



EXPERT BLOGS AND CONSUMER PERCEPTIONS OF COMPETING BRANDS

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Appendix A

Summary of Literature on Brand-Related Implications of Social Media and Comparison with this Study

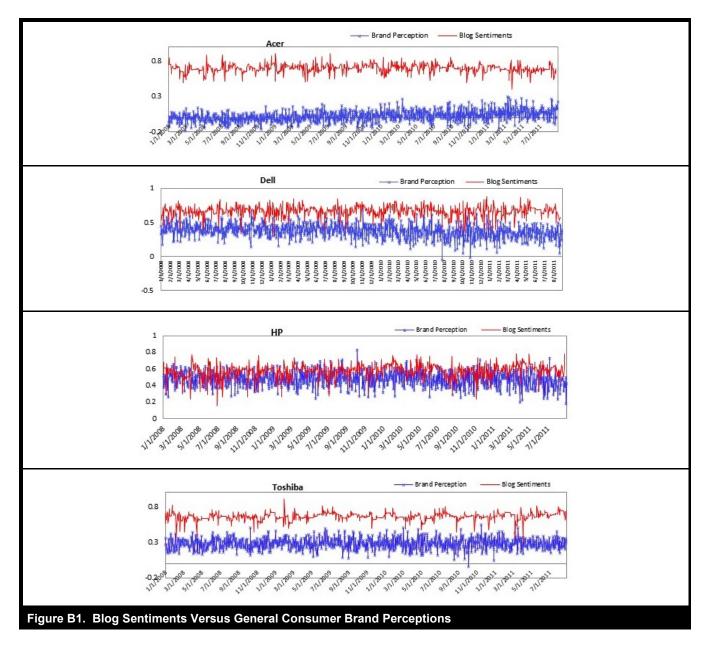
Authors (Year)	Objective	Relevance	Methodology and Data	Single-Firm/ Multiple-Firm Focus	Consideration of Expert Blogs	Consideration of Competitive Property	Consideration of Dynamic	Consideration of Asymmetric	Implications
Corstjens and Umblijs (2013)	Develop a set of social media indicators that incorporate social media participant sentiments on a brand and its competitors, and use the indicators to predict sales	Consider social media participants' mentions of brand names as parts of the proposed social media rating parameters	Multivariate time series regression (data from a manufacturer for flat screen TVs and an Internet broadband service provider)	Multiple firms	х	√ (only to a limited extent by con- sidering the mentioning of competing brand names in analyzing social media content)	X	X	 Developed a manageable set of social media rating parameters Social media, whether they are positive, neutral, or negative, have a signi- ficant effect on sales The effect of social media on sales depends on product category and industry competition

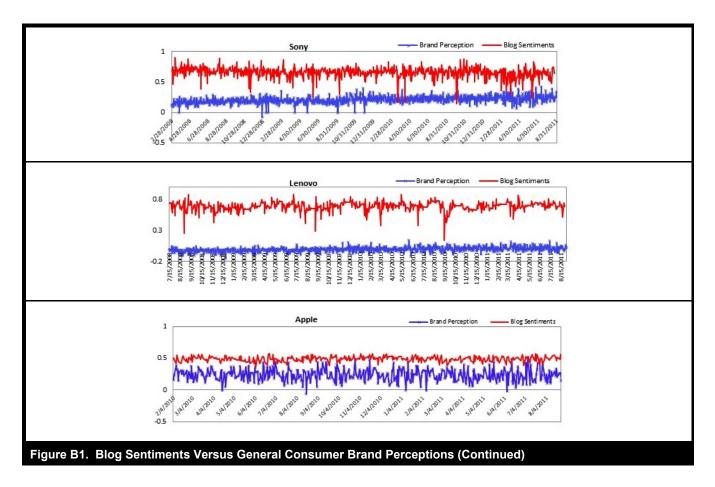
Authors (Year)	Objective	Relevance	Methodology and Data	Single-Firm/ Multiple-Firm Focus	Consideration of Expert Blogs	Consideration of Competitive Property	Consideration of Dynamic	Consideration of Asymmetric	Implications
Goh et al. (2013)	Investigate the impact of social media contents in brand community that are generated by consumers and marketers on consumers' repeated apparel purchase expenditures	Getting customers to repeatedly deal with a firm is an important precursor of brand building	Qualitative and quanti- tative analysis based on propensity score matching technique with difference-in- differences approach (data comprising social media contents and customers' purchase records from fan pages)	Single firm	x	x	×	x	 Engagement in social media leads to a positive increase in purchase expenditures Social media contents affect consumer pur- chase behavior through embedded information and persuasion Contents contributed by consumers exhibit a stronger impact than contents contributed by marketers on consumer purchase behavior
Laroche et al. (2013)	Examine how the setting up of a social media brand community may bring forth enhanced customers' brand loyalty	Focus on brand loyalty as the outcome	Survey (441 respon- dents who are members of social media brand communities)	No specific focus on a particular firm	Х	X	x	X	The setting up of a brand community enhances relationships with custo- mers, which in turn promote brand trust and eventually improve brand loyalty
Luo et al. (2013)	Examine the effect of social media (blogs and consumer ratings) on firm equity value, and its relative impact compared to conventional online behavioral metrics	A firm's equity value is highly associated with its brand equity	Vector auto- regressive models (a combina- tion of data from Alexa.com, Google Insights for Search, CNet)	Multiple firms	√ (not explicitly mentioned, but they considered blogs from sources such as Techcrunch and Engadget where expert blogs are prevalent)	X	×	x	 Social media metrics are leading predictors of firm equity value, more so than conventional online behavioral metrics (e.g., search engines) Social media has a faster predictive value, i.e., shorter "wear-in" time, than conventional online media
Naylor et al. (2012)	Investigate whether revealing information of a brand's online supporters would affect its other consumers' per- ception about the brand	Examine how consumers evaluate a brand	Laboratory experiments (scenario- based, non- field data)	Multiple firms	x	\checkmark	X	X	 Demographic information of brand supporters on a social media website will influence a target consu- mer's brand evaluations and purchase intentions, even when the presence of these supporters is only passively experi- enced and virtual Framework for brand managers when deciding whether to reveal the identities of their online

Authors (Year)	Objective	Relevance	Methodology and Data	Single-Firm/ Multiple-Firm Focus	Consideration of Expert Blogs	Consideration of Competitive Property	Consideration of Dynamic	Consideration of Asymmetric	Implications
									supporters based on: (1) the composition of existing supporters relative to targeted new supporters; (2) whether the brand is evaluated singly or in combination with rival brands
Rishika et al. (2013)	Examine the effect of customer s' participation in a firm's social media brand community on the intensity of relationship between the firm and its customers	Interaction between firms and its customers may cultivate/ enhance brand image	Propensity score matching technique in combination with difference-in- differences analysis	Single firm	x	X	X	×	There are positive links between customers' participation in a firm's social media brand community and the intensity of customer-firm interactions
Schweidel and Moe (2014)	Propose metrics to measure brand sentiments based on social media content	Assessment of brand sentiments	Content analysis of comments posted by consumers (data from various social media platforms)	Multiple firms (in sepa- rate indus- tries: an enterprise software firm and a telecom- munication s firm)	(Although the study considers blogs, it is not stated whether they are expert blogs)	X	X	x	 Comments contributed to different social media types vary in the senti- ment expressed and their focal topic (i.e., the product and attribute referenced) Inferences obtained from monitoring social media are dependent on which type of social media is of focus
Singh and Sonneburg (2012)	Suggest how firms should engage social media for better brand performances	Ways of improving consumer brand perception are proposed	Qualitative analysis based on an improvisation theater model (data from various social media campaigns)	Multiple firms	x	X	x	x	 Show that social media brand owners do not tell brand stories alone but co-create brand perfor- mances in collaboration with the consumers Offers a semantic framework that demon- strates the necessity of co-creation in storytelling, and identifies the core of an inspiring story
This study	Examine the competitive relationships between expert blog and general consumer brand perception, taking into considera- tions the dynamic and asymmetric nature of the relationships between leading vs. non-leading brands	Focus on general consumer brand perception	Vector auto- regressive model (data combining online expert blogs, and offline general consumer perception of the brands at a daily level)	Multiple firms	~	V	~	√	 Expert blogs on a brand not only have a positive relationship with consu- mer perception about the brand, but also a nega- tive relationship with that of its competitors Demonstrate the dyna- mics in the influences of expert blogs Highlight the asymmetric nature of the competitive and dynamic influences of expert blogs between leading and a non- leading brands

Appendix B

Data Illustrations





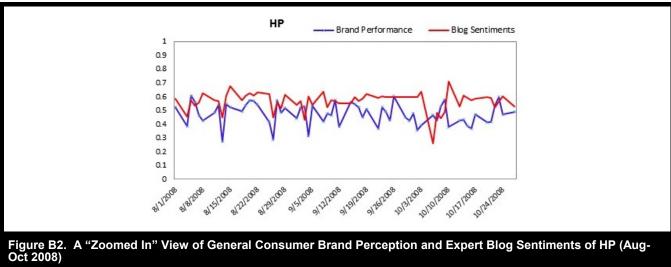
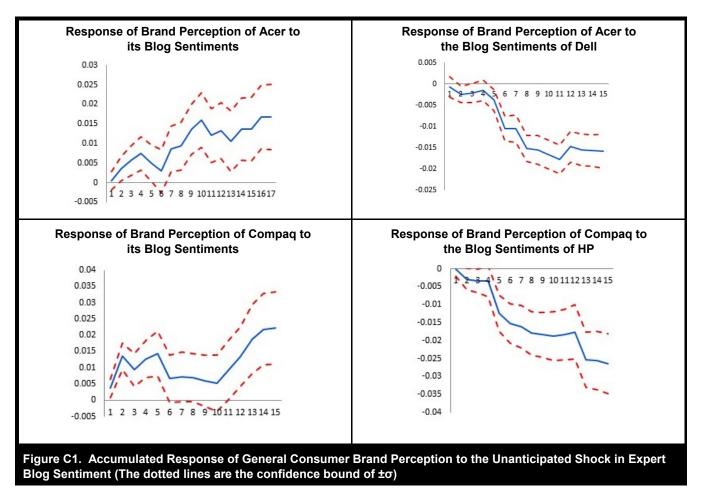


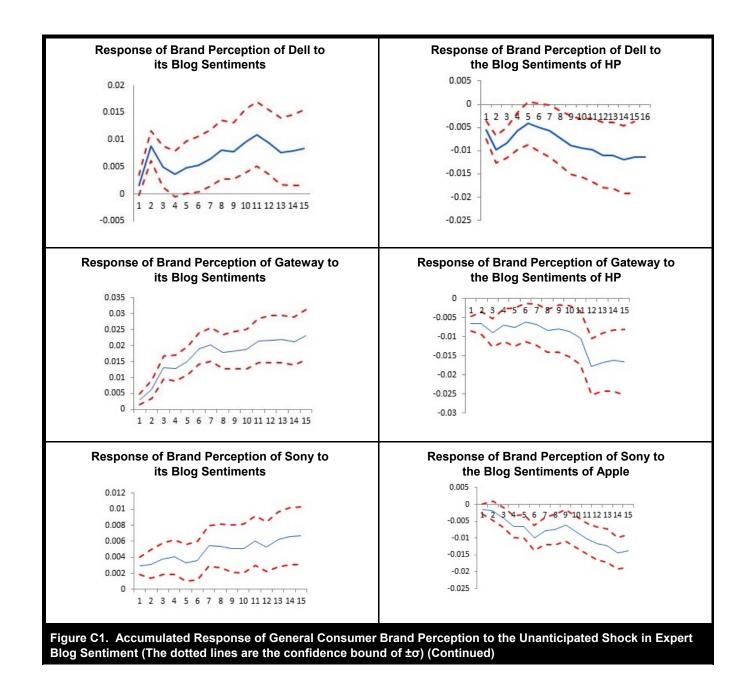
Table B1. Summary Statistics of Monthly Advertising Spending for Each Brand							
Variable	Mean	Std Dev	Minimum	Maximum			
adAcer	904.41	853.56	0	3910.20			
adApple	7164.56	8370.80	0	23663.50			
adCompaq	344.31	618.82	0	2527.10			
adDell	21644.54	12177.05	5175.30	65393.60			
adGateway	64.08	233.62	0	1427.30			
adHp	16105.97	7679.38	3828.50	39194.80			
adLenovo	1888.35	3368.74	1.80	19445.10			
adSony	1367.16	2134.83	0.10	8222.60			
adToshiba	2245.43	1946.97	54.30	9780.40			

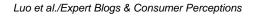
Note: Based on ad\$pender by Kantar Media, in thousands.

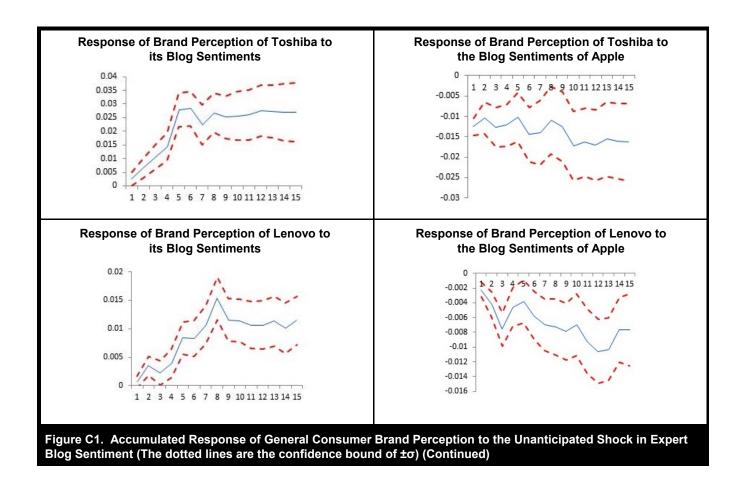
Appendix C

More Impulse Response Functions









Appendix D

Robustness Tests

Models 1a: VARX Model with Expert Blog Sentiments Only

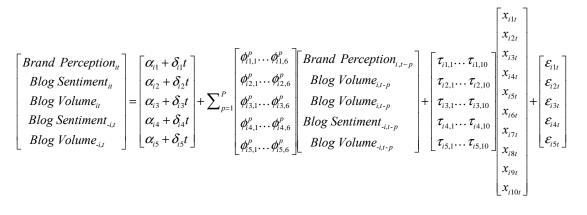
$$\begin{bmatrix}Brand \ Perception_{it}\\Blog \ Sentiment_{it}\\Blog \ Sentiment_{jt}\end{bmatrix} = \begin{bmatrix}\alpha_{i1} + \delta_{i1}t\\\alpha_{i2} + \delta_{i2}t\\\alpha_{i3} + \delta_{i3}t\end{bmatrix} + \sum_{p=1}^{p} \begin{bmatrix}\phi_{i1,1}^{p} \dots \phi_{i1,3}^{p}\\\theta_{i2,1}^{p} \dots \phi_{i3,3}^{p}\end{bmatrix} \begin{bmatrix}Brand \ Perception_{i,t-p}\\Blog \ Sentiment_{i,t-p}\\Blog \ Sentiment_{j,t-p}\end{bmatrix} + \begin{bmatrix}\tau_{i1,1} \dots \tau_{i1,10}\\\tau_{i2,1} \dots \tau_{i2,10}\\\tau_{i3,1} \dots \tau_{i3,10}\end{bmatrix} \begin{bmatrix}x_{i4t}\\x_{i5t}\\x_{i6t}\\x_{i7t}\\x_{i8t}\\x_{i9t}\\x_{i10t}\end{bmatrix}$$

where i (i = 1, 2, ...9) represents the focal brand, t represents time, p is lag length, and P is maximum lags. α_{ik} (k = 1, 2, 3) denotes the constant. δ_{ik} , $\varphi_{ik,1}^p \tau_{ik,s}$ (k, l = 1, 2, 3, s = 1, 2...10) are coefficients: δ_{ik} reflects the seasonality effect, $\varphi_{i1,2}^p$ is the coefficient of the expert blog sentiment of brand i p days ago on the current brand perception, $\varphi_{i1,3}^p$ is the coefficient of the expert blog sentiment of brand j ($i \neq j$) p days ago on the current focal brand i's perception, $\varphi_{i2,1}^p$ and $\varphi_{i3,1}^p$ reflect the feedback effect, and $\varphi_{i2,2}^p$ and $\varphi_{i3,3}^p$ denote the reinforcing effect of the past blog sentiment on the current one. ε_k (k = 1, 2, 3) represents the white-noise residual. x_{ist} (s = 1, 2...10) represents the exogenous variables.

Models 1b: VARX Model with Expert Blog Volume Only

$$\begin{bmatrix}Brand \ Perception_{it}\\Blog \ Volume_{it}\\Blog \ Volume_{jt}\end{bmatrix} = \begin{bmatrix}\alpha_{i1} + \delta_{i1}t\\\alpha_{i2} + \delta_{i2}t\\\alpha_{i3} + \delta_{i3}t\end{bmatrix} + \sum_{p=1}^{p} \begin{bmatrix}\phi_{i1,1}^{p} \dots \phi_{i1,3}^{p}\\\phi_{i2,1}^{p} \dots \phi_{i2,3}^{p}\\\theta_{i3,1}^{p} \dots \phi_{i3,3}^{p}\end{bmatrix} \begin{bmatrix}Brand \ Perception_{i,t-p}\\Blog \ Volume_{i,t-p}\\Blog \ Volume_{j,t-p}\end{bmatrix} + \begin{bmatrix}\tau_{i1,1} \dots \tau_{i1,10}\\\tau_{i2,1} \dots \tau_{i2,10}\\\tau_{i3,1} \dots \tau_{i3,10}\end{bmatrix} \begin{bmatrix}x_{i1t}\\x_{i2t}\\x_{i3t}\\x_{i6t}\\x_{i7t}\\x_{i8t}\\x_{i9t}\\x_{i10t}\end{bmatrix} + \begin{bmatrix}\varepsilon_{i1t}\\\varepsilon_{i3t}\\z_{i3t}\\z_{i9t}\\x_{i10t}\end{bmatrix}$$





where Blog Sentiment_i, (Blog Volume_i,) are the average blog sentiment (blog volume) of all other brands than i at time t.



$$\begin{bmatrix}Brand \ Perception_{it}\\Blog \ Pos \ Volume_{it}\\Blog \ Neg \ Volume_{i,t}\\Blog \ Neg \ Volume_{i,t}\end{bmatrix} = \begin{bmatrix}\alpha_{i1} + \delta_{i1}t\\\alpha_{i2} + \delta_{i2}t\\\alpha_{i3} + \delta_{i3}t\\\alpha_{i4} + \delta_{i4}t\\\alpha_{i5} + \delta_{i5}t\end{bmatrix} + \sum_{p=1}^{p} \begin{bmatrix}\phi_{i1,1}^{p} \cdots \phi_{i1,6}^{p}\\\phi_{i2,1}^{p} \cdots \phi_{i2,6}^{p}\\\beta_{i3,1}^{p} \cdots \phi_{i3,6}^{p}\\Blog \ Neg \ Volume_{i,t-p}\\Blog \ Neg \ Volume_{i,t-p}\end{bmatrix} + \begin{bmatrix}\tau_{i1,1} \cdots \tau_{i1,10}\\\tau_{i2,1} \cdots \tau_{i2,10}\\\tau_{i3,1} \cdots \tau_{i3,10}\\\tau_{i4,1} \cdots \tau_{i4,10}\\\tau_{i5,1} \cdots \tau_{i5,10}\end{bmatrix} \begin{bmatrix}\varepsilon_{i1t}\\\varepsilon_{i2t}\\\varepsilon_{i3t}\\\varepsilon_{i4t}\\\varepsilon_{i5t}\end{bmatrix}$$

Table D1. A								Modeled S	eparately
Panel A: Res	oonses of G					-			
		Res	sponse of g	eneral consu	mer brand				
Expert Blog Sentiment	ACER	COMPAQ	DELL	GATEWAY	HP	SONY VAIO	тозніва	LENOVO	Apple MAC
ACER	0.044**	-0.063***	-0.032**	-0.049**	-0.026*	-0.083**	-0.046*	-0.032*	-0.032
COMPAQ	-0.015**	0.057***	-0.008*	-0.026**	-0.017*	-0.021*	-0.023*	-0.014**	-0.015**
DELL	-0.018**	-0.033**	0.051**	-0.057**	-0.066**	-0.026***	-0.053***	-0.011**	-0.035***
GATEWAY	-0.012**	-0.033***	-0.008***	0.062**	-0.010*	-0.022**	-0.032**	-0.005***	-0.014*
HP	-0.021*	-0.034**	-0.017***	-0.070**	0.054**	-0.069**	-0.049**	-0.016*	-0.018**
SONY VAIO	-0.011**	-0.032*	-0.015**	-0.061***	-0.022**	0.057**	-0.107***	-0.009*	-0.012*
TOSHIBA	-0.011***	-0.021*	-0.016***	-0.041*	-0.010***	-0.044***	0.068***	-0.021*	-0.018
LENOVO	-0.015**	-0.022**	-0.019*	-0.045**	-0.007*	-0.055*	-0.044***	0.052*	-0.019*
Apple MAC	-0.008***	-0.046*	-0.017*	-0.033***	-0.008**	-0.027**	-0.021*	-0.012**	0.015*
Note: The diago								e off-diagonal	estimates
are impulse resp					orands. *p <	< .10, ** <i>p</i> < .05	5, *** <i>p</i> < .01.		
Panel B: Aut	o-Regressio	on of Expert	Blog Sentir	nents					
			Respon	se of expert l	olog senti	ment			
Expert Blog						SONY			Apple
Sentiment	ACER	COMPAQ	DELL	GATEWAY	HP	VAIO	TOSHIBA	LENOVO	MAC
ACER	0.266***	0.019*	-0.068**	-0.031**	-0.015*	-0.022**	-0.014*	-0.082***	-0.025***
COMPAQ	-0.038*	0.110***	-0.065*	-0.023***	-0.011*	-0.031***	-0.018*	-0.030*	-0.003*
DELL	-0.033***	-0.004	0.231***	-0.035**	-0.059*	-0.017**	-0.058***	-0.014***	-0.052***
GATEWAY	-0.051***	-0.023***	-0.039*	0.156***	-0.026**	-0.015**	-0.017*	-0.014*	-0.012
HP	-0.048***	-0.002*	-0.044***	-0.025*	0.249***	-0.025***	-0.014***	-0.033*	-0.024**
SONY VAIO	-0.029***	-0.042***	-0.062***	-0.027**	-0.018	0.170***	-0.033*	-0.048*	-0.016***
TOSHIBA	-0.043***	-0.010**	-0.059***	-0.023*	-0.046**	-0.008**	0.188***	-0.052***	-0.015*
LENOVO	-0.034***	-0.014*	-0.065***	-0.034**	-0.048**	-0.057***	-0.066***	0.217***	-0.022*
Apple MAC	-0.071*	-0.019	-0.068***	-0.099***	-0.070*	-0.022	-0.055	-0.039	0.082***
Panel C: Res	ponses of (-			
		Res	sponse of g	eneral consu	mer brand		1		
Expert Blog						SONY			Apple
Volume	ACER	COMPAQ	DELL	GATEWAY	HP	VAIO	TOSHIBA	LENOVO	MAC
ACER	0.023***	-0.018**	-0.007**	-0.024***		-0.018***	-0.007*	-0.004**	-0.016*
COMPAQ	-0.005*	0.028**	-0.025***	-0.025**	-0.009**	-0.003*	-0.010**	-0.003*	-0.015
DELL	-0.012**	-0.018*	0.019**	-0.018*	-0.016*	-0.021*	-0.015***	-0.013***	-0.031*
GATEWAY	-0.017***	-0.008	0.015**	0.024***	-0.010**	0.009**	-0.012*	-0.009**	-0.016
HP	-0.014**	-0.012	-0.017***	-0.019*	0.021**	-0.013**	-0.023**	-0.011**	-0.019*
SONY VAIO	-0.012*	-0.008***	0.016**	-0.016***	-0.005	0.023***	-0.018	-0.012*	-0.009*
TOSHIBA	-0.011*	-0.009**	-0.008*	-0.007	-0.009	0.014**	0.027**	-0.007**	-0.021**
LENOVO	-0.004**	-0.015***	-0.008*	-0.018**	-0.012**	0.012*	-0.014**	0.018**	-0.017
Apple MAC	0.026***	-0.014*	-0.016**	-0.012**	0.024***	-0.011***	-0.021**	-0.008**	0.043*
Note: The diagonal									

Table D1. Additional VARX Model Results with Expert Blog Sentiments and Volume Modeled Separately (Continued)

Panel D: Aut	Panel D: Auto-Regression of Expert Blog Volumes								
	Response of expert blog volume								
Expert Blog Volume	ACER	COMPAQ	DELL	GATEWAY	НР	SONY VAIO	TOSHIBA	LENOVO	Apple MAC
ACER	1.417***	-0.118*	0.729**	0.353***	-0.360**	-1.212	-0.739**	0.589*	3.687
COMPAQ	-0.066	0.347***	-0.436***	-0.259*	0.262	-0.458	-0.558**	-0.225	-1.700*
DELL	0.877**	-0.092**	3.525***	-0.369***	1.197***	2.854***	1.065**	-0.646**	-6.993**
GATEWAY	-0.250*	-0.873**	-0.297*	0.613***	-0.129*	0.946***	-0.462***	-0.240*	-1.209*
HP	0.556**	0.057**	1.219**	-0.108*	3.658***	-2.212**	0.435**	-0.383**	3.896*
SONY VAIO	-0.311*	-0.065*	-0.392**	-0.044*	-0.537*	2.735***	0.703***	-0.283	1.401
TOSHIBA	0.409**	-0.029	-0.247**	-0.138**	-0.113	1.429**	1.634***	-0.177***	3.960*
LENOVO	0.494	0.141***	-0.360*	0.173*	-1.136*	1.463***	-0.281*	1.243***	-1.719
Apple MAC	-1.318***	-0.204*	1.830*	-0.474***	-0.221	-2.615***	-1.197**	-0.167**	8.105***
J J	Note: The diagonal shows the carry-over effects of blog volume of <i>own</i> brand, and the off-diagonal estimates are impulse responses to the past blog volume of <i>rival</i> brands. * $p < .10$, ** $p < .05$, *** $p < .01$.								

Table D2. Additional VARX Model Robustness Test of the Industry Spillover Effects

Panel A: Impulse Response of Brand Perception to Unanticipated Shock in Blog Sentiments (Volume) of its Own Brand and the Industry Spillover Effects

Expert Blog Sentiment (Volume)	Brand Perception of Own Brand	Industry Spillover Effects		
ACER	0.007** (0.010**)	-0.006** (-0.007**)		
DELL	0.009*** (0.008*)	-0.008 (-0.006*)		
HP	0.012** (0.013**)	-0.006* (-0.016***)		
LENOVO	0.007*** (0.006*)	-0.005** (-0.007**)		
COMPAQ	0.021*** (0.017**)	-0.015*** (-0.010**)		
GATEWAY	0.017** (0.010**)	-0.010* (-0.018*)		
SONY VAIO	0.012** (0.014***)	-0.012* (-0.009***)		
TOSHIBA	0.015** (0.016***)	-0.010* (-0.009**)		
Apple MAC	0.019** (0.018***)	-0.020** (-0.009*)		
	Blog Sentiments (Volume) to itself and the	Industry Spillover Effects		
Expert Blog Sentiment (Volume)	Expert Blog Sentiment (Volume) of Own Brand	Industry Spillover Effects		
ACER	0.068*** (2.160***)	-0.012** (-0.178**)		
DELL	0.103*** (3.112***)	-0.010* (-0.318*)		
HP	0.107*** (2.928***)	-0.008* (-0.189**)		
LENOVO	0.072*** (1.108***)	-0.007* (-0.674***)		
COMPAQ	0.104*** (0.326**)	-0.025** (-0.059**)		
GATEWAY	0.199*** (0.682***)	-0.022** (-0.168***)		
SONY VAIO	0.126*** (3.424***)	-0.021** (-0.225*)		
TOSHIBA	0.105*** (2.260***)	-0.013** (-0.225***)		
Apple MAC	0.021*** (13.281***)	-0.017*** (-4.741***)		