-style-type: none"> - Lurkers are driven by normative influence (measured as admiration of contributors) while sharing information but not by enjoyment and status benefits - Contributors are motivated by enjoyment and normative influence but not by status benefits 	<p>Rather than comparing the differences in the factors influencing contributors' and lurkers' participation post-hoc i.e., in the data analysis, as in this study, our work models their differences a priori through the lens of the construal level theory. Also, our study models and tests the effects of a larger set of motivations as well as resources and mobilization on participation.</p> <p>In terms of the motivations for lurkers to share information, the findings from our work are largely consistent with those of this study i.e., normative influence (mobilization in our study) is important but not the extrinsic benefits (instrumental political career in our study).</p> <p>For the factors influencing contributors' participation, the findings are less consistent with our work. This could be due to the difference in the research contexts. For instance, status (instrumental) benefits were not found to be salient in their study probably because the sharing of information was less relevant to determining one's status as compared to sharing rumors (e.g., invalidated insider news) which are of</p>

						greater interest to community members
Mo and Coulson (2010)	Compares contributors and lurkers in online support communities for HIV/AIDS in terms of obtaining support and empowerment	Perspective of empowering processes Variables: Receiving social support and useful information, finding positive meaning, helping others, satisfaction with online support group, coping, quality of life, self-care self-efficacy	Online support groups for individuals living with HIV/AIDS	Survey of 340 members from 6 online support communities for HIV/AIDS, of which one-fifth were lurkers	<ul style="list-style-type: none"> - Compared to contributors, lurkers scored lower in receiving social support and useful information; and in social functioning and satisfaction with their relationship with community members - Lurkers scored higher in the use of distraction as the coping strategy to deal with stress; and lower in planning compared to contributors - Between contributors and lurkers, there were no significant differences in self-care self efficacy, loneliness, depression, and optimism 	<p>This study examines differences in individual characteristics of lurkers and contributors. It also looks at differences in the outcomes that they obtain from the online support groups based on the empowerment perspective.</p> <p>Our study examines the differences in the participation antecedents of contributors and lurkers for OPDFs through the lenses of the civic voluntarism model, IT-enabled public goods, and construal level theory.</p> <p>Our work employs structural equation modeling to test the model whereas this study has no hypotheses and relies primarily on tests of the differences between contributors and lurkers.</p>
Nonnecke et al. (2006)	Examines the nature of lurking and the differences in attitudes between lurkers and contributors	No clear theoretical basis specified Variables: Reasons for joining an online community, reasons for lurking, expectation fulfillment and benefits, perceptions toward contributors / lurkers	MSN online communities from the categories of health and wellness, news and politics, sports and recreation, and organizations	Survey of 1188 respondents, of which 219 were lurkers	<ul style="list-style-type: none"> - Contributors have significantly more reasons for joining an online community that require outreach into the community and/or interaction with other members than lurkers e.g., tell stories, build professional relationships, and get sympathetic support - Lurkers have less satisfying experience with the online communities, and are less enthusiastic about community membership as compared to contributors 	<p>This study aims to provide an initial understanding of the differences between contributors and lurkers. There are no hypotheses and the differences between the two groups are tested using chisquare-tests.</p> <p>Our work advances the literature by offering a theory-driven and empirically-validated explanation of what motivates contributors and lurkers to participate.</p>
Preece et al. (2004)	Aims to understand why lurkers do not contribute in online communities	No clear theoretical basis specified Variables: Attitudes towards the online community,	MSN bulletin board communities from the categories of health and	Survey of 1188 respondents, of which 219 were lurkers	<ul style="list-style-type: none"> - Lurkers feel their needs are less met in the community - Lurkers should not be simply treated as selfish free-riders. There are several reasons why lurkers do not contribute, which include not feeling 	Our work supports the view of this study that lurkers should not be simply treated as selfish free-riders, and provides further insights into the characteristics and needs of lurkers through the lens of the construal level theory i.e., lurkers care about

		reasons for lurking	wellness, government, sports and recreation, and organization		the need to post; needing to find out more about the community before participating; thinking that they were being helpful by not posting; poor usability of the community system, and not liking the community dynamics or the community was a poor fit for them	community benefits. Differences between the two groups are theoretically grounded and empirically tested.
Ridings et al. (2006)	Investigates the differences in the behavior of lurkers, infrequent contributors, and contributors	Social exchange theory Variables: Trust in other community members, desire to give and get information, desire to exchange social support	Online communities revolving around personal interests, health concerns, geography, and occupations	Survey of 518 members from 20 asynchronous online communities	<ul style="list-style-type: none"> - There are significant differences between lurkers and contributors in terms of their interest in getting information, and trust in the ability and benevolence/integrity of other members - There was a gradual progression from lurkers to infrequent contributors and then to contributors regarding the interest in getting information from other members - Lurkers have less trust in the abilities and benevolence/integrity of others compared to contributors 	<p>This study examines the differences between contributors and lurkers in terms of trust, desire to give and get information, and desire to exchange social support. The hypotheses are tested using t-tests to compare the two groups.</p> <p>Our work extends the investigation of the differences between contributors and lurkers to another context i.e., OPDFs and with a comprehensive set of participation antecedents derived from relevant theories. The hypotheses are tested through structural equation modeling.</p>

Table A2. Differences between Contributors and Lurkers Seen through the CLT

	Defining difference	Theoretical links leading to psychological differences as understood through the construal level theory		
		Mental construal formed	Immediate effects of the mental construal formed	Implications
Lurkers	Observe and read posts in the forum	Due to lack of contribution experience, lurkers need to construe, e.g., imagine, predict what it is like to contribute to the OPDF, thus forming an abstract mental construal about contributing to the OPDF	Abstract mental construal frees lurkers' attention from the concrete, incidental details (e.g., situational constraints and opportunities) of the act of contribution	<ul style="list-style-type: none"> • <i>Think in more idealized and non-pragmatic terms about contributing to OPDF</i>
Contributors	Have contributed to the forum	Having direct contribution experience, contributors possess first-hand knowledge about what it is like to contribute, thus forming a concrete mental construal about contributing to the OPDF	Concrete mental construal brings contributors' attention to the immediate and incidental details (e.g., situational constraints and opportunities) of the act of contribution	<ul style="list-style-type: none"> • <i>Think in more pragmatic terms about contributing to OPDF</i>

Table A3. Key Arguments for the Different Participation Antecedents for Contributors versus Lurkers

Participation Antecedent	Definition	Lurkers	Contributors
Collective benefits	Belief in attaining benefits that can be enjoyed by all members of a collective through OPDF participation	Lurkers, with their abstract mental construal, are likely to have an idealized view of OPDF participation (i.e., as per the stated purpose of OPDF, citizen inputs will result in the formulation of better public policies). Hence, they should be sensitive to the collective benefits, i.e., better policies enjoyable by all through OPDF participation.	Contributors, with their focus on the concrete and pragmatic aspects of OPDF participation, are likely to be insensitive to such participation benefits of an idealistic nature in forming their participation intention.
Political career benefit	Belief that one's political career can be advanced through participation	With their idealistic view of OPDF participation, lurkers are not so sensitive to the instrumental aspects of participation (e.g., possibility to gain political career advantage) in forming their future intention to participate.	Contributors, with their emphasis on the concrete, pragmatic aspects of OPDF participation, are likely to base their participation decision closely on the extent to which instrumental opportunities are present in the environment. Thus, the potential benefit to advance one's political career through OPDF participation should appeal to them for their intention to participate.
Persuasion benefit	Belief that others can be persuaded to adopt one's preferred policy position through participation	Lurkers, with their abstract and idealized view of participating in an OPDF, should find it important (when deciding about their future participation) that others can be persuaded to promote a cause, as this is an intended purpose of OPDFs.	Contributors, with their concrete, pragmatic view of OPDF participation, may focus on the instrumental outcomes they can obtain from doing so (i.e., what can I get from contributing?). Persuasion is a process aimed at changing a person's (or a group's) attitude or behavior. As it is more a means than an end, contributors may not be concerned with it when deciding about their future participation, given their focus on instrumental outcomes.
Political efficacy	Belief that government will listen to citizens' inputs and that one is qualified to contribute policy inputs	For lurkers, who have an abstract mental construal and lack experience in contributing, the internal efficacy belief may not be salient for them. Further, even though lurkers may have an idealized view of OPDF participation, this does not imply a general belief in government's responsiveness to citizens'	Contributors have a concrete mental construal and experience of contributing, whereby internal efficacy may motivate their OPDF participation. The external belief that government is responsive to citizen inputs should also be important for them else they may not participate again (with their concern for pragmatic issues).

		concerns.	
Civic skills	Individuals' organizational and communication abilities that can facilitate participation	Lack of civic skills has been noted as a salient factor in the civic voluntarism model that may explain why an individual (in this case a lurker) has not participated.	With experience and skills already gained from communicating their views in the OPDF, contributors are less likely to consider civic skills as a salient factor determining their intention to contribute again in the forum.
Mobilization	Request from others to influence an individual to participate	As per the civic voluntarism model, mobilization may trigger lurkers to start participating. This also agrees with previous literature that subjective norms are important when a person has little or no experience with the target object/behavior.	Once they have already begun to contribute to the OPDF, contributors may not find mobilization to be salient to them. This is consistent with previous literature that the influence of subjective norms diminishes with direct experience.

Table A4. Roles and Anticipated Effects of Perceived Connectivity and Communality

Participation antecedent	Definition	Role in facilitating collective actions	Effects on participation intention or motivational factors
Perceived connectivity	Perceived ease of reaching others who share similar interests through IT	Facilitates OPDF participation directly by satisfying the need to connect to others with similar interests Facilitates OPDF participation indirectly by enhancing the perceived communality of the OPDF	Contributors, with their concrete mental construal and pragmatic view about OPDF participation, would be interested to get acknowledgement for their postings which would be likely if the IT connects them to others with similar interests. Lurkers, who have not contributed and possess an idealized view of OPDF participation, may not appreciate this capability in deciding whether to participate because they may not have experienced the need for this capability to get acknowledgement from others.
Perceived communality	Perceived ease of accessing a common pool of information to perform generalized and productive exchanges through a common repository	Facilitates policy deliberation through the provision of information access via a common repository Serves to enhance the perception of benefits (collective and persuasion) that people can obtain from OPDF participation, rather than directly driving participation	Communality, which makes it easier to achieve collective and persuasion benefits through information support, should have an indirect effect (i.e., through these motivational perceptions) on participation. The effect of communality should apply to both contributors and lurkers, as both groups would be able to observe its effects on collective and persuasion benefits.

Table A5. Demographic Information of Respondents

	Category	Contributors (N=101)	Lurkers (N=107)
Gender (GEN)	Male	68 (67.3%)	72 (67.3%)
	Female	33 (32.7%)	35 (32.7%)
Age (AGE)	< 26	20 (19.8%)	27 (25.2%)
	26 – 35	25 (24.8%)	37 (34.6%)
	36 – 45	16 (15.8%)	22 (20.5%)
	46 – 55	30 (29.7%)	16 (15.0%)
	> 55	10 (9.9%)	5 (4.7%)
Education (EDU)	A-Level and below	21 (20.8%)	36 (33.6%)
	Diploma	22 (21.8%)	14 (13.1%)
	Degree (Bachelors)	38 (37.6%)	42 (39.3%)
	Degree (Masters/PhD)	20 (19.8%)	15 (14.0%)
Income, in USD (INC)	< 750	26 (25.7%)	35 (32.7%)
	750 – 1,999	21 (20.8%)	20 (18.7%)
	2,000 – 2,999	23 (22.8%)	16 (15.0%)
	3,000 – 3,999	11 (10.9%)	18 (16.8%)
	4,000 – 4,999	9 (8.9%)	7 (6.5%)
	≥ 5,000	11 (10.9%)	11 (9.3%)

Internet Experience, in Years (EXP)	Mean = 9.98, StDev = 3.78	Mean = 9.31, StDev = 4.11
Duration in the Forum since Joining, in Months (DUR)	Mean = 15.09, StDev = 8.15	Mean = 10.71, StDev = 8.95
Offline Participation (Frequency over the Past 12 Months) (OFF)	Mean = 3.97, StDev = 5.26	Mean = 1.92, StDev = 5.39

Note: StDev = Standard Deviation

Table A6. Descriptive Statistics and Reliability of Reflective Constructs

Construct	Loading		Mean		StDev		CA		CR		AVE	
	C	L	C	L	C	L	C	L	C	L	C	L
Participation Intention (INTN)							0.90	0.83	0.95	0.92	0.91	0.86
INTN1	0.95***	0.91***	4.76	4.14	1.12	1.27						
INTN2	0.95***	0.94***	4.99	4.68	1.04	1.29						
Collective Benefits (COLL)							0.91	0.92	0.94	0.94	0.75	0.75
COLL1	0.77***	0.80***	4.90	4.62	1.39	1.32						
COLL2	0.91***	0.91***	5.12	4.93	1.24	1.32						
COLL3	0.89***	0.89***	4.91	4.88	1.34	1.31						
COLL4	0.89***	0.88***	5.25	4.97	1.16	1.34						
COLL5	0.87***	0.85***	5.11	5.06	1.39	1.37						
Political Career Benefit (POLC)							0.97	0.96	0.98	0.97	0.94	0.91
POLC1	0.96***	0.98***	2.94	3.39	1.63	1.57						
POLC2	0.98***	0.95***	2.93	3.50	1.61	1.59						
POLC3	0.97***	0.93***	2.83	3.46	1.62	1.58						
Persuasion (PERS)							0.89	0.91	0.93	0.94	0.82	0.85
PERS1	0.91***	0.85***	4.53	4.31	1.55	1.48						
PERS2	0.91***	0.96***	4.60	4.51	1.45	1.35						
PERS3	0.90***	0.95***	4.76	4.43	1.46	1.43						
Internal Political Efficacy (IPEF)							0.88	0.89	0.92	0.93	0.74	0.76
IPEF1	0.82**	0.86**	5.27	5.12	1.17	1.16						
IPEF2	0.86**	0.88**	5.42	5.13	1.07	1.17						
IPEF3	0.91**	0.92**	5.42	5.21	1.18	1.17						
IPEF4	0.83**	0.82**	5.18	4.86	1.17	1.37						
External Political Efficacy (EPEF)							0.86	0.90	0.91	0.93	0.72	0.78
EPEF1	0.91**	0.92***	4.34	4.24	1.53	1.39						
EPEF2	0.92**	0.93***	4.59	4.47	1.48	1.37						
EPEF3	0.92**	0.94**	4.57	4.29	1.55	1.51						
EPEF4	0.59*	0.73**	3.90	3.81	1.62	1.61						
Connectivity (CONN)							0.93	0.94	0.95	0.95	0.82	0.84
CONN1	0.91***	0.88***	3.48	3.24	1.01	1.05						
CONN2	0.93***	0.90***	3.50	3.34	1.03	1.02						
CONN3	0.91***	0.96***	3.58	3.41	0.99	0.98						
CONN4	0.89***	0.94***	3.62	3.41	1.01	1.04						
Communality (COMM)							0.94	0.95	0.95	0.96	0.77	0.79
COMM1	0.86***	0.89***	3.49	3.35	0.99	0.93						
COMM2	0.87***	0.90***	3.50	3.33	0.96	0.97						
COMM3	0.85***	0.86***	3.49	3.13	0.93	1.07						
COMM4	0.89***	0.90***	3.36	3.32	1.07	0.95						
COMM5	0.90***	0.89***	3.27	3.15	1.19	0.97						
COMM6	0.89***	0.88***	3.32	3.09	1.16	1.08						

Notes: ^p<0.10, *p<0.05, **p<0.01, ***p<0.001

C = Contributors, L = Lurkers, CA = Cronbach's Alpha, CR = Composite Reliability, AVE = Average Variance Extracted

Table A7. Results of Factor Analysis (Contributors' Sample)

	Component
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	1	2	3	4	5	6	7	8
INT1	.122	.219	.068	.224	.189	.257	.134	.801
INT2	.144	.158	.145	.232	.129	.127	.100	.862
COLL1	.126	.679	.061	.003	.169	.187	.113	.083
COLL2	.174	.876	.021	-.034	.171	.098	.038	.079
COLL3	.104	.876	.051	-.090	.147	.099	.064	.056
COLL4	.232	.834	.063	-.001	.133	-.039	.147	.104
COLL5	.105	.817	.068	-.051	.200	.132	.176	.058
POLC1	.118	.201	-.027	.065	.134	.885	.212	.123
POLC2	.165	.117	-.027	.066	.202	.893	.223	.095
POLC3	.149	.130	.002	.079	.128	.886	.258	.137
PERS1	.139	.102	.051	.137	.034	.256	.876	.032
PERS2	.064	.239	-.017	.152	.103	.300	.793	.106
PERS3	.160	.199	-.026	.052	.289	.168	.793	.107
IPEF1	.134	-.126	-.007	.830	-.084	.017	.002	.034
IPEF2	.052	.009	.202	.823	.042	.005	.144	.094
IPEF3	.115	-.031	.057	.878	.066	-.020	.075	.169
IPEF4	.019	-.007	.003	.806	.003	.174	.074	.072
EPEF1	.167	.271	.007	.003	.838	.088	.079	.112
EPEF2	.183	.253	-.058	.068	.846	.122	.095	-.005
EPEF3	.073	.259	.066	.064	.870	.041	.149	.048
EPEF4	.036	.040	.150	-.108	.555	.220	.056	.156
CONN1	.265	.112	.820	.154	.063	.052	.023	.094
CONN2	.164	.066	.890	.166	.016	.055	-.006	.055
CONN3	.182	.035	.911	.005	.058	-.070	-.001	-.006
CONN4	.129	.024	.906	-.047	.027	-.060	.004	.067
COMM1	.892	.129	.076	.014	.053	.032	.057	.119
COMM2	.906	.107	.129	-.032	-.011	.103	.037	.128
COMM3	.869	.097	.163	-.017	-.002	.151	.024	.136
COMM4	.768	.132	.256	.243	.172	.093	.126	-.030
COMM5	.762	.216	.165	.206	.266	.083	.146	-.037
COMM6	.728	.268	.229	.192	.262	.078	.129	-.055

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 6 iterations.

Table A8. Results of Factor Analysis (Lurkers' Sample)

	Component							
	1	2	3	4	5	6	7	8
INT1	.095	.183	.093	.063	.137	.035	.115	.875
INT2	.174	.369	.016	-.012	.146	-.008	.181	.794
COLL1	-.025	.737	.190	.203	.044	.142	-.019	.176
COLL2	.136	.843	.082	.255	-.010	.067	.045	.147
COLL3	.155	.797	.116	.283	.040	.061	.017	.160
COLL4	.170	.853	.052	.108	.016	-.040	.146	.088

COLL5	.181	.841	.005	.087	.093	.102	.114	.000
POLC1	.039	.118	.052	.144	.028	.937	.061	.097
POLC2	.075	.041	-.040	.084	.025	.959	.106	-.017
POLC3	.034	.100	-.018	.050	.027	.928	.195	-.039
PERS1	.037	.069	.055	.014	.114	.260	.867	-.024
PERS2	.234	.092	.010	.022	.052	.108	.897	.157
PERS3	.219	.114	.010	.055	.102	.028	.883	.152
IPEF1	.134	.011	.090	-.128	.847	.083	.108	.183
IPEF2	.116	.078	.122	-.027	.865	.008	-.045	.181
IPEF3	.101	.073	.144	.083	.888	.062	.091	.021
IPEF4	.011	-.002	.083	.213	.801	-.059	.121	-.088
EPEF1	.015	.234	.087	.884	.057	.048	.033	.090
EPEF2	-.034	.250	.162	.867	.157	.029	.020	-.067
EPEF3	.068	.110	.103	.927	.057	.144	-.054	-.043
EPEF4	-.004	.274	.181	.662	-.130	.093	.117	.095
CONN1	.234	.073	.855	.158	.125	-.021	-.007	-.106
CONN2	.206	.121	.845	.246	.074	.017	.107	.023
CONN3	.335	.143	.855	.076	.167	-.018	-.015	.129
CONN4	.351	.098	.822	.096	.168	.018	.001	.140
COMM1	.814	.027	.275	.057	.095	.007	.199	.072
COMM2	.846	.035	.256	-.002	.111	.004	.116	.071
COMM3	.854	.052	.238	.001	.079	.052	.086	.098
COMM4	.855	.196	.141	.040	.052	-.048	.153	-.023
COMM5	.845	.193	.088	.067	.047	.037	.090	.099
COMM6	.884	.147	.110	-.081	.055	.145	-.035	.015

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 7 iterations.

Table A9. Weights of Formative Measures

Formative Construct	Dimension	Mean		StDev		Weight	
		C	L	C	L	C	L
Political Efficacy (PEFF)	IPEF	-	-	-	-	0.71***	0.68***
	EPEF	-	-	-	-	0.65***	0.64***
Civic Skills (CIVC) <i>"W" in W.CIV refers to civic skills practiced at the workplace. Likewise, "V" refers to voluntary organizations; and "R" refers to religious institutions</i>	W.CIVC	-	-	-	-	0.33***	0.27*
	V.CIVC	-	-	-	-	0.47***	0.49***
	R.CIVC	-	-	-	-	0.45***	0.57***
	W.CIVC1	2.19	2.26	1.28	1.27	0.37*	0.08
	W.CIVC2	2.43	2.42	1.49	1.37	-0.21	-0.10
	W.CIVC3	1.99	1.93	1.31	1.19	0.23	0.44
	W.CIVC4	1.97	2.02	1.25	1.14	0.50^	0.52^
	W.CIVC5	2.26	2.23	1.37	1.26	0.21	0.17
	V.CIVC1	2.08	1.69	1.20	1.05	0.21^	0.27^
	V.CIVC2	2.04	2.07	1.26	1.28	0.25*	-0.20
	V.CIVC3	1.68	1.76	1.02	1.19	0.48**	0.37*
	V.CIVC4	1.78	1.91	1.17	1.18	-0.07	0.26
	V.CIVC5	1.88	1.85	1.15	1.10	0.26*	0.44*
	R.CIVC1	1.67	1.50	1.00	0.93	0.28***	-0.04
	R.CIVC2	1.68	1.58	1.04	1.05	-0.01	0.29
	R.CIVC3	1.33	1.38	0.69	0.87	0.39***	0.31*
R.CIVC4	1.47	1.53	0.82	0.98	0.26*	0.11	
R.CIVC5	1.50	1.60	0.84	1.07	0.22^	0.40*	

Notes: C indicates corresponding value for the Contributors' sample; L indicates corresponding value for the Lurkers' sample
- Not directly measured. Formed by the first-order constructs, ^p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table A10. Comparison of the Antecedents in this Study with Prior Literature and Implications for Online Feedback Forums and Other Online Communities

Construct	Comparable Construct(s) in Prior Literature	Remarks on Similarities and Differences	Implications for Online Feedback Forums beyond OPDFs		Implications for Other Online Communities
			Organization Employees	External Customers	
Collective benefits	Ideology in particular altruism (Paulini et al. 2014); Making a better society (Ståhlbröst and Bergvall-Kåreborn 2011)	In the previous literature, it has been found that people participate to benefit the community as a whole, e.g., for online communities for sharing of technical knowledge (Wasko and Faraj 2000). In the context of OPDFs, the focus of collective benefits is on attaining improved public policies (and related consequences such as better living conditions) through citizen participation.	The focus of collective benefits in this context could be on attaining better performance of a work team or the whole organization. The items of this antecedent may be adapted to include more efficient work procedures and better work conditions resulting from the feedback collected from employees.	The focus of collective benefits in this context could be on developing better products. The items of this antecedent may be adapted to include the stimulation and formulation of more innovative product ideas as a result of discussion and selection (e.g., voting) among the customers.	This antecedent may be relevant to online communities in general given that they produce public goods in the form of a more comprehensive information base. However, collective benefits in these contexts may be more specific to visitors to the online communities rather than stakeholders at large. For instance, in social support and leisure forums, the primary collective benefit may be the creation of an information base from which visitors can obtain better support or entertainment value.
Persuasion benefit	New construct proposed here to explain participation in OPDFs	To the best of our knowledge, this construct has not been examined in the previous literature on online communities. The closest we could find is self-expression, or the desire of individuals to express their opinion in online communities (Peddibhotla and Subramani 2007). However, persuasion benefit is different from self-expression in that individuals do not just want to express their feelings, but they express in order to persuade others to adopt their own political stance	Organization employees may desire to persuade others to agree with their views on improving work procedures and organization policies.	Customers in these forums may be motivated to engage in persuasion effort to make their proposed product ideas stand out and get adopted.	This antecedent may be relatively less salient for other online communities in which the main focus is not for organizations to collect feedback and for participants to provide inputs in order to influence decision making, e.g., leisure forums
Political career benefit	Career advancement (Paulini et al. 2014)	Previous research has investigated individuals' desire to improve their career prospects (e.g., making new business contacts to help advance their career) in online Innovation communities, where consumers provide product design ideas (e.g., Paulini et al. 2014). For OPDFs, we employed the construct political	In an organizational context, employees may contribute with a desire to gain attention from the management for career advancement opportunities.	Career opportunities in this context may be in the form of obtaining recognition as a consumer innovator for commercial purposes e.g., to gain profits if a product idea is commercialized	This antecedent may also be applied to other online communities where contribution of useful inputs can result in better career prospects e.g., industry-wide or professional knowledge sharing communities.

		career benefit to capture people's perception that participating in OPDFs will further their political career			
Political efficacy	Efficacy (e.g., Antikainen et al. 2010)	<p>In the context of online innovation communities, research has investigated the role of efficacy, or individuals' confidence in their ability to provide useful inputs (e.g., Antikainen et al. 2010).</p> <p>In this study, we employ the efficacy perception that is relevant to OPDFs, i.e., political efficacy, which captures citizens' confidence in whether their participation can indeed bring about desired change to policy making. This includes both the internal dimension (confidence in one's competence to discuss policy issues) and external dimension (confidence that government authorities are responsive to citizens' inputs).</p>	Efficacy in the context of an organizational feedback forum may include employees' confidence in their ability to help the organization or work unit (internal dimension), as well as the extent to which the management listens to employees' feedback (external dimension) to bring about change to the organization/work unit.	Customers participating in these forums may be concerned with whether they possess sufficient understanding of the products to help the company by providing useful ideas (internal dimension) and belief in the possibility of the company to adopt their ideas (external dimension).	<p>The efficacy construct may be applied to other online communities in which participants are likely to feel certain challenges in contributing inputs (internal dimension) e.g., offering emotional support in social support forums.</p> <p>However, the external dimension of efficacy may be less salient in these communities since the exchanges (e.g., sharing of social support) are mostly among the participants, and the main focus is not on influencing organizational decision making.</p>
Civic skills	New construct employed here to explain participation in OPDFs	<p>To the best of our knowledge, this construct has not been examined in the previous literature on online communities. The closest we could find is expertise that is investigated in prior studies as the domain-specific skills possessed by an individual needed for contributing knowledge (e.g., Wasko and Faraj 2005).</p> <p>However, civic skills do not refer to domain or subject knowledge, but to the organizational and communication abilities that can facilitate one's participation in discourses in OPDFs. Also we comprehensively measured this construct by considering citizens' practice of five different skill acts in three major societal institutions, i.e., the workplace, civic organizations, and religious institutions. This approach is preferred over self-rated measures which may be biased and confound with the respondents' efficacy belief.</p>	<p>Part of civic skills measurement includes the practicing of relevant skill acts in the work place.</p> <p>Good communication and organizational abilities should be relevant for employees' articulation of their inputs, such as how their ideas may help improve work efficiency.</p>	Similarly, civic skills should also be salient for customers when participating in these forums since the skills can help them express their ideas (e.g., on how a product can be improved) in an easily understandable manner.	The antecedent should also be useful for research on other online communities in which communication and organizational abilities are desired for providing helpful contributions, e.g., emotional support that is clearly expressed in social support communities.

Mobilization	Subjective norms (e.g., Bock et al. 2005)	<p>A previously investigated construct related to mobilization is subjective norms that captures the perceived social pressure to perform or not perform a behavior, e.g., knowledge sharing in online communities (Bock et al. 2005).</p> <p>However, mobilization refers to the request from others to influence an individual to participate rather than the subjective norms experienced. It is thus conceptually different from, but related to subjective norms in that people are influenced by the pressure to conform to others' requests to participate.</p>	<p>Effort to influence an employee to participate may be made by the management or through his/her colleagues.</p> <p>However, it should be noted that in the organizational context, mobilization could be incentivized or even mandated, which differs from the OPDF context in which mobilization is typically voluntary.</p>	<p>Effort to influence a customer to participate may be made by the company, through his/her friends, or by enlisting the assistance of members in the forums. Similar to the OPDF context, the nature of mobilization here is typically voluntary.</p>	<p>This antecedent may also be applied to investigate participation in other online communities where requests and active efforts can be made to individuals to trigger their participation e.g., leisure communities.</p>
Connectivity	Social interactivity (e.g., Phang et al. 2009)	<p>A somewhat related construct in the prior literature is social interactivity, which refers to the extent to which individuals feel comfortable to communicate with others through the online space e.g., for knowledge sharing (Phang et al. 2009).</p> <p>However, connectivity extends the notion of interactivity by considering not only the ease of social interactions, but interactions with <i>those sharing common interests or goals</i>.</p>	<p>The construct may be adapted to this context by capturing the ease with which employees can connect with others who have similar interests or goals depending on the task to be achieved, e.g., connecting with those having similar interest or expertise to design a new work procedure.</p>	<p>The construct may be adapted to this context by capturing the ease with which customers can connect with others who share similar interests or goals in discussing the design and innovation of particular product aspects (e.g., how the button layout of a smartphone interface can be improved).</p>	<p>Connectivity may also be a useful concept to understand participation in other online communities given that it can facilitate collective action that is fundamental to online communities, e.g., the sharing of support in specific areas (e.g., knee problems) among members in health support communities.</p>
Communality	Information accessibility (e.g., Teo et al. 2003)	<p>A somewhat related construct in the previous literature is information accessibility, which refers to the way in which information is made accessible to participants in online communities, e.g., those for virtual learning (Teo et al 2003).</p> <p>However, communality extends the notion of information accessibility by considering how the ease of accessing information is enabled through a common repository to facilitate collective action.</p>	<p>The construct may be adapted to this context by capturing the extent to which the forum system can facilitate employees' access to relevant information (e.g., documents on existing work procedures and policies) for deliberating a work issue.</p>	<p>The construct may be adapted to this context by capturing the extent to which the forum system can facilitate customers' access to relevant information (e.g., product specifications) for the formulation of better product design ideas.</p>	<p>Communality may also be useful to understand motives for participation in other online communities that facilitate accumulation of information for collective action, e.g., more comprehensive support for a health issue.</p>

Discussion A – Effects of Perceived Connectivity and Communality on Political Career Benefit, Political Efficacy, Civic Skills, and Mobilization

Both perceived connectivity and communality are not expected to influence political career benefit, political efficacy, civic skills, and mobilization.

First, for political career benefit, this benefit concerns obtaining political career opportunities through gaining the attention of and connecting (vertically) with authorities, e.g., political figures and public agency representatives, via participation in OPDF. The perception of political career benefit is not likely to be enhanced by communality that facilitates information access for policy-related exchanges, or connectivity that affords horizontal communication among participants who share similar interests in deliberating a policy issue. Thus, both these IT-related factors may not enhance perceptions of political career benefit.

Second, we do not propose effects of both perceived connectivity and communality on political efficacy. As noted earlier, political efficacy, i.e., individual's belief that political change is possible, has two aspects: 1) one's confidence in own competence to contribute useful policy inputs; and 2) government will listen to citizen inputs. Both connectivity and communality (that facilitate individual participation by enabling easier communication and information access) may not change people's perceptions that government would be responsive. Thus, they are not expected to influence the overall political efficacy perception of an individual.

Third, both IT-related factors are unlikely to influence civic skills, i.e., individuals' organizational and communication abilities that they acquire through practicing different skill acts in institutional organizations such as the workplace. Last, we do not expect perceived connectivity and communality to affect mobilization. As previously noted, mobilization involves request from one's relatives, friends, acquaintances, or sometimes strangers to participate. Perceiving that the OPDF allows people to connect with others sharing similar interests, i.e., connectivity, does not imply that the individual will get a request to participate. Similarly, perception of the OPDF's ability to ease the access of information from a common source, i.e., communality, may not affect whether one receives a request to participate.

Test A – Common Method Bias Assessments

We assess if there is threat of common method bias in four ways. First, according to Harman's one-factor test, common method bias is likely if a single factor can account for a majority of the covariance in the independent and dependent variables (Podsakoff et al. 2003). Our factor analyses did not detect such a factor (the highest variance accounted for by a factor is 31%). Second, we correlated contributors' participation intention with an objective measure of their number of postings made over a three-month period. The correlation is significant (0.23, $p < 0.05$), which supports the reliability of our participation intention measure.

Third, we included a common method latent variable (Podsakoff et al. 2003), which is an unmeasured latent variable containing all the measures employed as indicators. The inclusion of this additional latent variable resulted in an increase of less than 1% in the R^2 for explaining contributors' and lurkers' participation intention. This is well below the threshold of 16-42% (Williams et al 1989) that may indicate common method bias. Fourth, we performed a modified marker variable test (Pavlou and Gefen 2005), which identifies a marker variable that is in theory weakly-related to the study's principal constructs, and assesses its correlations with items of the principal constructs. High correlations may suggest common method bias. In this study, we employed Internet experience as a marker variable given its theoretically weak relationships with our principal constructs (collective, political career, and persuasion benefits; political efficacy; civic skills; mobilization; perceived connectivity and communality of the OPDF). We found that the average correlations between Internet experience and items of the principal constructs were $r = -0.019$ (average p -value = 0.462) and $r = 0.011$ (average p -value = 0.523) for the contributors' and lurkers' samples respectively, where both are lower than the threshold in previous studies

(Pavlou et al. 2007). Based on these assessments, we can reasonably assume that common method bias is not a threat to our results. A summary of the assessment results is provided in Table A11 below.

Table A11. Summary of the Results of Assessing Common Method Bias

Test	Contributors' Sample (N = 101)			Lurkers' Sample (N = 107)		
	Harman's one-factor test	Highest variance accounted by a factor is 31.07%			Highest variance accounted by a factor is 28.95%	
Correlating participation intention with actual participation (number of postings)	Significant correlation (0.23, $p < 0.05$)			Not applicable since lurkers have not contributed any postings		
Inclusion of a common method latent variable in the research model	R ² (before)	R ² (after)	Change in R ²	R ² (before)	R ² (after)	Change in R ²
	42.5%	43.0%	0.5%	41.6%	41.7%	0.1%
Marker variable test (Internet experience was used as a marker variable for the test)	Average correlation between Internet experience and items of the study's principal constructs = -0.019 (average p-value = 0.462)			Average correlation between Internet experience and items of the study's principal constructs = 0.011 (average p-value = 0.523)		

Additional References

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Figure A. Research Model for the Antecedents of Contributors' and Lurkers' Participation

Notes: All hypotheses are in the positive direction. * H8-10 are hypothesized for both contributors and lurkers.

