5-20-2011

If they Trust our E-commerce Site, Will They Trust our Social Commerce Site Too? Differentiating the Trust in E-commerce and S-commerce: The Moderating Role of Privacy and Security Concerns

Gaurav Bansal
University of Wisconsin - Green Bay, bansaig@uwgb.edu

Lijun Chen
University of Wisconsin - Green Bay, chenl10@uwgb.edu

If they Trust our E-commerce Site, Will They Trust our Social Commerce Site Too? Differentiating the Trust in E-commerce and S-commerce: The Moderating Role of Privacy and Security Concerns

Gaurav Bansal
University of Wisconsin – Green Bay
bansalg@uwgb.edu

Lijun Chen
University of Wisconsin – Green Bay
chenl10@uwgb.edu

ABSTRACT
This study ventures into the new domain of s-commerce. It studies the moderating impact of the four privacy concern dimensions (collection, secondary use, improper access and errors) and security concerns on trust between e-commerce and s-commerce sites of e-vendors. Several studies have examined privacy concern; however, the knowledge pertaining to the role of its individual dimensions is very limited. This study involves 270 students studying in a Midwestern University. The data were analyzed using median split. Analyses were conducted using multi variate concern factors. The study reveals several interesting findings. It suggests that users trust e-commerce sites more than s-commerce ones. More interestingly, the findings reveal that the Internet users have largely freed their trust formation from the limiting hives of collection and secondary usage concerns. The findings also signaled a strong support for the role of concerns related to *improper access* and *errors* in trust formation. According to the results the users trust, in general, is impacted by their *error* concerns. However, their *improper access concerns* impact their trust differently. They lower their trust in s-commerce sites, but not in e-commerce sites. Theoretical and practical implications of these findings are discussed.

Keywords (Required)
Privacy concern, Security concern, Trust, s-commerce, e-commerce

INTRODUCTION
On August 2, 1776 when most of the 55 members of the Continental U.S. Congress signed the parchment copy of the Declaration of Independence (http://www.historyplace.com/specials/calendar/august.htm), they would not have thought that 234 years later, in August 2010, U.S. Internet users would spend 41.1 billion minutes on Facebook, surpassing Google Inc.'s 39.8 billion minutes for the first time (Dow Jones Newswires 2010). This is a harbinger of a new trend. With its 500 million members plus behemoth size, the social networking site, Facebook, is increasingly engaging in a growing number of partnerships with online retailers. Going big with Facebook, Dow Jones Newswires (2010) contends that it will be one of the top-three channels for all retailers in near future.

Social commerce (s-commerce) made a formal launch on July 29, 2009 when1-800-Flowers.com opened the first Facebook store (Stuth and Mancose 2010, Dow Jones Newswires 2010). So what is s-commerce, and how does it differ from e-commerce? The e-commerce is electronic commerce whereby people individually buy stuff online while s-commerce is about utilizing the social media to build a personal relationship by creating a sense of shared values and community between products and markets by reaching out to people in the intimate and comfortable setting of online social media sites. S-commerce is also about projecting the brand, product or service through online channels such as Facebook to feel like a member of one's own family or extended community. This is definitely a new way to break through the clutter of messaging and product options. We adapt this definition of s-commerce from the views of Stuth and Mancose (2010).

Trust and e-commerce go hand in hand. The primary interface in e-commerce is a website, and the buyers don't actually physically know the sellers, unlike the traditional business, hence the role of trust in e-commerce becomes even more important (Gefen et al. 2003). The trust in e-commerce is negatively impacted by privacy (Bansal et al. 2010) and security concerns (Bansal 2011). Almost 70 percent of Facebook users and 52 percent of Google users are somewhat or very concerned about privacy while using both services (PCMag.com 2011). It is also reported that 75 percent of U.S. adults are at least somewhat concerned about Internet security (PCWorld.com 2009). These concerns have been acknowledged to hamper the development of e-commerce (Hu et al. 2010), and could prevent s-commerce from reaching its full potential.

In the following sections of this paper we provide review of literature and hypotheses examined in this study, research methodology and data analysis. Results are presented next, followed by discussion and conclusion.

LITERATURE REVIEW AND HYPOTHESES

This paper draws from multidisciplinary literature i.e. Sociology, Psychology, Marketing and of course Information Systems, as shown in Table 1 below.

Discipline	Connection	Theory & Description
Sociology	Social commerce	Social network theory suggests that the attributes of individuals are less important than their relationships and ties with other actors within the network (Freeman 1979).
Psychology	Trust	Trust could be best conceptualized as a social and psychological construct which has cognitive, behavioral and affective dimensions (Lewis and Weigert 1985).
Economics/ Marketing	Merchants & commerce Reputation	The notions of commerce (e-commerce or s-commerce) and merchant reputation are Economics at best, and Marketing for sure.
Information Systems	Privacy Concerns	Websites rely purely on exchange of information. The involvement of information also gives rise to issues related to its proper handling.
	Security Concerns	

Table 1. Multidisciplinary nature of the research

Privacy concern has been defined as the degree of control one has over one's information (Bansal et al. 2010). Smith et al. (1996) identified four dimensions of privacy concern namely: (a) collection, (b) unauthorized secondary use, (c) unauthorized access, and (d) errors. However, to date the individual examination of the privacy concern factors is rare (example Bansal and Davenport 2010). Table 2 briefly defines the privacy and security concern dimensions.

Concern	Dimension	Description
Privacy Concerns (PC)†	Collection (ColCon)	Collecting too much information on the users
	Secondary Use (SecUseCon)	Usage of the user information for other purposes, without the users' approval
	Improper Access (IACon)	Unauthorized access to the user information
	Errors (ErrCon)	Errors in the user information
Security Concern (SC)††	Authentication	Verification of the correct user and the website
	Confidentiality	Hiding the information from unauthorized viewing
	Integrity	Preventing the data from getting corrupted
	Non repudiation	Obtaining the receipt of the transaction

Table 2. Privacy & Security concern factors (†Smith et al. 1996 and ††Bansal and Zahedi 2010)

For this study, however, we are interested in examining the role of security concerns related to sending information over the Internet in general. Both privacy (Bansal et al. 2010) and security concerns (Bansal 2011) have been argued to lower trust in a website. The research model of the study is presented in Figure 1.

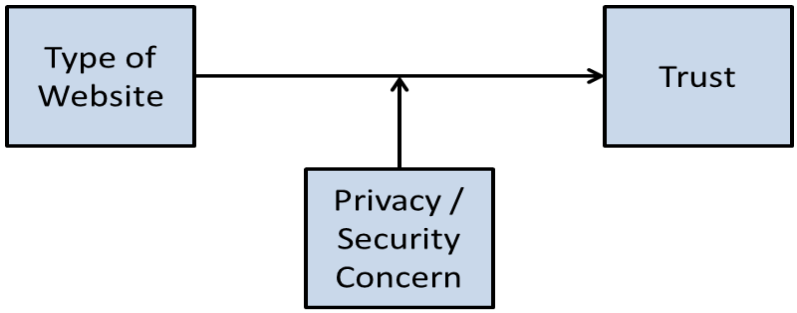


Figure 1. The Research Model

Facebook has had many privacy lapses (Bradshaw and Gelles 2010). Ability is a trust dimension (Bhattacherjee 2002), and inability in handling the user information adequately, would definitely undermine the user trust in the site. Thus we argue that

users would generally regard Facebook as less privacy protective in general, and hence would trust the s-commerce site less as compared to the corresponding e-commerce site. Thus, based on our argument that privacy and security concerns lower trust, and that users trust s-commerce sites less than e-commerce sites, we hypothesize the following.

Hypothesis 1: Users trust e-commerce sites more than s-commerce sites.

Hypothesis 2: Security concern (SC) moderates the trust in a website such that (i) the higher concern would lead to lower trust, (ii) more so for an s-commerce site than an e-commerce site.

Hypothesis 3: Collection concern (ColCon) moderates the trust in a website such that (i) the higher concern would lead to lower trust, (ii) more so for an s-commerce site than an e-commerce site.

Hypothesis 4: Secondary use concern (SecUseCon) moderates the trust in a website such that (i) the higher concern would lead to lower trust, (ii) more so for an s-commerce site than an e-commerce site.

Hypothesis 5: Improper access (IACon) concern moderates the trust in a website such that (i) the higher concern would lead to lower trust, (ii) more so for an s-commerce site than an e-commerce site.

Hypothesis 6: Error concern (ErrCon) moderates the trust in a website such that (i) the higher concern would lead to lower trust, (ii) more so for an s-commerce site than an e-commerce site.

RESEARCH METHODOLOGY

Participants were students in a Midwestern university. The sample is appropriate for this study since highest levels of Internet use are by age group 24 or younger (Digital Future Report 2004). Moreover, it has been noted that the younger generation is more dependent on the Internet and is the primary population using Internet (Bansal et al. 2010). The participants were shown a website which was randomly selected from a pool of six websites: (a) sony.com, (b) hp.com, (c) Lenovo.com, (d) facebook.com/sony (e) facebook.com/hp and (f) facebook.com/Lenovo. The home pages of the websites shown are presented in table 4. Next, the participants were quizzed on the website they viewed to make sure that they had given some thought to the website. They then filled out the instrument online. The items were adapted from the following sources. PC: Malhotra et al. 2004, Smith et al. 2006, SC: Pavlou et al. 2007, Trust: Gefen et al. 2003, Design: Zhou et al. 2009; Trust propensity: Hui et al. 2007; Reputation: Zahedi and Song 2008. A total of 270 observations were collected, 26 were deleted because they failed the website quiz. Thus the analysis was performed with a total of 244 usable observations. The demographics are briefly explained in Table 3.

	Number of Responses	Range (years)	Mean	Std Deviation
Males (Age in years)	110	19-55	23.100	5.676
Females (Age in years)	133	19-31	21.068	2.023

Table 3. Demographics

We have adapted the security concern items from Pavlou et al. (2007) and have modified them to reflect concerns related to sending information over the Internet in general. Prior research has demonstrated that website design, reputation and one's trust propensity could impact the level of one's trust in a website, hence we have controlled for these in our study.

DATA ANALYSIS

We examined the items for reliability and validity. Reliability was examined by computing Cronbach alpha and Composite Factor Reliability (Table 5). All the constructs exceeded the required threshold of .70 (Song and Zahedi 2005). Discriminant and Convergent validity were examined by conducting EFA, and also by comparing construct correlations with square root of AVE (Table 4). We also examined the items' correlation with the general item for each construct. The high correlations further established the uni-dimensionality of the items. EFA revealed that the items within each construct had high loadings (more than .70). This provides support for convergent validity. All the items (except for one, which had cross loading of .50) demonstrated low cross loadings (less than .40) as well. This provides support for discriminant validity. We examined the common method variance using the Harman single factor test. No issues were found. The items for each construct were then used to compute multivariate factors (MVF) by averaging the item scores.

We created high and low factors of the privacy and security concerns by using median split. Trust (measured as MVF) was the dependent variable; the factors were the high-low privacy and security concerns. To examine the effect of s-commerce vs.

Multivariate Factor		1	2	3	4	5	6	7	8	9
Trust	1	**0.830**								
ColCon	2	0.000	**0.890**							
SecUseCon	3	-0.099	0.685	**0.824**						
IACon	4	-0.122	0.248	0.385	**0.844**					
ErrCon	5	-0.204	0.082	0.210	0.646	**0.870**				
SC	6	-0.218	0.298	0.267	0.327	0.428	**0.855**			
TruProp	7	0.147	0.084	0.061	0.030	0.033	-0.172	**0.915**		
Des	8	0.568	0.025	0.030	0.057	0.055	-0.054	0.136	**0.800**	
Rep	9	0.525	0.035	-0.103	-0.011	-0.054	-0.199	0.048	0.443	**0.857**

Table 4. Construct correlations and square root of AVE

* diagonal values are square root of AVE

<>

Construct	Items Used	Cronbach alpha	CFR
Trust	1-3	.905	.870
Collection	1-3	.939	.920
Secondary use	1-3	.948	.864
Improper access	1-3	.910	.881
Error concern	1-3	.950	.903
Security concern	1-3	.948	.890
Design	1-3	.822	.842
Reputation	1-3	.887	.892
Trust propensity	1-2	.834	.911

Table 5. Reliability

<>

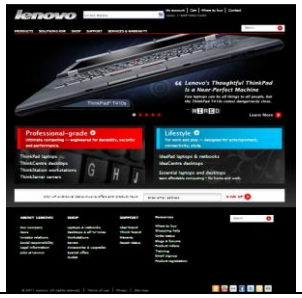
		
Facebook.com/Sony	**Facebook.com/HP**	**Facebook.com/Lenovo**
		
Sony.com	**HP.com**	**Lenovo.com**

Table 6. Screen shots of the home pages of the sites shown to the participants

e-commerce, a binary variable capturing whether the participant viewed and responded to an e-commerce vs. a s-commerce site (FborCo) was also factored in the Anova analysis. We controlled for the site design, reputation and trust propensity of the participants, by using their MVFs as the covariates. We also examined the data discretely for those participants who viewed and responded to Facebook sites only (FB only), and those who viewed and responded to e-commerce sites (Co only) separately.

RESULTS

The results were analyzed using Anova approach, and are presented in Table 7. Trust is shown on the vertical axis. The horizontal axis represents the *low* (left side) - *high* (right side) privacy and security concern factors. Each graph is followed by the p values for various tests: (a) p value for FBorCo. This p value tests H1; (b) p value for the overall concern factor for the cumulative dataset comprising of both FB only and CO only participants. This p value tests the first part of H2-H6 i.e. H2(i) - H6(i); (c) p values for the *FB only* participants, and lastly (d) the p values for the *Co only* participants. Comparison of the significance of (c) and (d) tests the second part of H2-H6 i.e. H2(ii)- H6(ii).

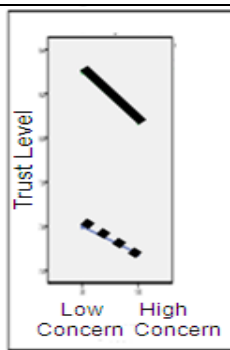
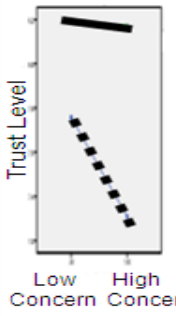
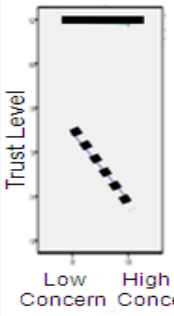
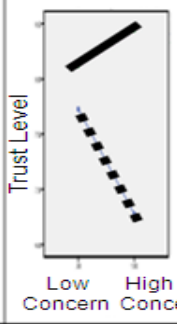
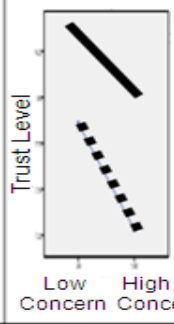
				
#1.Security Concern	#2.Collection Concern	#3.Secondary Concern	#4.Improper Access	#5.Error
FBorCo: .00(**H1**) SC: FB only: CO only:	FBorCo: .00(**H1**) ColCon: FB only: CO only	FBorCo: .00(**H1**) SecUseCon: FB only: CO only	FBorCo: .00(**H1**) IACon: FB only: .01(**H5ii**) CO only	FBorCo: .00(**H1**) ErrCon: .01(**H6i**) FB only: CO only

Table 7. Results*

*Note: Dark lines represent e-commerce sites, dotted lines represent s-commerce sites

FBorCo is significant in all 5 cases at $p < .05$. Thus H1 is strongly supported. Suggesting that the users trust e-commerce sites more than the s-commerce ones. High vs. Low Security Concern-, Collection Concern- and Secondary Concern- factors do not impact trust differently in the combined dataset as well as in the individual datasets (FB only and Co only). Thus H2-H4 are not supported at all. Low improper access concern as opposed to high improper access concern does not lead to different trust levels in the combined dataset. Thus H5(i) is not supported. However, High improper access concern lowers trust significantly in FB dataset (p value = .01), as opposed to Co only dataset (p value > .05 hence not-significant). Thus supporting H5(ii). High error concern is associated with lower trust as opposed to low error concern (p value = .01) thus lending support to H6(i). However, high and low error concern do not impact trust in individual datasets (FB only and Co only), thus H6(ii) is not supported.

DISCUSSION AND CONCLUSION

The study suggests that users trust e-commerce sites more than s-commerce ones. The findings also signaled a strong support for the role of concerns related to *improper access* and *errors* in trust formation. According to the results the users trust is impacted by their *error* concerns, such that high error concern is associated with significantly lower trust in website. However, their trust in s-commerce sites is impacted by *improper access* concerns only.

The paper has theoretical and practical implications. Theoretically, the study ventures into the new domain of s-commerce. This is the first study, to the best of our knowledge, to examine user attitude pertaining to s-commerce. The paper also sheds light on the relative role of different privacy concern dimensions along with security concerns on trust. Even though several studies have examined privacy concern, the knowledge pertaining to the role of individual dimensions is very limited. E-vendors should take heed to prevent improper access to the user's information - more so on the s-commerce sites. The e-vendors should also realize that users value the integrity of their data on the vendors' servers. Assuring the users about the integrity of their data, may win the user's trust.

REFERENCES

1. Bansal, G. (2011) Understanding the Security in Privacy-Security Concerns: A Theoretical and Empirical Examination, in the proceedings of the *17th Americas Conference on Information Systems*, Detroit (forthcoming).
2. Bansal G. and Davenport R. (2010) Moderating Role of Perceived Health Status on Privacy Concern Factors and Intentions to Transact with High versus Low Trustworthy Health Websites, in the proceedings of the *5th Midwest Association for Information Systems*, Moorhead, MN.
3. Bansal, G. and Zahedi, F. M. (2010) Trading Trust for Discount: Does Frugality Moderate the Impact of Privacy and Security Concerns? in proceedings of the *16th Americas Conference on Information Systems*, Peru.
4. Bansal, G., Zahedi F.M. and Gefen, D. (2010) The Impact of Personal Dispositions on Information Sensitivity, Privacy Concern and Trust in Disclosing Health Information Online, *Decision Support Systems*, 49, 2010, 138-150.
5. Bhattacherjee, A. (2002) Individual trust in online firms: Scale development and initial test, *Journal of Management Information Systems*, 19, 1, 211-241.
6. Bradshaw, T. and Gelles, D. (2010) Facebook admits app data privacy concerns, *Financial Times*, London (Oct 19), p 24.
7. Digital Future Project 2010, available at: http://www.digitalcenter.org/pdf/2010_digital_future_final_release.pdf [last accessed Feb 23, 2011].
8. Dow Jones Newswires (2010) Facebook Sees Social Commerce Reaching Tipping Point, September 28.
9. Freeman, L. C. (1979) Centrality in Social Networks: Conceptual clarification, *Social Networks*, 1, 215-239.
10. Gefen, D., Karahanna, E. and Straub, D.W. (2003). Trust and TAM in online shopping: An integrated model, *MIS Quarterly* 27, 1, 51-90.
11. Hu, X., Wu, G., Wu, Y., and Zhang, H. (2010) The effects of Web assurance seals on consumers' initial trust in an online vendor: A functional perspective, *Decision Support Systems*, 48, 407-418.
12. Hui, K.-L., Teo, H.H. and Lee, S.-Y.T. (2007) The value of privacy assurance: An exploratory field experiment, *MIS Quarterly*, 31, 1, 19-33.
13. Lewis J. D. and Weigert A. (1985) Trust as a social reality, *Soc Forces*, 63, 967– 85.
14. Malhotra, N. K., Kim, S. S. and Agarwal, J. (2004) Internet users' information privacy concerns (IUIPC): The construct, the scale, and a causal model, *Information Systems Research*, 15, 4, 336-355.
15. Pavlou, P. A., Lian, H. and Xue, Y. (2007) Understanding and mitigating uncertainty in online exchange relationships: A principal-agent perspective, *MIS Quarterly*, 31, 1, 105-136.
16. PCMag.com (2011) Web Users Concerned About Privacy on Google, Facebook. Will 'Do Not Track' Help? http://www.pcmag.com/article2/0,2817,2380089,00.asp [last accessed Mar 5, 2011].
17. PCWorld.com (2009) http://www.pcworld.com/businesscenter/article/174301/trust_the_cloud_americans_say_no_way.html [last accessed Feb 23, 2011]
18. Smith, H. J., Milberg, S. J. and Burke, S. J. (1996) Information privacy: Measuring individuals' concerns about organizational practices, *MIS Quarterly, 20*, 2, 167-196.
19. Stuth, K. and Mancuso, J. (2010) Belief, Trust, Gender and Social Shopping: Social media can help turn brands into trusted friends, *Social Media*, 22, 4, 31-32.
20. USC Annenberg School of Communication-Center for the Digital Future, Surveying the digital future- year four, http://www.digitalcenter.org/downloads/DigitalFutureReport-Year4-2004.pdf (last accessed May 3, 2011).
21. Zahedi, F. M. and Song, J. (2008) Dynamics of trust revision: Using health infomediaries, *Journal of Management Information Systems*, 24, 4, 225-248.
22. Zhou, T., Lu, Y. and Wang, B. (2009)The relative importance of website design quality and service quality in determining consumers' online repurchase behavior, *Information Systems Management*, 26, 4, 327-337.