

Irina V. Kozlenkova, Robert W. Palmatier, Eric (Er) Fang, Bangming Xiao,  
& Minxue Huang

# Online Relationship Formation

As online shopping evolves from being primarily transactional to being more relational, sellers aim to form online relationships. This article investigates online relationship formation, identifies the performance payoffs that result from forming different types of online relationships (unilateral vs. reciprocal), and tests the most effective relationship-building strategies. Study 1, based on a longitudinal buyer-level analysis of an online shopping community, reveals that buyers use community-, seller-, and buyer-generated signals to identify suitable relationship partners and reduce online shopping risk. These signals generally diminish in importance as buyers gain experience but become more important when buyers are forming reciprocal relationships. Study 2 evaluates the dynamic payoffs of online relationship formation (seller-level analysis) on sales; the effect on sales of reciprocal relationships is three times greater and lasts seven times longer than that of seller-initiated, unilateral relationships. Study 3 is a field experiment testing managerially actionable strategies for leveraging relationships to grow online sales. Tenets arising from differences between online and offline relationships, together with the results from the three studies, inform an emerging theory of online relationships.

**Keywords:** online shopping, e-commerce, shopping communities, reciprocity, relationship marketing

**Online Supplement:** <http://dx.doi.org/10.1509/jm.15.0430>

Shopping on e-commerce marketplaces such as eBay and Alibaba continues to increase (Reich 2013). In the United States, more than 60% of buyers make e-commerce purchases through online marketplaces, and online retail sales are expected to exceed \$330 billion in 2015 (Forrester Report 2015). In China, online marketplaces account for more than 90% of all e-commerce (Nowlin 2014). As online sales grow and customers gain e-commerce experience, online shopping also is evolving from primarily a transactional exchange to a more relational-based exchange, similar to traditional retail interactions. To facilitate this transition, online shopping communities offer means to reinsert the “shopping experience” and “personal interaction” into the modern retail purchasing process; when missing, such elements often represent the greatest concern

---

Irina V. Kozlenkova is Assistant Professor of Marketing, Broad College of Business, Michigan State University (e-mail: [irinak@msu.edu](mailto:irinak@msu.edu)). Robert W. Palmatier is Professor of Marketing and John C. Narver Chair in Business Administration, Michael G. Foster School of Business, University of Washington (e-mail: [palmatrw@uw.edu](mailto:palmatrw@uw.edu)). Eric (Er) Fang is Visiting Professor of Marketing, University of Hong Kong, and Professor of Marketing and James Tower Faculty Fellow, University of Illinois at Urbana-Champaign (e-mail: [erfang@illinois.edu](mailto:erfang@illinois.edu)). Bangming Xiao is Lecturer in Marketing, College of Economics and Management, Huazhong Agricultural University (e-mail: [xiaobangming@mail.hzau.edu.cn](mailto:xiaobangming@mail.hzau.edu.cn)). Minxue Huang (corresponding author) is Professor of Marketing, School of Economics and Management, Wuhan University (e-mail: [huangminxue@whu.edu.cn](mailto:huangminxue@whu.edu.cn)). The authors thank the Marketing Science Institute for their helpful comments on an early version of this paper (Marketing Science Institute Working Paper Series 15-126). The authors acknowledge the financial support of the National Natural Science Foundation of China (grant #71602064; 71672132) and the Fundamental Research Funds for the Central Universities, China (grant #2662016QD052). Satish Jayachandran served as area editor for this article.

---

consumers express with regard to online (compared with traditional) retailing (Dholakia and Vianello 2009; Reich 2013; Yin 2010). Sellers thus work to form online relationships with customers in online shopping communities, with the belief that doing so will increase their performance. However, little research has evaluated the actual effectiveness of online relationship-building strategies (Verma, Sharma, and Sheth 2016). Thus, we aim to increase understanding of online relationship formation, as well as the performance payoffs that result from different types of online relationships (buyer/seller unilateral vs. reciprocal<sup>1</sup>) and the most effective relationship-building strategies.

In many ways, online and offline relationships are similar; psychological systems and the human need for relationships are at play in both settings (Zhu et al. 2012). However, there are important differences between offline and online channels that prevent simple applications of offline strategies to online channels (e.g., anonymity). These differences affect online relationship formation by increasing the relative importance of other cues or signals to reduce uncertainty about the suitability or benevolence of potential online partners, the speed of relationship formation, and the salience of reciprocation as a signal of relational intentions.

To increase understanding of online relationship formation, its performance implications, and effective strategies, we conduct three related studies. In Study 1, we attempt to identify which signals drive relationship formation, in the context of an online shopping community on the largest e-commerce platform in China. Using a hazard model, we evaluate factors that cause new buyers to form 1,074 unilateral or reciprocal relationships

---

<sup>1</sup>We thank the Editor in Chief and an anonymous reviewer for their helpful suggestion to expand our examination of reciprocal relationships.

with sellers over a five-month data collection period, contingent on moderating factors (buyer-level analysis). In Study 2, we use the same longitudinal data collection approach but analyze the impact of unilateral and reciprocal buyer–seller relationships on the sales performance of 336 sellers (seller-level analysis). To account for the dynamic nature and potential endogeneity among variables, we use a vector autoregressive (VARX) approach. Thus, our focus is on the dynamic payoffs sellers experience from online relationship formation. Finally, Study 3 combines key insights from Studies 1 and 2 to test the effectiveness of managerially actionable strategies for leveraging relationships to increase online sales, using a field experiment in a different online context with nearly 800 potential customers.

This article thus contributes to extant literature in five main ways. First, we provide insights into online relationship formation dynamics from a signaling theory perspective. Buyers use signals to identify suitable relationship partners, including bilateral communication, or the direct exchange of information between a buyer and a seller; the seller’s reputation, which is a signal of the seller’s quality, as perceived by the buyer; and relational observation, which refers to buyers observing their community neighbors’ relational choices with sellers. By using these signals, buyers reduce their online shopping risk. However, we find that signals diminish in importance (with the exception of seller’s reputation) as buyers gain experience because they develop and use their own expanding knowledge to make decisions. In addition, these signals are more important when buyers form more committed, reciprocal relationships in response to seller-initiated relationship efforts compared with when they form unilateral relationships. Relational observation also enhances the effects of communication and seller’s reputation, such that these factors seem more credible when they come from a source that is closely linked to the buyer.

Second, this article is the first to reveal the dynamic effects of buyer- and seller-unilateral and reciprocal relationships on online sales, enabling us to investigate and detail differential payoffs across all three types of online relationships. As Study 2 shows, building a portfolio of reciprocal relationships is very important for growing online sales. The effect of reciprocal relationships on the seller’s sales is three times greater and lasts far longer than does the effect of seller-initiated unilateral relationships; it also is approximately 60% greater than that of buyer-initiated unilateral relationships. To influence buyer relationship formation indirectly, sellers could signal their value as a partner (e.g., by enhancing reputation) or directly initiate relationships with potential buyers (e.g., by following a buyer). Yet our results show that sellers’ outreach efforts have limited effectiveness for increasing sales unless they can get buyers to reciprocate (e.g., follow back) because reciprocation generates substantial multiplier effects for both sales and dynamic reach. These findings lead to a managerially important question: How can sellers get buyers to reciprocate seller-initiated unilateral relationships?

Third, to address this question, we use a field experiment to identify and test managerially actionable strategies for using relationships to grow online sales. Specifically, we combine the Study 1 finding that relational observation has the largest effect in terms of driving buyers’ reciprocal relationship formation and the Study 2 finding that the highest payoffs come from reciprocal relationships. In Study 3, we find that the rate of buyer

reciprocation of seller-initiated relationships is 70% higher when buyers follow a community member (intermediary) who is already following the seller (i.e., relational observation). An intermediary’s choice to follow a specific seller sends a signal to the buyer that the seller is reliable, credible, and a good “fit.” Relational observation also is more effective when the reputation of the intermediary is better than that of the buyer. These effects can be understood from a signaling perspective; signals have more weight when they come from a source that is more credible than the receiver is.

Fourth, we describe the unique characteristics of online relationships, outline supporting evidence, and discuss implications for building and executing online relationship marketing strategies. From these insights and findings, we offer three tenets that inform an emerging theory of online relationships.

Fifth, by integrating the results from all three studies and applying post hoc analysis, we provide managerial insights and takeaways related to the effects of various online marketing strategies at different levels of buyers’ experience and for various relationship types (unilateral vs. reciprocal). For example, for new buyers (–1 SD in experience) forming reciprocal relationships, relational observation is the most effective means to increase relationship formation (twice as effective as communication and three times more effective than seller’s reputation) and, ultimately, seller sales, because reciprocal relationships offer the highest payoff. However, for experienced buyers, the pattern of results reverses. For experienced buyers (+1 SD) forming reciprocal relationships, seller reputation is the most effective means to increase relationship formation (approximately three times as effective as communication and relational observation). Thus, relational observation is most effective for new buyers and least effective for experienced buyers, and the seller’s reputation has opposite effects.

## Role of Relationships in Online Shopping

### *Online Shopping*

In 2014, global e-commerce reached \$1.3 trillion in sales, and China was the leading e-commerce market, followed by the United States (eMarketer 2014). Many e-commerce purchases occur in online marketplaces, which are platforms that unite buyers and sellers. As customers purchase more products and services online, online shopping also is evolving from its roots as a transactional exchange to a more relational exchange. Customers still want an engaging community experience that is typically associated with offline shopping because they “partially substitute shopping for recreation and use these activities to develop social activities and bonds with others” (Anderson, Swaminathan, and Mehta 2013, p. 14). As a result, within these large online marketplaces, smaller shopping communities, or subgroups that facilitate interactions among buyers and sellers around some particular interest, are emerging. The communities provide more “interpersonal” interactions and shopping experiences (Dholakia and Vianello 2009). For example, eBay describes them as “a great place to connect with other community members who share similar interests, ... give support,

share information, and connect with fellow members” (eBay 2015).

Social media platforms such as Facebook, Twitter, and Weibo also have substantial roles in e-commerce, increasing brand and product awareness, providing information, and linking customers to online marketplaces and shopping communities. Social media can “promote deep relationships, allow fast organization, improve the creation and synthesis of knowledge, and permit better filtering of information” (Kane et al. 2009, p. 46). For example, Instagram provides links to online shopping communities (e.g., LIKEtoKNOW.it) by providing direct links to the products in the pictures of various fashion influencers. Because they enhance customers’ shopping experience, provide socially relevant product and seller information, and reduce purchase uncertainty, online relationships are key to growing online sales. However, researchers argue that “online retailers find it more difficult to build a relationship with consumers as compared to brick and mortar retailers,” and sellers often lack insights into how to adapt face-to-face relational strategies to an online context (Verma, Sharma, and Sheth 2016, p. 207).

### **Online Relationships**

Online buyers connect to sellers and other buyers to learn as well as to improve their shopping experience (Manchanda, Packard, and Pattabhiramaiah 2015). For example, “in eBay’s online community, customers’ discussions regarding trading issues are interspersed with personal conversations, humor, social support, and helping behaviors” (Zhu et al. 2012, p. 396). Thus, the needs that drive online relationships are similar in many ways to the needs that are satisfied by offline relationships. Regardless of the channel, the psychological underpinnings and human desire for relationships transcend the environment, so “all communities, whether online or offline, are subject to psychological processes of identification, appreciation of members’ contribution, camaraderie, and perceptions of social support” (Zhu et al. 2012, p. 404). Relationships that users develop on the Internet can be as strong and as deep as the ones in offline settings; more than 80% of respondents in one study identify their online relationships as equally important and close as their offline relationships (McKenna, Green, and Gleason 2002).

Even though the underlying psychological roots are similar, differences in offline and online shopping channels can have profound effects on online relationship formation. As Stephen and Toubia (2010, p. 217) note, “though similar to offline shopping centers at a basic level, social commerce marketplaces are not merely online equivalents of shopping centers.” There are several differences between offline and online channels. First, offline relational partners are often located in geographic proximity, particularly during the relationship formation stage, which supports richer face-to-face communication, whereas online relational partners can be anywhere in the world and might never meet face-to-face, leading to leaner communication with limited verbal and nonverbal cues (Benedickus et al. 2010). Second, offline relational partners typically know the identity of potential partners, whereas online relational partners may have little knowledge of the true identity of potential partners. Third, many online relationships have a stable unilateral structure,

whereby a relationship partner never reciprocates but remains in the unilateral relationship as a follower (Trier and Richter 2015), which is not as common in offline relationships because of the social pressure to reciprocate. Fourth, the level of social interconnectedness differs, in that offline relational partners typically have many more common friends than do online relational partners (Chan and Cheng 2004). Most of these differences increase the risk that an online partner might behave opportunistically, thus enhancing the importance of risk-reducing and trust-building signals during the relationship-formation process.

### **Online Relationship Formation**

People form (offline and online) business relationships to reduce uncertainty and buy from trusted partners in an exchange governed by relational norms (Adjei, Noble, and Noble 2010; Palmatier, Dant, and Grewal 2007). Buyer uncertainty arises as a result of information asymmetries between sellers and buyers, and these issues are magnified in the less observable online context “because the spatial and temporal separation of the online environment creates additional information asymmetries that benefit the seller” (Pai and Tsai 2011, p. 604). Information asymmetry also makes it difficult for buyers to identify good partners in the relationship-formation process, so they increase their focus on observable signals (Kirmani and Rao 2000).

After one party identifies a potential online relational partner, the next step is to initiate a relationship by following the other party, which constitutes a unilateral relationship. Arguably, the most important step is the subsequent reciprocation by the other party, which indicates mutual interest in the bilateral relational bond, or a reciprocal relationship. To determine the suitability of a potential partner and whether to reciprocate a seller’s relationship request, buyers evaluate signals similar to the ones they would consider if they were initiating the relationship themselves. Reciprocation is the critical step in relationship formation because it “forms the basis on which the entire social and ethical life of ... civilizations presumably rests” (Gouldner 1960, p. 161). By indicating greater commitment, it also encourages persistent interactions (Chan and Li 2010). Stronger, more committed bonds then yield many benefits, including relationship growth, loyalty, and the desire to reward partners directly, with more sales, and indirectly, through word of mouth (Lund, Kozlenkova, and Palmatier 2016; Palmatier et al. 2009).

## **Understanding Online Relationship Formation (Study 1)**

Perceived risk inhibits various types of consumer transactions online (Andrews and Boyle 2008). Feelings of uncertainty and perceived risk are exacerbated in online shopping communities because people can be more anonymous online (Rotman 2010); in addition, there is an overwhelming number of sellers and the perception that “almost anyone can set up a retail presence on the Internet at a very low cost” (Biswas and Biswas 2004, p. 30). To manage this risk, online buyers aim to build relationships and look for marketplace signals to identify the best relationship partners before purchasing. As signaling theory argues, visible signals can indicate unobservable attributes and help resolve information asymmetry (Kirmani and Rao 2000). In online

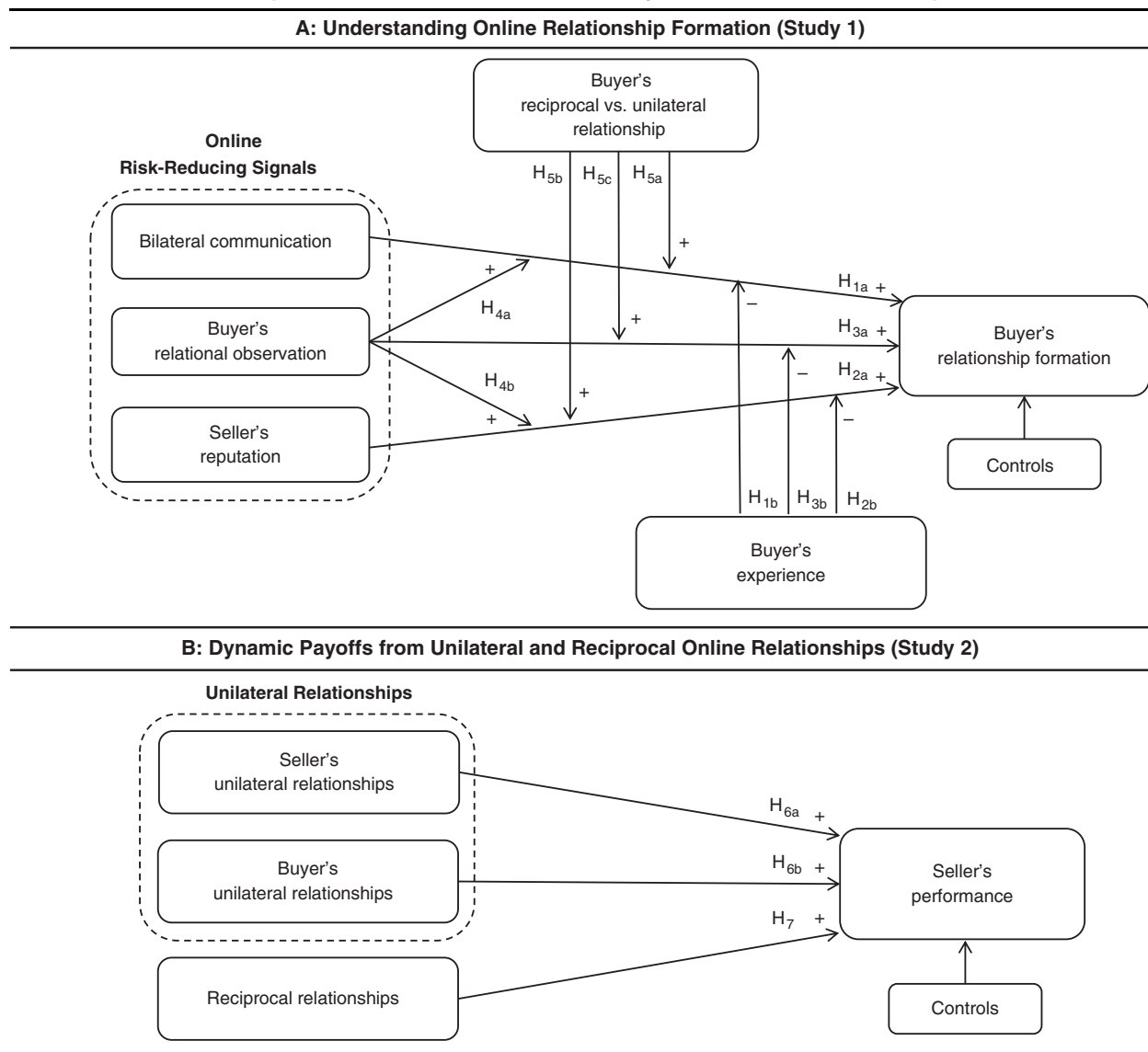
shopping communities, three main categories of observable signals can help buyers identify suitable partners: (1) signals coming directly from the seller, such as bilateral communication; (2) signals about the seller from the overall online community, such as the seller's reputation; and (3) signals from observing relationship choices of those community members with whom the buyer is closely connected, or the buyer's relational observation. In Study 1, we investigate the effects of these risk-reducing signals on the likelihood that a buyer forms a relationship with a seller, as well as factors that may moderate these effects (Figure 1, Panel A). In an online context, buyer relationship formation refers to a buyer following a seller and can be either unilateral (seller is not following the buyer back) or reciprocal (seller is following the buyer too). Understanding this

relationship formation is critical because it is a key precursor to a buyer's ultimate purchase decisions (Ha 2004).

### Conceptual Model and Hypotheses

*Bilateral communication.* We define bilateral communication as the direct exchange of information between a buyer and a seller. In online shopping communities, communication can be initiated by either party and may include a reply or not. Communication builds trust (Palmatier et al. 2006) and encourages long-term relationships between buyers and sellers (Reinartz, Thomas, and Kumar 2005). In online communities, communication may be even more critical because even minimal or superficial communication on unimportant issues

**FIGURE 1**  
**Conceptual Models for Formation and Payoffs of Online Relationships**



among online strangers signals trustworthiness (Nass and Yen 2010). For example, by communicating with a potential buyer, a seller can seem less anonymous and send a signal to reassure the buyer of the seller's expertise, reliability, and responsiveness, which lowers perceived risk. The seller also signals transparency and trustworthiness to the potential buyer, which should increase the buyer's desire to form a relationship (Porter and Donthu 2008; Verma, Sharma, and Sheth 2016).

Communication is especially important early in the relationship, to help "not only build initial trust but also help develop processes and norms that support lasting improvements in relationship interactions" (Palmatier 2008, p. 61). However, over time, communication often yields diminishing returns (Palmatier et al. 2013). The longer buyers are present in an online community, the more knowledgeable, experienced, and comfortable they become, and the less risk they feel (Zhu et al. 2012). As buyers gain experience, they have fewer informational needs, and their perception of informational asymmetry lessens, so communication becomes less valuable and less likely to trigger the need for relationship formation as a means to manage risk.

H<sub>1</sub>: (a) Bilateral communication increases buyer relationship formation, and (b) these effects diminish with the buyer's experience.

*Seller's reputation.* Reputation is a signal of the seller's quality, as perceived by the buyer (Baker, Faulkner, and Fisher 1998). The seller's reputation can serve as another source of information, because a strong reputation alleviates consumers' perceived risk and potential concerns about the seller (Pavlou, Liang, and Xue 2007). In online shopping communities, a signal of the seller's reputation provides "a viable mechanism for fostering cooperation among strangers ... by ensuring that the behavior of a trader toward any other trader becomes publicly known and may, therefore, affect the behavior of the entire community toward that trader in the future" (Dellarocas 2003, p. 1407). This information typically is easily accessible and highly visible in online communities (e.g., stars to rate the seller). Accordingly, 84% of online U.S. shoppers are influenced by others' perceptions of seller quality, which signal credibility and thereby reduce perceived risk (Anderson, Swaminathan, and Mehta 2013). Thus, we expect that buyers seek out and form relationships with sellers that have strong reputations.

However, the longer buyers are active in an online shopping community, the more experience, knowledge, and familiarity they gain, which makes them perceive less risk in dealing with sellers (Yoon 2002). For example, after making a few successful product returns to sellers in the community, a buyer likely will be less hesitant about dealing with other sellers, even if they do not have strong reputations. Thus, as the buyer becomes more experienced, the value of the seller's reputation as a risk-reducing signal diminishes.

H<sub>2</sub>: (a) A seller's reputation increases buyer relationship formation, and (b) these effects diminish with the buyer's experience.

*Buyer's relational observation.* Buyers in an online community also observe the behaviors of those to whom they are closest in the online shopping community. Signals from

community neighbors are especially powerful because prospective buyers want to know not only which sellers and products are considered good in general but also which are "good for folks like us" (Van den Bulte and Wuyts 2007, p. 41). A buyer's relational observation in an online shopping context refers to buyers observing their community neighbors' relational choices with sellers. For example, if a buyer follows a fellow community member who is following a seller, the buyer receives valuable information about that specific seller's value as a potential partner. Researchers describe similar observational processes as imitation, exposure, contagion, or observational learning, depending on the context and theoretical paradigm (Nitzan and Libai 2011; Van den Bulte and Wuyts 2007). Previous research has shown that when feeling uncertain, people look to others to decide how to act (Chen 2008).

Relational observation helps buyers assess sellers' credibility by providing a source of information or signal that they consider personally relevant (Chen, Wang, and Xie 2011). To find trustworthy sellers that fit their needs, buyers look to see where the people they follow do their shopping. For example, on Polyvore, an online marketplace for fashion products, buyers can follow other buyers whose tastes they like. When buyers observe that their relational partners have a relationship with a specific seller, they are more likely to form a relationship with that seller too. Similar to communication and reputation, the influence of relational observation should diminish as the buyer gains experience (Nitzan and Libai 2011).

Finally, we expect that relational observation works synergistically with both bilateral communication and the seller's reputation in increasing the likelihood that a buyer forms a relationship with a seller. Relational observation can validate the two other signals by adding credence or weight to the communication and reputation information, because it provides an indication of "fit" that is unique to that buyer (Adjei, Noble, and Noble 2010). For example, the seller's reputation signals that the seller is generally reliable and trustworthy but gives little insight into whether the seller's offering matches the buyer's personal preferences (e.g., taste, price). Thus, the seller's reputation and bilateral communication should have stronger impacts on the buyer's likelihood to form a relationship as relational observation of the seller increases.

H<sub>3</sub>: (a) The buyer's relational observation increases buyer relationship formation, and (b) these effects diminish with the buyer's experience.

H<sub>4</sub>: The positive effect of (a) bilateral communication and (b) the seller's reputation on buyer relationship formation is greater as the buyer's relational observation increases.

*Buyer's reciprocal (vs. unilateral) relationships.* In online shopping communities, buyers can initiate a relationship with a seller or reciprocate a seller-initiated relationship. Reciprocating a relationship indicates a higher psychological level of commitment on the part of the buyer than does an initial step of unilateral relationship formation, which may be only an information-gathering step, whereas reciprocation is an active relationship-building step. Thus, we expect that when the buyer is in a reciprocating (vs. an initiating) position, the three informational signals about the seller (i.e., bilateral communication, seller's reputation, and relational observation) become

more impactful and valuable to the buyer. In offline contexts, people generally recognize that reciprocal relationships evoke exchange norms, which bind them to specific actions (Dahl, Honea, and Manchanda 2005). Research has shown that “reciprocity implicates a responsibility” (Nass and Yen 2010, p. 181), regardless of the relationship stage; experiments reveal that even complete strangers interacting online for a mere five minutes about inconsequential issues felt a sense of responsibility to reciprocate, implying higher feelings of commitment. Nass and Yen (2010, p. 190) conclude that “experiments on reciprocity highlight a key point about social behavior: the more fundamental and basic a social rule, the less you need to do to get others to follow it,” which implies that reciprocity can occur at any stage and in any type of relationship. Furthermore, feelings of reciprocity are so fundamental that they translate across cultures and even can be felt toward inanimate objects, such as computers. Buyers may want to avoid this sense of future obligation altogether; if a seller already follows them, buyers may choose to ignore it and not reciprocate, unless they are reassured by other signals about this seller. Therefore, bilateral communication, seller’s reputation, and relational observation should be more important and valuable when a buyer is deciding to form a reciprocal versus a unilateral relationship.

H<sub>5</sub>: The positive effect of (a) bilateral communication, (b) the seller’s reputation, and (c) the buyer’s relational observation on buyer relationship formation is greater when establishing reciprocal versus unilateral relationships.

### Methodology

Our conceptual model aims to explicate the signals that drive relationship formation for individual buyers in an online shopping community. Several characteristics of our context make it appropriate for testing our model. First, we focus on a single category in the Taobao.com online shopping community (clothing) to reduce product heterogeneity. Second, sellers are visually distinct from buyers on this platform because they include hyperlinks to their online stores in all interactions. Every time a seller posts, replies, or follows another member, the hyperlink to the seller’s online store appears. The online shopping community also enables members to communicate and share information, which can be observed. Third, any potential buyer can join the community and form unilateral relationships (follow) with other members as well as reciprocate (follow back). Thus, members can build multiple relationships, gain information about others, and observe other members’ behaviors. Finally, Taobao.com is the largest e-commerce platform in China, which makes it an important online retail context.

*Sample and measurement.* In building the longitudinal sample, we aimed to minimize preexisting relationships by restricting the sample to new members who joined the community after the start of our data collection on April 1, 2014. The data collection lasted 134 days, consistent with our interest in studying online relationship formation. We programmed a web crawler to search and store data from the online shopping community daily. We obtained data about 146 buyers who formed 1,074 relationships with 336 sellers.

We used existing measures whenever possible. Buyer relationship formation is a binary variable equal to 1 if a buyer forms a relationship with (i.e., follows) a seller at time  $t$ , and 0 otherwise. Bilateral communication ( $COM_{i,j,t}$ ) indicates the number of times communication occurred between a buyer and seller before time  $t$ . Buyers and sellers generally interact in community forums by replying to each other’s postings. We thus identify text associated with “@+member ID” in the community at time  $t$ , using simple text mining techniques, and record the communication between buyer  $i$  and seller  $j$  before time  $t$ . To measure the seller’s reputation ( $REP_{j,t}$ ), we code seller  $j$ ’s reputation at time  $t$  as the average scores of reviews by buyers (1 = lowest, and 5 = highest) pertaining to transactions that occurred before time  $t$ . Buyers provide scores on several dimensions (e.g., product description, customer service), so each seller’s average score reflects all previous buyers’ ratings. The buyer’s relational observation ( $OBS_{i,j,t}$ ) captures the number of other members this buyer follows who also follow the seller, prior to relationship formation between the focal buyer and seller (Van den Bulte and Wuyts 2007). This unidirectional, intermediate linkage between the buyer and the seller is an important distinction between the construct of relational observation and other constructs, such as degree centrality, which captures the number of ties a buyer has without specifying the direction or position relative to the seller. The buyer’s experience ( $EXP_{i,t}$ ) reflects the time elapsed, in weeks, since the buyer joined the online shopping community before time  $t$ . The buyer’s reciprocal relationships ( $REC_{i,t}$ ) is a dummy variable, where relationships reciprocated by the buyer equal 1, and relationships initiated by the buyer (unilateral) equal 0. As control variables, we include the seller’s duration, common events, number of followers of the buyer and the seller, and the seller’s product breadth. Table 1 contains a detailed summary of all construct definitions and operationalizations; Table 2 reports the descriptive statistics and correlations of all variables.

*Estimation and results.* To estimate our model, we use a Cox (1972) proportional hazard regression model. Relationship formation is a time-based binary event, and the probability of relationship formation over time is a function of time-varying independent variables. Time-based phenomena can be modeled effectively with a hazard function, which can identify cross-sectional and longitudinal effects as well as handle sample selection biases such as censoring. We therefore estimate a hazard model using a semiparametric partial likelihood method (Mitra and Golder 2002; Thompson and Sinha 2008). We set the hazard rate  $h(t)$  to reflect the probability of relationship formation between a buyer and a seller; it represents the instantaneous probability of an event (relationship formation), given that it has not occurred yet at time  $t$  (Kleinbaum and Klein 2005). Equation 1 represents the main-effects only model, and Equation 2 is the full model with the hypothesized interactions we use for hypothesis testing:

$$(1) \quad h(t)_{ij} = h_0(t) \exp(\alpha + \beta_1 COM_{i,j,t} + \beta_2 REP_{j,t} + \beta_3 OBS_{i,j,t} + \beta_4 EXP_{i,t} + \beta_5 REC_{i,t} + \delta Controls + \varepsilon).$$

**TABLE 1**  
**Constructs, Definitions, and Operationalizations**

Constructs	Definitions	Operationalizations
<b>Study 1</b>		
Buyer relationship formation	Buyer forming a relationship with a seller (following/friending) in an online shopping community	Dummy variable, where 1 = relationship formation and 0 = otherwise
Bilateral communication	Direct exchange of information between a buyer and a seller prior to relationship formation, which may be initiated by either party	$COM_{i,j,t} = INT_{i,j,t-1}$ , where communication (COM) between $i$ and $j$ at time $t$ = number of interactions (INT) before time $t$ ( $t - 1$ )
Seller's reputation	Signal of seller's quality in reviews left by previous buyers	$REP_{j,t} = REV_{j,t-1}$ , where reputation (REP) of seller $j$ at time $t$ = average score from reviews of previous transactions (1 = lowest, and 5 = highest)
Buyer's relational observation	Observing the behavior of others whom the buyer is following, who also follow the seller (i.e., intermediary)	$OBS_{i,j,t}$ = number of other members in the community the buyer follows, who also follow the seller, prior to the relationship formation between focal buyer and seller before time $t$ ( $t - 1$ )
Buyer's experience	Time since the buyer joined the online shopping community	$EXP_{i,t} = TIME_{i,t-1}$ , where $i$ 's experience (EXP) at time $t$ = number of weeks since $i$ joined the community
Buyer's reciprocal relationships	In online shopping communities, a user following the party who initiated the relationship, making the relationship bidirectional (Van den Bulte and Wuyts 2007)	$REC_{i,t}$ is a dummy variable, where relationships reciprocated by the buyer = 1, and relationships initiated by the buyer (unilateral) = 0
<b>Study 2</b>		
Seller performance	Seller's daily revenue from all buyers on the shopping platform	Revenue $_{i,t}$ , where seller $i$ 's performance at time $t$ = revenue in time $t$
Seller-unilateral relationships	Relationships initiated by the seller but not reciprocated by buyer	For seller $i$ , $i \in m$ , and buyer $j$ , $j \in n$ , $a_{i,j} \in A$ $SUR_{(seller-unilateral\ relationship)} = \sum_{j=1}^n a_{i,j} = 1$ , $a_{j,i} \neq 1$ ; $A$ is the relationship matrix; $m$ is the total number of sellers; $n$ is the total number of buyers
Buyer-unilateral relationships	Relationships initiated by the buyer but not reciprocated by seller	For seller $i$ , $i \in m$ , and buyer $j$ , $j \in n$ , $a_{i,j} \in A$ $BUR_{(buyer-unilateral\ relationship)} = \sum_{i=1}^m a_{i,j} = 1$ , $a_{i,j} \neq 1$ ; $A$ is the relationship matrix; $m$ is the total number of sellers; $n$ is the total number of buyers
Reciprocated relationships	Total number of bidirectional relationships (seller following buyer and buyer following seller) (Van den Bulte and Wuyts 2007)	Sum of overlapped grids between matrix $A_t$ and its transpose $A_t^T$ (where both values from matrix $A_t$ and matrix $A_t^T$ equal 1)
<b>Study 3</b>		
Buyer's relational observation	Observing the behavior of others whom the buyer is following, who also follow the seller (i.e., intermediary), prior to relationship formation between buyer and seller	Variable reflecting whether the buyer has any intermediaries with the seller (1 = existence of intermediaries, 0 = no intermediaries)
Buyer-reciprocated relationship	In online shopping communities, the buyer follows the party who initiated the relationship, such that the relationship is bidirectional (Van den Bulte and Wuyts 2007)	Buyer following back the seller after the seller has initiated a relationship (1 = buyer reciprocated; 0 = buyer did not reciprocate)
Intermediary's reputation	Perceptions held by community members of the intermediary's expertise, knowledge, and credibility	Number of community members following the intermediary
Buyer's reputation	Perceptions held by community members of the buyer's expertise, knowledge, and credibility	Number of community members following the buyer
<b>Control Variables</b>		
Seller's duration (Study 1)	Time since the seller joined the online shopping community	$DUR_{j,t} = TIME_{j,t-1}$ , where $j$ 's duration (DUR) at time $t$ = number of weeks since $j$ joined the community

**TABLE 1**  
Continued

Constructs	Definitions	Operationalizations
Common events (Study 1)	Buyer's and seller's participation in the same community events	$EVT_{i,j,t} = NJP_{i,j,t-1}$ , where common events (EVT) between <i>i</i> and <i>j</i> at time <i>t</i> = number of joint participations in community events (NJP) at ( <i>t</i> - 1)
Buyer's followers (Study 1)	Number of people following the buyer	$FOL_{i,t}$ = number of buyer <i>i</i> 's followers prior to relationship formation with seller
Seller's followers (Study 1)	Number of people following the seller	$FOL_{j,t}$ = number of seller <i>j</i> 's followers prior to relationship formation with buyer
Seller's product breadth (Study 1)	Total number of items the seller is offering	Total number of items listed on seller <i>j</i> 's electronic shop before time <i>t</i> ( <i>t</i> - 1)
Seller's reputation (Study 2)	Signal of seller's quality in reviews left by previous buyers	$REP_{j,t} = REV_{j,t-1}$ , where reputation (REP) of seller <i>j</i> at time <i>t</i> = average score from reviews of previous transactions (1 = lowest, and 5 = highest)
Number of members buyer follows (Study 3)	Overall number of people the buyer follows in the community	Total number of people the buyer follows in the community
Buyer's activity level (Study 3)	Overall level of activity of the buyer in the community	Total number of posts made by the buyer in the community

Notes: Sellers all display "shop tags," or embedded hyperlinks to their electronic stores; buyers are those without any such shop tag.

$$(2) \quad h(t)_{i,j} = h_0(t) \exp(\alpha + \beta_1 COM_{i,j,t} + \beta_2 REP_{j,t} + \beta_3 OBS_{i,j,t} + \beta_4 EXP_{i,t} + \beta_5 REC_{i,t} + \gamma_1 COM_{i,j,t} \times EXP_{i,t} + \gamma_2 REP_{j,t} \times EXP_{i,t} + \gamma_3 OBS_{i,j,t} \times EXP_{i,t} + \gamma_4 OBS_{i,j,t} \times COM_{i,j,t} + \gamma_5 OBS_{i,j,t} \times REP_{j,t} + \gamma_6 OBS_{i,j,t} \times REC_{i,t} + \gamma_7 REP_{j,t} \times REC_{i,t} + \delta Controls + \epsilon).$$

In the results reported in Table 3, Model 2 includes the interactions and exhibits a better fit than the main-effects-only model (Model 1). As a robustness test, we add a Gaussian frailty term in each equation to account for unobserved heterogeneity across individual buyers, and the results remain consistent. The Gaussian frailty term is not significant in either Models 3 or 4. The Akaike information criterion values and model coefficients

**TABLE 2**  
Descriptive Statistics and Correlations (Studies 1 and 2)

A: Study 1													
Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Buyer relationship formation	.02	.11	1.00										
2. Bilateral communication	4.17	2.49	.02	1.00									
3. Seller's reputation	3.77	1.21	.12**	.13**	1.00								
4. Buyer's relational observation	3.18	2.18	.07*	.23**	.14**	1.00							
5. Buyer's experience	14.83	7.38	.07*	.02	.07*	.28**	1.00						
6. Buyer's reciprocal relationship	.01	.01	.15**	.10**	.03	.01	.07*	1.00					
7. Seller's duration	10.67	5.24	.05	.22**	.03	.03	.02	.07*	1.00				
8. Common events	6.98	3.09	.05	.21**	.12**	.02	.04	.12**	.13**	1.00			
9. Buyer's followers	11.87	12.00	.06	.21**	.04	.04	.11**	.03	.26**	.01	1.00		
10. Seller's followers	18.38	12.46	.08*	.09**	.12**	.01	.10**	.05	.08*	.09**	.12**	1.00	
11. Seller's product breadth	30.03	9.66	.01	.23**	.00	.02	.07*	.73*	.10**	.12**	.03	.03	1.00

B: Study 2							
Variable	M	SD	1	2	3	4	5
1. Seller performance	33.11	13.62	1.00				
2. Seller-unilateral relationships	12.99	9.85	.08*	1.00			
3. Buyer-unilateral relationships	8.02	6.83	.19**	.21**	1.00		
4. Reciprocal relationships	3.03	1.52	.27**	.02	.03	1.00	
5. Seller reputation	3.63	1.19	.05	.08*	.09*	.11**	1.00

\**p* < .05.

\*\**p* < .01.



**TABLE 3**  
**Study 1 Results: Online Buyer Relationship Formation**

Independent Variables	Hypothesis	Model 1	Model 2	Model 3	Model 4
<b>Main Effects</b>					
Bilateral communication	H <sub>1a</sub>	.23 (.01)**	.21 (.01)**	.20 (.01)**	.18 (.01)**
Seller's reputation	H <sub>2a</sub>	.33 (.02)**	.27 (.01)**	.35 (.03)**	.25 (.01)**
Buyer's relational observation	H <sub>3a</sub>	.13 (.01)**	.18 (.01)**	.11 (.02)**	.18 (.01)**
Buyer's experience		.01 (.03)	.02 (.12)	.03 (.14)	.04 (.08)
Buyer's reciprocal relationship		-.12 (.01)**	-.12 (.01)**	-.09 (.01)**	-.14 (.01)**
<b>Interactions</b>					
Bilateral communication × Buyer's experience	H <sub>1b</sub>		-.15 (.01)**		-.15 (.01)**
Seller's reputation × Buyer's experience	H <sub>2b</sub>		.25 (.01)**		.26 (.02)**
Buyer's relational observation × Buyer's experience	H <sub>3b</sub>		-.43 (.04)**		-.40 (.03)**
Buyer's relational observation × Bilateral communication	H <sub>4a</sub>		.13 (.01)**		.13 (.01)**
Buyer's relational observation × Seller's reputation	H <sub>4b</sub>		.24 (.01)**		.26 (.02)**
Bilateral communication × Buyer's reciprocal relationship	H <sub>5a</sub>		.13 (.01)**		.14 (.01)**
Seller's reputation × Buyer's reciprocal relationship	H <sub>5b</sub>		.13 (.01)**		.14 (.01)**
Buyer's relational observation × Buyer's reciprocal relationship	H <sub>5c</sub>		.18 (.00)**		.18 (.01)**
<b>Controls</b>					
Seller's duration		.02 (.04)	.13 (.17)	.22 (.19)	.17 (.24)
Common events		.02 (.27)	.02 (.38)	.01 (.06)	.03 (.31)
Buyer's followers		.34 (.03)**	.26 (.02)**	.31 (.04)**	.26 (.02)**
Seller's followers		.38 (.02)**	.26 (.01)**	.31 (.03)**	.23 (.01)**
Seller's product breadth		.02 (.23)	.04 (.28)	.12 (.34)	.03 (.21)
Frailty		N.A.	N.A.	.14 (.21)	.19 (.33)
Sample size		1,074	1,074	1,074	1,074
R <sup>2</sup>		.28	.30	.27	.28
Adjusted R <sup>2</sup>		.27	.28	.26	.27
Log-likelihood		-15,987.56	-15,747.13	-16,185.42	-15,993.50
Wald $\chi^2$		1,459.14**	1,561.33**	1,351.53**	1,442.62**
Akaike information criterion		29,939.02	29,709.02	30,106.84	29,958.12
Bayesian information criterion		29,984.85	29,769.01	30,296.04	29,993.40

\* $p < .05$ .

\*\* $p < .01$ .

Notes: N.A. = not applicable. This table shows the standardized coefficients. Standard errors are in parentheses. Model 1 is the main-effects-only model, Model 2 is the final model, Model 3 is the main-effects model with a frailty term, and Model 4 includes main and interaction effects with the frailty term.

suggest that unobserved buyer heterogeneity is not a significant issue.

As we predicted in H<sub>1a</sub>, communication positively affects buyer relationship formation with a seller ( $\beta = .21, p < .01$ ), and the buyer's experience diminishes this effect ( $\gamma = -.15, p < .01$ ), in support of H<sub>1b</sub>. The seller's reputation positively affects buyer relationship formation ( $\beta = .27, p < .01$ ), in support of H<sub>2a</sub>. However, contrary to H<sub>2b</sub>, the buyer's experience does not diminish but rather enhances this effect ( $\gamma = .25, p < .01$ ). In support of H<sub>3a</sub>, the buyer's relational observation positively affects relationship formation ( $\beta = .18, p < .01$ ), and this effect weakens as the buyer's experience increases ( $\gamma = -.43, p < .01$ ), as we predicted in H<sub>3b</sub>. The buyer's relational observation enhances the positive effect of communication ( $\gamma = .13, p < .01$ ) and reputation ( $\gamma = .24, p < .01$ ) on buyer relationship formation, in support of H<sub>4a</sub> and H<sub>4b</sub>. Finally, H<sub>5</sub> is fully supported; communication ( $\gamma = .13, p < .01$ ), seller's reputation ( $\gamma = .13, p < .01$ ), and relational observation ( $\gamma = .18, p < .01$ ) have

stronger effects on buyer relationship formation when the buyer is reciprocating a seller-initiated relationship rather than forming a unilateral relationship.

### Discussion

Study 1 supports the notion that buyers use seller-, buyer-, and community-generated signals (e.g., communication, relational observation, reputation) to identify suitable relationship partners and reduce online shopping risk. These signals generally diminish in importance (with the exception of seller's reputation) as buyers gain experience because they develop and use their own knowledge to make decisions. The signals become even more important when buyers form more committed reciprocal relationships in response to a seller-initiated relationship, compared with when they form unilateral relationships on their own. In addition, relational observation appears to be the most critical signal for buyer relationship formation,

with the combination of its strong direct effect and its enhancing effects on the seller's reputation and communication. Study 1 thus improves understanding of the factors that increase the likelihood that a buyer will form a relationship with a seller, based on the premise that a buyer-seller relationship is a critical precursor to a purchase decision. In Study 2, we evaluate this premise by testing the sales payoffs earned from unilateral and reciprocal online relationships.

## Dynamic Payoffs from Unilateral and Reciprocal Online Relationships (Study 2)

In Study 1, we examined the factors affecting buyer relationship formation in online shopping communities. In Study 2, we focus instead on the dynamic payoffs to sellers when they form such online relationships. Extant research has focused mostly on the indirect effects of social networks, such as Facebook and Twitter, on seller performance (Curry and Zhang 2011); we instead examine the *direct* payoffs that sellers experience from their portfolios of online relationships. Specifically, we investigate the dynamic effects of both unilateral buyer-to-seller relationships and seller-to-buyer relationships and reciprocal relationships on sales performance, then evaluate whether the more committed reciprocal relationships outperform the unilateral relationships (Figure 1, Panel B). Another key difference is the unit of analysis: in Study 1, we considered the buyer, or individual buyer's relationship formation over time, whereas in Study 2, the unit of analysis is the seller—or the effect of the seller's relationship portfolio, spanning many buyers—on that seller's sales performance over time. The dependent variable in this study thus is seller performance, or the seller's daily sales revenue from all buyers.

### Conceptual Model and Hypotheses

#### *Effect of unilateral relationships on seller performance.*

According to a recent study of a retailer-sponsored online community, joining an online community and forming relationships with other customers increases customers' spending (Manchanda, Packard, and Pattabhiramaiah 2015). We advance this research stream by investigating how the relationships between buyers and sellers influence sales in a non-firm-sponsored online shopping community. Consistent with extant research (Ha 2004), we argue that forming a relationship, whether initiated by buyers or sellers, indicates some interest, involvement, and engagement and is a precursor to purchase. Extensive relationship marketing research has also shown that offline relationships increase sellers' performance (Palmatier et al. 2006). When a seller initiates a unilateral relationship with a buyer, it signals the seller's belief in the buyer's quality and likely puts the seller on the buyer's radar, increasing awareness. Overall, a seller initiating a relationship represents a relational investment to engage with the buyer, which should increase the buyer's likelihood to purchase from that seller (Rust and Chung 2006). We expect that sellers with more seller-unilateral relationships (relationships initiated by the seller but not reciprocated by the buyer) outperform sellers with fewer such relationships. Similarly, buyers form relationships with

sellers to reduce information asymmetry and risk, thereby enhancing trust, so they should be more likely to buy from sellers with whom they have relationships (Palmatier 2008). We therefore expect that sellers with more buyer-unilateral relationships (initiated by the buyer but not reciprocated by the seller) outperform sellers with fewer such relationships.

H<sub>6</sub>: (a) Seller- and (b) buyer-unilateral relationships positively affect seller performance.

#### *Effect of reciprocal relationships on seller performance.*

In addition to the effect of one-sided, unilateral relationships initiated by either a seller or a buyer, we examine the effect of reciprocal relationships (bidirectional relationship between the buyer and seller) on seller performance. Reciprocation is a critical step in relationship formation because it signals that both parties are motivated, increasing mutual trust and commitment, and prompting exchange norms, all of which increase performance (Dahl, Honea, and Manchanda 2005). Extant research has suggested that reciprocity is a key structural characteristic of social networks that operate in an online channel (Ansari, Koenigsberg, and Stahl 2011). Reciprocal relationships may be more valuable to the seller than unilateral relationships because reciprocity leads to relationship growth, loyalty, and a desire to reward a partner directly through more sales and indirectly through positive word of mouth (Palmatier et al. 2009). Therefore, reciprocal relationships more accurately represent the strength of the seller's relationship portfolio than unilateral relationships because, bilaterally, strongly committed customers likely have a higher propensity to make repeated purchases, expand into other product categories, and serve as advocates for new customers (Reinartz and Kumar 2003).

H<sub>7</sub>: Reciprocal relationships positively affect seller performance.

H<sub>8</sub>: Reciprocal relationships have a greater positive effect on seller performance than do unilateral (a) seller and (b) buyer relationships.

### Methodology

*Sample and measurement.* Study 2 focuses on the dynamic payoffs to sellers of building a portfolio of seller- and buyer-unilateral and reciprocal relationships in an online shopping community. We use the same context and time frame for the longitudinal data collection in Study 2 that we used in Study 1. Rather than analyzing an individual buyer's relationship formation, however, we evaluate the impact of these relationships on seller sales. With a web crawler program, we recorded daily transaction for each item listed in each seller's electronic shop, then calculated daily total revenue for each seller. Because we were unable to identify a specific buyer's sales from Study 1, we captured all buyers' purchases from the same 336 sellers across the same time frame. The final sample includes 5,231 buyers and 336 sellers. The seller (buyer) unilateral relationship measure represents the number of relationships initiated by the seller (buyer) that are not reciprocated. Reciprocal relationships are the number of bidirectional relationships between a seller and buyers in the online shopping community. As a control variable, we also include the seller's reputation, as an endogenous variable based on average customer reviews (i.e., same as in Study 1). Table 1 provides the definitions and operationalizations, and Table 2 contains the descriptive statistics and correlations.

*Estimation and results.* To account for the dynamic nature and potential endogeneity among the variables in our conceptual model, we use a VARX method (Stephen and Toubia 2010) that captures the interdependent evolution of the variables. By treating each variable as potentially endogenous, the VARX model reveals dynamic, complex interdependence among the variables. It also captures the cumulative effects of relationships on sales (Dekimpe and Hanssens 1995). We follow a four-step approach for estimating VARX models (Fang et al. 2015).

First-differencing indicates that all the variables are stationary, in support of our choice to estimate a VARX model in difference. To determine an appropriate number of lags, we used the Schwarz Bayesian information criterion (SBIC). A single period emerged as an appropriate lag (SBIC = 5.42). Thus, we estimated a VARX system to capture the dynamic interactions among the three types of relationships in a seller's portfolio, reputation, and sales revenue, written as follows:

$$\begin{bmatrix} Y_t \\ S_t \\ B_t \\ RB_t \\ RE_t \end{bmatrix} = \begin{bmatrix} C_Y \\ C_S \\ C_B \\ C_{RB} \\ C_{RE} \end{bmatrix} + \sum_{j=1}^J \begin{bmatrix} \omega_{11}^j & \omega_{12}^j & \omega_{13}^j & \omega_{14}^j & \omega_{15}^j \\ \omega_{21}^j & \omega_{22}^j & \omega_{23}^j & \omega_{24}^j & \omega_{25}^j \\ \omega_{31}^j & \omega_{32}^j & \omega_{33}^j & \omega_{34}^j & \omega_{35}^j \\ \omega_{41}^j & \omega_{42}^j & \omega_{43}^j & \omega_{44}^j & \omega_{45}^j \\ \omega_{51}^j & \omega_{52}^j & \omega_{53}^j & \omega_{54}^j & \omega_{55}^j \end{bmatrix} \times \begin{bmatrix} Y_{t-j} \\ S_{t-j} \\ B_{t-j} \\ RB_{t-j} \\ RE_{t-j} \end{bmatrix} + \begin{bmatrix} \sigma_{Y,t} \\ \sigma_{B,t} \\ \sigma_{S,t} \\ \sigma_{RB,t} \\ \sigma_{RE,t} \end{bmatrix},$$

where  $Y_t$  indicates seller performance,  $S_t$  is the number of seller-unilateral relationships,  $B_t$  stands for the number of buyer-unilateral relationships,  $RB_t$  refers to the number of reciprocated relationships, and  $RE_t$  is seller reputation, all at time  $t$ ;  $j$  denotes the lagged period used in the VARX model.

The vector of the exogenous variables includes, for each endogenous variable, an intercept that is a deterministic trend variable that captures the impact of the omitted, gradually changing trend of the variables (Fang et al. 2015). Consistent with Joshi and Hanssens (2010), we took a log-transformation of all variables so that the coefficients could be interpreted as elasticities. We derived the impulse response functions (IRFs), which trace the impact of a unit shock to any endogenous variable on other endogenous variables over time. Following Dekimpe and Hanssens (1995), we use generalized IRFs (or simultaneous shocking) to ensure that the order of the variables in the system does not affect the results and to account for contemporaneous effects. The duration of the shock is equal to the last period in which the IRF value had a  $t$ -statistic greater than 1. We accumulated IRFs until lag  $k$  to reflect the cumulative effect of the unexpected shock in the impulse variable on the response variable. Table 4 contains these results.

In support of  $H_{6a}$  and  $H_{6b}$ , seller-unilateral relationships (elasticity = .10,  $p < .01$ ) and buyer-unilateral relationships (elasticity = .19,  $p < .01$ ) positively affect seller performance. Reciprocal relationships also positively influence seller sales

(elasticity = .30,  $p < .01$ ), in support of  $H_7$ . Both  $H_{8a}$  and  $H_{8b}$  also receive support because the effect on sales performance is stronger for reciprocal relationships than for unilateral seller relationships (difference = .20,  $p < .01$ ) or unilateral buyer relationships (difference = .11,  $p < .05$ ), according to the pairwise difference tests.<sup>2</sup> A VARX model also provides insights into the dynamic reach of the three types of relationships. Changes in seller-unilateral relationships have the shortest reach; they significantly affect seller sales for only one day, whereas buyer-unilateral relationships affect sales for four days. Reciprocal relationships have the longest reach, with an effect on sales for seven days. Reciprocal relationships lift sales (in dollars) approximately 60% more than do buyer- and three times more than do seller-unilateral relationships (Table 4).

## Discussion

These results strongly support the premise that building a portfolio of reciprocal relationships is very important to growing sales in online shopping communities. The effect of reciprocal relationships on seller sales is three times greater and lasts many times longer than that of seller-initiated unilateral relationships; it is 60% greater and also lasts longer than buyer-initiated unilateral relationships. Thus, reciprocation represents a key process for online relationship building and an important precursor to purchase decisions. Sellers can indirectly influence buyer relationship formation by signaling their value as a partner (building a stronger reputation), or they can initiate relationships with potential buyers directly. However, our results suggest that seller relationship building has limited effectiveness for sales unless sellers get buyers to reciprocate (follow back). Reciprocation generates a substantial multiplier effect for both sales and dynamic reach. Thus, in Study 3, we consider a managerially important research question that emerges from these results: how can sellers get buyers to reciprocate their seller-initiated unilateral relationship?

## Seller Strategies for Forming Reciprocal Relationships (Study 3)

In Study 1, we show that relational observation is the most impactful signal for buyers' online relationship formation because it (1) has a direct effect on buyer relationship formation and (2) enhances the positive effects of both communication and reputation on buyer relationship formation. Furthermore, these relational observation effects are twice as strong when buyers form reciprocal versus unilateral relationships. Combining these insights with the results from Study 2, which show elevated payoffs from reciprocal relationships compared with unilateral relationships, we design Study 3 as a field experiment to isolate the effect of relational observation on the buyer's reciprocation of the seller's relational efforts and identify factors that can enhance its effectiveness (see Figure 2). Thus, Study 3 provides

<sup>2</sup>In a post hoc analysis, we separated the reciprocal relationships variable into seller-initiated and buyer-initiated reciprocal relationships to test for possible asymmetry in the effects on sellers' sales. Both variables significantly increased sales, but we found no significant pairwise difference.

**TABLE 4**  
**Study 2 Results: Dynamic Payoffs from Unilateral and Reciprocal Online Relationships**

Path Tested	Hypothesis	Elasticity Estimate	Number of Days	Dollar Value <sup>a</sup>
Seller-unilateral relationships → Seller performance	H <sub>6a</sub>	.10**	1	\$3.31
Buyer-unilateral relationships → Seller performance	H <sub>6b</sub>	.19**	4	\$6.29
Reciprocal relationships → Seller performance	H <sub>7</sub>	.30**	7	\$9.93
Pairwise difference (Reciprocal relationships – Seller-unilateral relationships)	H <sub>8a</sub>	.20**		\$6.62
Pairwise difference (Reciprocal relationships – Buyer-unilateral relationships)	H <sub>8b</sub>	.11*		\$3.64
Seller reputation → Seller performance		.04		

\* $p < .05$ .

\*\* $p < .01$ .

<sup>a</sup>Dollar value generated from one additional relationship.

managerially actionable strategies for using relational observation to grow online sales.

### Conceptual Model and Hypotheses

Building on the powerful effect of relational observation on buyers' natural relationship formation, we investigate whether sellers can improve their relationship-building efforts by proactively identifying buyers that are more likely to reciprocate. As in Study 1, we assert that relational observation occurs when a buyer follows another community member who follows a specific seller. The fellow community neighbors whom the buyer follows and who also follow the focal seller represent intermediaries. An intermediary's choice of seller thus sends a signal to buyers that this seller is reliable, credible, and a good fit with the buyer who follows that intermediary (Chen, Wang, and Xie 2011). Seller-initiated relationship efforts in turn should be more successful for buyers who engage in relational observation than for those who do not.

H<sub>9</sub>: A buyer is more likely to reciprocate a seller-initiated relationship if the buyer observes an intermediary following that seller (i.e., buyer relational observation).

When relational observation occurs, the reputations of both the intermediary and the buyer should determine the effectiveness of relational observation for promoting reciprocation. The effect of reputation can be understood from a signaling perspective, because signals have more weight according to the relative credibility of the source and the receiver (Cialdini 2009). The intermediary's and buyer's reputations both refer to general beliefs about these actors' expertise, knowledge, and credibility. Reputation or status can be inferred in online contexts by the number of followers, which "serves as a quality indicator for users of the community-generated content" (Labrecque et al. 2013, p. 258). Buyers are more likely to reciprocate seller-initiated relationship efforts when they observe an intermediary with a higher reputation because they judge the intermediary's choice as more credible. However, the intermediary's reputation effects are suppressed for buyers with reputations that are stronger than the intermediary's, because buyers give less weight to a source with a similar or lower level of perceived expertise or knowledge (Adjei, Noble, and Noble 2010). For example, a new buyer with few followers, observing an intermediary with many followers, likely

perceives that intermediary as more credible and knowledgeable than would a buyer who already has even more followers.

H<sub>10</sub>: During relational observation, (a) an intermediary's reputation positively affects the buyer's likelihood to reciprocate (i.e., buyer-reciprocated relationship), and (b) these effects diminish as the buyer's reputation increases.

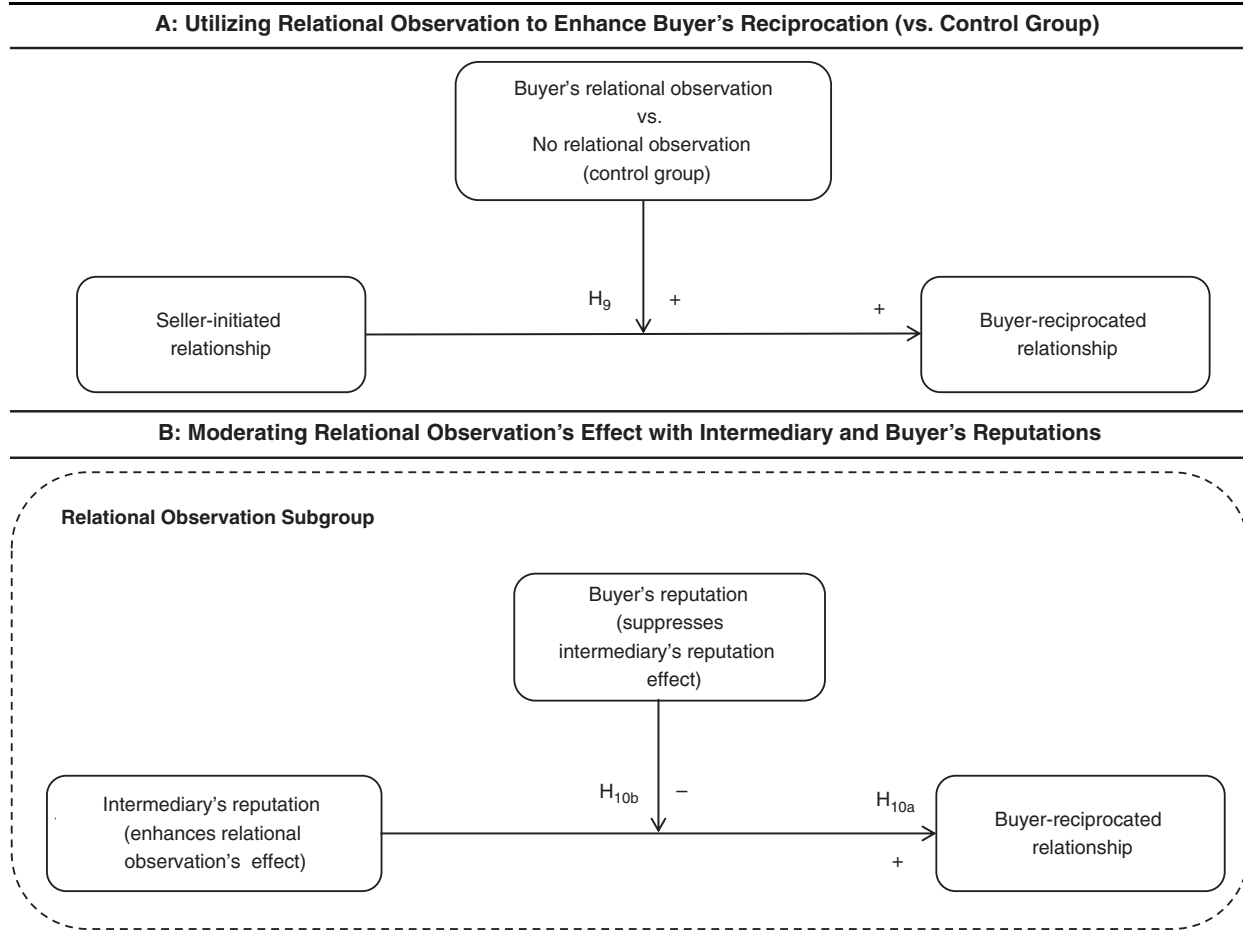
### Methodology

We conducted a field experiment on an online social media platform (Weibo.com, known popularly as "China's Twitter") to provide more confidence in the validity of our arguments, test the effectiveness of the important constructs identified in Studies 1 and 2 in a different online context, and address possible endogeneity concerns. In cooperation with a large seller of food and beverage products with approximately 1 million followers, we implemented a field experiment.

In the field experiment, we manipulated the groups of potential buyers with which the seller initiated a relationship: (1) the first group—relational observation group of potential buyers—consisted of only those community members who also had an intermediary following the seller, and (2) the second group of potential buyers—control group—consisted only of those who did not know any intermediary following the seller, meaning they could not engage in relational observation.

To construct the sample, we identified 4,000 members (intermediaries) who recently started following the seller. We then identified all followers of these 4,000 members, using a web crawler. After we removed potential targeted buyers who already were following the seller, we obtained a sample pool of 98,704 potential targeted buyers, none of whom were following the seller and all of whom were following an intermediary that was following the seller (relational observation condition). We randomly selected 386 potential buyers from this sample (we started with 400, but removed 14 observations with outliers on non-manipulated variables that were  $\pm 3$  SDs from the mean). The control group consisted of a randomly chosen 2,400 members who were not following either the seller or any intermediary that was following that seller. To ensure that the samples matched on all other attributes, we adopted a propensity matching process and generated the same number of observations. Mean comparisons of the nonmanipulated variables confirmed that no significant differences existed between the two groups (see the Web Appendix).

**FIGURE 2**  
**Field Experiment Testing Seller Strategies for Forming Reciprocal Relationships (Study 3)**



The managerial strategy of using a seller-initiated relationship was implemented with all 772 potential buyers over an eight-hour period. That is, using this seller's account, we initiated relationships with (followed) potential buyers in both groups. After seven days, we identified all buyers in both groups who had reciprocated the seller-initiated relationship. This window is reasonable; 96% of the reciprocal follows happened within three days. Thus, our dependent variable, buyer-reciprocated relationship, equals 1 if the buyer followed back and 0 if the buyer did not. For each buyer, we also capture reputation (number of followers), number of members the buyer follows, and the buyer's activity level (number of posts).

The second goal of the experiment was to test  $H_{10}$ , which posited that when relational observation occurs, the reputations of both the intermediary and the buyer determine the effectiveness of relational observation for promoting reciprocation. Because this hypothesis involves only the relational observation group, the analysis examined only this group of buyers. Thus, testing  $H_{10}$  required no additional manipulations; rather, we just measured the reputations of each intermediary and each of the 386 buyers, using the number of followers for each.

### **Estimation and Results**

To test our hypotheses, we use logistic regression, consistent with our binary dependent variable. In Panel A of Table 5, we include the buyer's relational observation (1 = relational observation, 0 = control) and control variables such as reputation, activity level, and the number of members the buyer follows to predict whether each buyer will reciprocate the seller-initiated relationship. A log-transformation of all control variables corrects for skewness. The results support  $H_9$ ; a buyer is more likely to reciprocate a seller-initiated relationship if (s)he observes an intermediary following the seller (i.e., there is buyer relational observation) ( $\beta = .59, p < .05$ ).<sup>3</sup>

To evaluate  $H_{10}$ , we estimated the model only for the relational observation group and tested whether the intermediary's reputation increased buyer reciprocation and whether

<sup>3</sup>As a robustness check, we operationalized relational observation as a continuous variable (i.e., number of intermediaries a buyer has) and still found support for  $H_9$  ( $\beta = .19, p < .01$ ). We thank an anonymous reviewer for this suggestion.

**TABLE 5**  
**Study 3 Results: Effect of Relational Observation and Reputation on Buyer's Reciprocation**

Variable	Hypothesis	Parameter Estimate
<b>Relational Observation Enhances Buyer Reciprocation (vs. Control Group)</b>		
Constant		-2.40 (.69)**
Buyer's relational observation (0 = no relational observation, 1 = relational observation)	H <sub>9</sub>	.59 (.29)*
Buyer's reputation		-.10 (.13)
Number of members buyer follows		-.03 (.10)
Buyer's activity level		-.05 (.06)
Sample size		772
Pseudo R <sup>2</sup>		.02
Likelihood ratio		6.54
<b>Moderating Effects of Reputations<sup>a</sup></b>		
Constant		-6.41 (1.68)**
Intermediary's reputation	H <sub>10a</sub>	.32 (.13)**
Intermediary's reputation × Buyer's reputation	H <sub>10b</sub>	-.16 (.06)**
Buyer's reputation		-.05 (.14)
Number of members buyer follows		.30 (.14)*
Buyer's activity level		.13 (.09)
Buyer's number of intermediaries		.24 (.08)**
Sample size		386
Pseudo R <sup>2</sup>		.11
Likelihood ratio		22.98

\* $p < .05$ .

\*\* $p < .01$ .

<sup>a</sup>These estimates feature the relational observation subgroup, because the intermediary's reputation is not defined in the no relational observation group (i.e., control group).

Notes: Standard errors are in parentheses.

the buyer's reputation suppressed this effect. Panel B of Table 5 includes the intermediary's reputation, buyer's reputation, intermediary's reputation × buyer's reputation interaction, number of members that the buyer follows, the buyer's activity level, and the buyer's number of intermediaries, which we use to predict buyer reciprocation. In support of H<sub>10a</sub>, the intermediary's reputation significantly increases the buyer's reciprocation ( $\beta = .32, p < .01$ ) when relational observation exists. As predicted by H<sub>10b</sub>, the interaction of the intermediary's reputation × the buyer's reputation was negative and significant ( $\beta = -.16, p < .01$ ); intermediary's reputation effects are suppressed as the buyer's reputation increases.

### Discussion

The results of Study 3 provide insights into managerially actionable strategies that sellers can use to increase the percentage of potential buyers who would reciprocate their relationship-building efforts. First, 8.8% of the participants in the relational observation group and 5.2% in the control group reciprocated the seller-initiated relationship, representing an approximately 70% lift in the buyer's likelihood to reciprocate in the treatment group. Thus, when deciding which potential buyers to follow in hopes of converting them into customers, rather than randomly following anyone, sellers could review their existing followers and follow those members of the community who follow those intermediaries. These potential buyers are much more likely to reciprocate, and as Study 2 shows, reciprocal relationships significantly outperform unilateral relationships. Second, sellers can identify targeted buyers among the followers of intermediaries with high reputations, who signal expertise and credibility and

thus increase the likelihood that potential buyers who follow them will reciprocate with the seller. Third, the balance between the reputation of the intermediary and the reputation of the potential buyer is important to consider; signals have more weight with the greater relative credibility of the source to the receiver.

Although online relationship building is rather inexpensive, sellers should work to maintain a higher proportion of reciprocal versus unilateral relationships because this ratio signals the quality of their relationships. Some community members "unfollow" others who do not reciprocate after some period of time. As one Twitter user noted, "I unfollow if they have shown no interest in interacting with me" (Schaefer 2013).

## Emerging Theory of Online Relationships

Although some may argue that online relationships function in the same way as do offline relationships, we suggest that several fundamental differences must be accounted for to understand and effectively execute online relationship marketing strategies. As a first step in supporting this effort, we describe the unique characteristics of online relationships, outline evidence from extant as well as this research, and discuss implications for building and executing online relationship marketing strategies. Three tenets parsimoniously capture these insights and inform the emerging theory of online relationships that we summarize in Table 6.

First, online relationships are more anonymous than offline ones. Offline partners typically know the identity (e.g., name, job) of potential partners, with some confidence. Online partners instead tend to have limited information about or confidence in

**TABLE 6**  
**Emerging Theory of Online Relationships: Research Tenets**

Unique Online Characteristics	Source of Unique Characteristics	Supporting Evidence
<b>Tenet 1: Online anonymity makes any risk-reducing signals highly influential for relationship formation, allows online relationships to form and end quickly, and supports relationship formation and influence among dissimilar partners.</b>		
Online relationships are more anonymous: Partners have limited information or certainty regarding the identity of potential online partners (Rotman 2010).	<ul style="list-style-type: none"> <li>• Online relational partners can be located anywhere in the world.</li> <li>• Online relationships lack rich, face-to-face interactions and other nonverbal cues about trustworthiness of an online relational partner (Rovie 2013).</li> </ul>	<ul style="list-style-type: none"> <li>• 96% of reciprocal relationships formed in only 3 days (Study 3).</li> <li>• Studies show increased risk of opportunism (Rotman 2010).</li> <li>• Social norms are weaker online (Wallace 1999).</li> </ul>
<b>Tenet 2: The ease of forming and maintaining online unilateral relationships allows customers to develop an extensive and diverse portfolio of unilateral relationships, which represents an important source of insight for their decision making.</b>		
Unilateral relationships are easier to form and maintain online: many online relationships have a stable, unilateral structure, in which a relationship partner never reciprocates but remains in the unilateral relationship as a follower (Trier and Richter 2015).	<ul style="list-style-type: none"> <li>• Unilateral relationships have lower formation and maintenance costs (effort, time, emotion) online.</li> <li>• Offline unilateral relationships become either bilateral as social norms make partners reciprocate relational advances, even when not desired (Cialdini 2009), or else disintegrate if one partner's failure to reciprocate causes the other partner to avoid future interactions.</li> </ul>	<ul style="list-style-type: none"> <li>• A typical online user has more unilateral than reciprocated relationships (Study 2).</li> <li>• There is less social pressure to reciprocate relational advances in a computer-mediated environment (Trier and Richter 2015).</li> <li>• There are fewer barriers to relationship formation and termination online (McKenna, Green, and Gleason 2002).</li> </ul>
<b>Tenet 3: Reciprocated online relationships have a strong effect on customers' psychological commitment and financially relevant behaviors.</b>		
Tenets 1 and 2 outline key differences between online and offline relationships; Tenet 3 highlights a commonality that is not widely acknowledged but appears to be fundamental to building relationships online (i.e., reciprocity).	<ul style="list-style-type: none"> <li>• Because most online relationships are unilateral, reciprocation may take on added significance; it helps a buyer differentiate a particular relationship among the vast number of unilateral relationships.</li> <li>• Feelings of reciprocity are fundamental and represent a hardwired social rule; they translate across cultures and can be felt even toward inanimate objects, such as computers (Nass and Yen 2010).</li> </ul>	<ul style="list-style-type: none"> <li>• Impact of risk-reducing signals is enhanced when reciprocating a seller's outreach versus initiating a relationship (Study 1).</li> <li>• Reciprocal relationships lift sales (in dollars) about 60% more than do buyer and three times more than do seller-unilateral relationships (Study 2).</li> <li>• Reciprocal relationships have the longest impact on sales: seven days versus one and four days for seller- and buyer-unilateral relationships, respectively (Study 2).</li> </ul>

the identity of a partner, such that “the relative anonymity of e-commerce provides a basis for opportunism that does not exist in more traditional forms of business exchange” (Rotman 2010, p. 59). The lack of geographical proximity adds anonymity in terms of location, beyond the identity anonymity that characterizes computer-mediated exchanges. Consequently, the added risk of opportunism from unknown or distant partners and the scarcity of other cues make any available risk-reducing signals highly impactful on online relationship formation. Our research shows that observing other community members, receiving seller communication or follow-back, and reading reviews are all critical signals that give a buyer confidence to build a relationship or make a purchase. Thus, managers need to carefully identify and control the limited number of online risk-reducing signals they transmit. We know the importance of reviews, but other functions, such as seller “likes,” customized communication, and other community-based signals, are less well understood and demand further research.

Anonymity also allows online relationships to form and end quickly. When relational partners know that they can end a relationship and are very likely to never “run into” the person again while also having few common acquaintances, it promotes both risky trial and easy termination. For example, in Study 3, 96% of the observed reciprocal relationships formed in the first three days. Managers should be aware of the high rate of change and short decision windows in online contexts and develop processes to support a nearly real-time response to relational outreach. Otherwise, sellers may lose an opportunity to build a relationship with significant financial ramifications. As Study 2 shows, missing an opportunity to reciprocate a buyer's outreach can reduce sales by approximately 40%, as well as ruining the chances of benefiting from a long-term relationship. More research is needed to understand the optimal response time for online reciprocation that can signal interest but not that the response is automated or without any partner discernment.

In addition, anonymity supports online relationship formation and influence among dissimilar people because of the

fewer visual cues and lower pressure from social norms (Wallace 1999). Sellers can use online anonymity to make vertical moves in products and brands by building communities in which online shoppers provide information, testimonials, and relational observation for dissimilar groups of potential customers that would typically not interact in an offline context. The strong role of relational observation in promoting relationships and sales can work across very dissimilar groups in an anonymous online context (Studies 1 and 3), but this would be atypical in the offline context as shoppers often ignore input from people dissimilar to themselves (Yaniv, Choshen-Hillel, and Milyavsky 2011). This discussion of anonymity leads to our first tenet:

Tenet 1: Online anonymity makes any risk-reducing signals highly influential for relationship formation, allows online relationships to form and end quickly, and supports relationship formation and influence among dissimilar partners.

Second, unilateral relationships are much easier to form and maintain online than offline. The lower cost (effort, time, emotion) and continuous temporal connectivity (24/7) of online relationships allow users to reach out and build relationships with many buyers and sellers. In an offline context, exchange partners typically must be colocated in space and time for initial relationship building, and this process requires more cognitive and emotional effort in rich, face-to-face, offline environments to build and maintain the relationship. In addition, offline relationships over time tend to either become bilateral, if social norms pressure partners to reciprocate relationship advances (Cialdini 2009), or disintegrate, because one partner's failure to reciprocate over time will cause the other partner to feel spurned and avoid future interactions, thus limiting the size of offline relational portfolios.

In contrast, many online relationships have a stable unilateral structure, in which a relationship partner never reciprocates but remains in the unilateral relationship as a follower (Trier and Richter 2015). It is common for online partners not to reciprocate relational advances, because the computer-mediated environment reduces the social pressure to do so. This allows people to build extensive, easy-to-maintain, unilateral relationships that would be virtually impossible in an offline setting. For example, reality television star Kim Kardashian has 66 million unilateral relationship followers on Instagram, but only 104 of them are the more effortful bilateral or reciprocated online relationships. Thus, the ease of forming and maintaining unilateral online relationships allows customers to develop an extensive and diverse portfolio of unilateral relationships, which is important—and sometimes even essential—for decision making (e.g., identifying products or trustworthy sellers). For example, for buyers considering forming a unilateral relationship, relational observation had strong direct and leveraging effects on relationship formation. Managers need to recognize that most of their potential online customers are going to turn to this pool of partners for information and insight. Thus, sellers should use strategies such as entering a new cluster of customers and leveraging their interconnections rather than targeting different customers with few common intermediaries.

Tenet 2: The ease of forming and maintaining online unilateral relationships allows customers to develop an extensive and diverse portfolio of unilateral relationships, which

represents an important source of insight for their decision making.

Third, while the previous two tenets outlined key differences between online and offline relationships, this last tenet highlights a commonality that is not widely acknowledged but appears to be fundamental to building online relationships (i.e., reciprocity). Reciprocity appears to be as important online as it is in an offline context. Many managers involved in our research were surprised at the significant difference in sales coming from buyer-unilateral relationships (i.e., buyer is following a seller) versus reciprocal relationships (i.e., seller is also following the buyer), with sales from the latter being 60% higher and having nearly twice the dynamic reach (Study 2). But why do buyers care if the seller follows them back, if they get the same information and access? Research has suggested that people use the same psychological processes to manage their online and offline relationships, and reciprocity promotes relationship formation, encourages positive behaviors, and enhances performance (Zhu et al. 2012). Therefore, managers should realize that reciprocating a link is a critical relationship-building step, even online, with psychological significance beyond the seemingly trivial action involved.

In particular, our results show that buyers seem to make a meaningful commitment when they reciprocate a seller's outreach because the impact of risk-reducing signals is enhanced when they do so, relative to initiating a relationship (Study 1). The sales performance also is greater for reciprocal than for either type of unilateral relationship (Study 2). In this sense, managers must not only reciprocate their customers' outreach efforts (which many sellers in our sample failed to do) but also design strategies to promote customer reciprocation as a means to build stronger online relationships and enhance sales. Reciprocation may even take on added significance in an online context because it helps the buyer differentiate a particular relationship among the vast number of unilateral relationships; however, more research is needed.

Tenet 3: Reciprocated online relationships have a strong effect on customers' psychological commitment and financially relevant behaviors.

## General Discussion

Academic research on the drivers and payoffs of online relationship formation is scarce. In response, we aim to increase understanding of online relationship formation, the performance payoffs of different types of online relationships, and the most effective relationship-building strategies. Our three studies provide both theoretical and managerial implications.

### Theoretical Implications

As discussed in depth in the previous section, we identify fundamental differences and commonalities in offline and online channels that can affect relationship formation and build on these insights to offer three research tenets as a first step in developing a theory of online relationships. This emerging theory attempts to prevent academics and managers from simply extending results from offline relationships to an online context



with little regard for its unique characteristics. We highlight the theoretical implications of a few other findings next.

Our results show that in the online context, being able to validate the choice of a relational partner by observing the behavior of other people (i.e., relational observation) is a critical buyer strategy. Relational observation signals the quality of the seller directly, increasing the likelihood of relationship formation, but it also enhances the positive effects of both communication and the seller's reputation. Online e-retailer Overstock.com agrees that "observing the behavior of other people" was key to its overall success (Bradley et al. 2011, p. 12). Buyers also use other signals, such as communication or reputation, to reduce information asymmetry with sellers and reduce the risks of relationship formation.

However, ignoring the dynamic nature of online relationships can mask the differential effectiveness of observable signals over time. The effects of communication and relational observation diminish as the buyer gains experience in the community, but the positive effect of the seller's reputation increases with more buyer experience. This latter finding conflicts with our prediction. Perhaps when buyers gain experience in the community, they learn and identify which sellers have strong reputations, follow them to keep track of these "leading" sellers, and reward them by returning to purchase more. This investigation of the dynamic effects of various signals for buyers extends previous research. For example,

Katona, Zubcsek, and Sarvary (2011) suggest that network duration has no effect on the growth rate of a user's network. We confirm the lack of a direct effect, but we also show that duration has a significant, moderating effect on relationship formation across many trust-inducing signals. Finally, our results are consistent with previous online research on the importance of reputation; they also extend these findings by revealing the key role of the relative difference in reputations among members when observing their behaviors.

### **Managerial Implications and Insights into Online Relationship-Formation Strategies**

As our three studies show, when it comes to online relationship formation and its payoffs, three aspects are critical: (1) risk-reducing signals, such as communication, reputation, and relational observation; (2) the level of the buyer's experience; and (3) the relationship type (unilateral vs. reciprocal). In a post hoc analysis designed to derive managerial insights, we integrated the Study 1 results (Table 7, Panel A) with the elasticity results from Study 2 to obtain takeaways about the most effective strategies at different levels of buyer experience ( $\pm 1$  SD) and relationship type (unilateral vs. reciprocal), as summarized in Table 7, Panel B. With this analysis, we determine that, independent of buyer experience, bilateral communication, seller reputation, and relational observation all have greater

**TABLE 7**  
**Managerial Insights into Online Relationship Formation Strategies**

<b>A: Post Hoc Analysis for Study 1</b>		
	<b>Hazard Probability of Relationship Formation</b>	
	<b>Low Buyer's Experience (-1 SD)</b>	<b>High Buyer's Experience (+1 SD)</b>
<b>Bilateral Communication</b>		
Buyer's reciprocal relationship = 0 (unilateral relationship)	.36	.06
Buyer's reciprocal relationship = 1 (reciprocal relationship)	.62	.32
<b>Seller's Reputation</b>		
Buyer's reciprocal relationship = 0 (unilateral relationship)	.13	.63
Buyer's reciprocal relationship = 1 (reciprocal relationship)	.39	.89
<b>Buyer's Relational Observation</b>		
Buyer's reciprocal relationship = 0 (unilateral relationship)	.80	-.06
Buyer's reciprocal relationship = 1 (reciprocal relationship)	1.16	.30

### **B: Managerial Takeaways**

- For new buyers, relational observation is the most effective online risk-reducing signal, followed by communication and the seller's reputation.
- For experienced buyers, seller's reputation is the most effective online risk-reducing signal, followed by communication and relational observation.
- Buyer-seller reciprocal relationships consistently outperform unilateral relationships, regardless of the level of the buyer's experience. Reciprocal relationships lift sales (in dollars) about 60% more than do buyer-unilateral relationships and three times more than seller-unilateral relationships.
- To increase the likelihood of potential buyers reciprocating seller-initiated relationships rather than randomly following anyone, sellers should review their existing followers (i.e., intermediaries) and follow those members of the community who are following the intermediaries (vs. following members who lack any intermediaries following the seller).
- Sellers should identify who, among their followers, has the highest reputations and then initiate relationships with their followers, because buyers are more likely to reciprocate seller-initiated relationship efforts when they observe an intermediary with a higher reputation than their own.

effects on buyer relationship formation when a buyer is reciprocating versus initiating a unilateral relationship. The effects on reciprocal relationships range from approximately 50% greater for relational observation with inexperienced buyers to five times greater for bilateral communication with experienced buyers. These signals are critical to get buyers to form higher-performing reciprocal bonds with a seller. Study 2 shows that reciprocal relationships have three times more impact on seller performance than seller-unilateral relationships, indicating that seller strategies leading to higher levels of reciprocal relationship formation will be most effective.

In addition, the effectiveness of online risk-reducing signals depends on the extent of the buyer's experience in the community and whether that buyer is initiating or reciprocating a relationship. For new buyers in the community ( $-1$  SD in experience) forming reciprocal relationships, relational observation is most effective for increasing relationship formation (approximately 90% more effective than the second best strategy, communication). The pattern of results for new buyers in unilateral relationships initiated by the seller is similar. Relational observation leads to the biggest increase in buyer relationship formation; it is twice as effective as communication and six times more effective than seller's reputation. New buyers thus appear to value signals they observe from the actions of close others. As one community buyer notes, "I care about what my friends like. I have added [followed] many of their favorites to my list of favorites and have bought several things based on that activity feed that I otherwise wouldn't have known about" (Auman 2010). Searching through a vast number of sellers may seem overwhelming to buyers when they first join a community. Thus, observing the sellers that their "friends" follow may determine the buyer's early consideration set of sellers.

In contrast, the pattern for experienced buyers ( $+1$  SD) shows that for buyers in reciprocal relationships, the seller's reputation is the most effective means to increase the likelihood of buyer relationship formation (almost three times as effective as communication or relational observation). The ranking stays the same for experienced buyers in unilateral relationships initiated by the seller. Thus, relational observation, which was most effective for new buyers, is the least effective for experienced buyers. Seller's reputation is the least effective for new buyers, but it leads to the largest increases in buyer relationship formation for experienced buyers. Regardless of the buyer's experience level, however, our analysis shows that reciprocal relationships consistently generate higher returns than unilateral ones.

Overall, the biggest bang for the buck for sellers comes from building reciprocal relationships. The elasticity analysis in Study 2 shows that reciprocal relationships generate payoffs that are 60% to 200% greater than those of unilateral relationships. Study 3 identifies some strategies that increase the likelihood of forming reciprocal relationships, such as the presence of an intermediary that follows that seller (relational observation). Thus, it would be more effective for sellers to initiate relationships with those buyers whom they have identified by looking through the members who already follow them.

### **Limitations and Research Directions**

This research has several limitations. We test our conceptual framework in a goods context, but emerging online marketplaces also focus on selling services. Further research could investigate whether the online risk-reducing signals in services-oriented online communities differ from those we investigated. We examine relationships between buyers and sellers in an online shopping community who could have simultaneous relationships with members of other communities in the same online marketplace. Additional research could investigate the impact of relationships outside a focal community on the relationships within that community.

We faced some restrictions due to the available data. In Study 2, the private nature of the transactional data prevented us from isolating which transactions came from which specific buyer. Thus, it is accounted for at an aggregated level, with seller performance measured as sales from all buyers in a given time period. We also did not have access to private communications between buyers and sellers. Further research might study how communication may make buyers more aware of specific sellers, as another mechanism for enhancing relationship formation. In addition, because Study 2 focused on the payoffs of formed relationships to sellers, the sample consisted of sellers with whom buyers had formed relationships in Study 1, who may be more effective than average for the entire community.

Reciprocity also played an important role. Further research might aim to deepen this understanding by investigating whether buyers and sellers choose to reciprocate for different reasons, as well as whether or how their performance outcomes depend on which party initiates versus reciprocates the relationship. Consistent with our focus on relationship formation, our studies address "early-stage" relationships; further research could investigate how to maintain or refresh more mature relationships and assess long-term payoffs to sellers.

---

## **REFERENCES**

- Adjei, Mavis T., Stephanie M. Noble, and Charles H. Noble (2010), "The Influence of C2C Communications in Online Brand Communities on Customer Purchase Behavior," *Journal of the Academy of Marketing Science*, 38 (5), 634–53.
- Anderson, Rolph E., Srinivasan Swaminathan, and Rajiv Mehta (2013), "How to Drive Customer Satisfaction," *MIT Sloan Management Review*, 54 (4), 13–15.
- Andrews, Lynda, and Maree V. Boyle (2008), "Consumers' Accounts of Perceived Risk Online and the Influence of Communication Sources," *Qualitative Market Research*, 11 (1), 59–75.
- Ansari, Asim, Oded Koenigsberg, and Florian Stahl (2011), "Modeling Multiple Relationships in Social Networks," *Journal of Marketing Research*, 48 (August), 713–28.
- Auman, Megan (2010), "Is Etsy Choosing Community over Commerce?" blog entry, *Designing an MBA* (December 6), <http://designinganmba.com/2010/12/06/etsy-community-commerce/>.
- Baker, Wayne E., Robert R. Faulkner, and Gene A. Fisher (1998), "Hazards of the Market: The Continuity and Dissolution of Inter-organizational Market Relationships," *American Sociological Review*, 63 (2), 147–77.

- Benedicktus, Ray L., Michael K. Brady, Peter R. Darke, and Clay M. Voorhees (2010), "Conveying Trustworthiness to Online Consumers: Reactions to Consensus, Physical Store Presence, Brand Familiarity, and Generalized Suspicion," *Journal of Retailing*, 86 (4), 322–35.
- Biswas, Dipayan, and Abhijit Biswas (2004), "The Diagnostic Role of Signals in the Context of Perceived Risks in Online Shopping: Do Signals Matter More on the Web?" *Journal of Interactive Marketing*, 18 (3), 30–45.
- Bradley, Stephen P., Nancy Bartlett, and James Weber (2011), "Retail Shopping in 2007: The Net Versus the Mall," case study, *Harvard Business Review*, <https://hbr.org/product/retail-shopping-in-2007-the-net-versus-the-mall/707566-PDF-ENG>.
- Chan, Darius K.-S., and Grand H.-L. Cheng (2004), "A Comparison of Offline and Online Friendship Qualities at Different Stages of Relationship Development," *Journal of Social and Personal Relationships*, 21 (3), 305–20.
- Chan, Kimmy W., and Stella Y. Li (2010), "Understanding Consumer-to-Consumer Interactions in Virtual Communities: The Salience of Reciprocity," *Journal of Business Research*, 63 (9), 1033–40.
- Chen, Yi-Fen (2008), "Herd Behavior in Purchasing Books Online," *Computers in Human Behavior*, 24, 1977–92.
- Chen, Yubo, Qi Wang, and Jinhong Xie (2011), "Online Social Interactions: A Natural Experiment on Word of Mouth Versus Observational Learning," *Journal of Marketing Research*, 48 (April), 238–54.
- Cialdini, Robert (2009), *Influence: Science and Practice*. Boston: Pearson Education.
- Cox, David R. (1972), "Regression Models and Life-Tables," *Journal of the Royal Statistical Society. Series B. Methodological*, 34 (2), 187–220.
- Curry, Renata G., and Ping Zhang (2011), "Social Commerce: Looking Back and Forward," *Proceedings of the American Society for Information Science and Technology*, 48 (1), 1–10.
- Dahl, Darren W., Heather Honea, and Rajesh V. Manchanda (2005), "Three Rs of Interpersonal Consumer Guilt: Relationship, Reciprocity, Reparation," *Journal of Consumer Psychology*, 15 (4), 307–15.
- Dekimpe, Marnik G., and Dominique M. Hanssens (1995), "The Persistence of Marketing Effects on Sales," *Marketing Science*, 14 (1), 1–21.
- Dellarocas, Chrysanthos (2003), "The Digitization of Word of Mouth: Promise and Challenges of Online Feedback Mechanisms," *Management Science*, 49 (10), 1407–24.
- Dholakia, Utpal M., and Silvia Vianello (2009), "The Fans Know Best," *The Wall Street Journal* (August 17), <https://www.wsj.com/articles/SB10001424052970204482304574222062946162306>.
- eBay (2015), "Special Interest Groups," (accessed July 3, 2015), <http://community.ebay.com/t5/Special-Interest-Groups/ct-p/1125>.
- eMarketer (2014), "Retail Sales Worldwide Will Top \$22 Trillion this Year," (accessed July 5, 2015), [www.emarketer.com/Article/Retail-Sales-Worldwide-Will-Top-22-Trillion-This-Year/1011765](http://www.emarketer.com/Article/Retail-Sales-Worldwide-Will-Top-22-Trillion-This-Year/1011765).
- Fang, Eric, Xiaoling Li, Minxue Huang, and Robert W. Palmatier (2015), "Direct and Indirect Effects of Buyers and Sellers on Search Advertising Revenues in Business-to-Business Electronic Platforms," *Journal of Marketing Research*, 52 (June), 407–22.
- Forrester Report (2015), "Forrester Research eCommerce Forecast, 2014 to 2019," *Forrester* (April 22), [www.forrester.com/Forrester+Research+eCommerce+Forecast+2014+To+2019+US/fulltext/-/E-res116713](http://www.forrester.com/Forrester+Research+eCommerce+Forecast+2014+To+2019+US/fulltext/-/E-res116713).
- Gouldner, Alvin W. (1960), "The Norm of Reciprocity: A Preliminary Statement," *American Sociological Review*, 25 (2), 161–78.
- Ha, Hong-Youl (2004), "Factors Affecting Online Relationships and Impacts," *Marketing Review*, 4 (2), 189–209.
- Joshi, Amit, and Dominique M. Hanssens (2010), "The Direct and Indirect Effects of Advertising Spending on Firm Value," *Journal of Marketing*, 74 (January), 20–33.
- Kane, Gerald C., Robert G. Fichman, John Gallaughier, and John Glaser (2009), "Community Relations 2.0," *Harvard Business Review*, 87 (11), 45–50.
- Katona, Zsolt, Peter P. Zubcsek, and Miklos Sarvary (2011), "Network Effects and Personal Influences: The Diffusion of an Online Social Network," *Journal of Marketing Research*, 48 (June), 425–43.
- Kirmani, Amna, and Akshay R. Rao (2000), "No Pain, No Gain: A Critical Review of the Literature on Signaling Unobservable Product Quality," *Journal of Marketing*, 64 (April), 66–79.
- Kleinbaum, David G., and Mitchel Klein (2005), "Competing Risks Survival Analysis," in *Survival Analysis: A Self-Learning Text*. New York: Springer, 425–96.
- Labrecque, Lauren I., Jonas vor dem Esche, Charla Mathwick, Thomas P. Novak, and Charles F. Hofacker (2013), "Consumer Power: Evolution in the Digital Age," *Journal of Interactive Marketing*, 27 (4), 257–69.
- Lund, Donald J., Irina V. Kozlenkova, and Robert W. Palmatier (2016), "Relationships: Good vs. Bad Relationship Framework," in *The Dark Side of CRM: Customers, Relationships and Management*, B. Nguyen, L. Simkin and A. Canhoto, eds. Abingdon, UK: Routledge, 93–121.
- Manchanda, Puneet, Grant Packard, and Adithya Pattabhiramaiah (2015), "Social Dollars: The Economic Impact of Customer Participation in a Firm-Sponsored Online Customer Community," *Marketing Science*, 34 (3), 367–87.
- McKenna, Katelyn Y., Amie S. Green, and Marci E. Gleason (2002), "Relationship Formation on the Internet: What's the Big Attraction," *Journal of Social Issues*, 58 (1), 9–31.
- Mitra, Debanjan, and Peter N. Golder (2002), "Whose Culture Matters? Near-Market Knowledge and Its Impact on Foreign Market Entry Timing," *Journal of Marketing Research*, 39 (August), 350–65.
- Nass, Clifford, and Corina Yen (2010), *The Man Who Lied to His Laptop*. New York: Penguin.
- Nitzan, Irit, and Barak Libai (2011), "Social Effects on Customer Retention," *Journal of Marketing*, 75 (November), 24–38.
- Nowlin, Jordan (2014), "What You Need to Know about the Chinese Consumer: Understanding Taobao," *ChannelAdvisor.com* (September 12), [www.channeladvisor.com/blog/?pn=market-places/what-you-need-to-know-about-the-chinese-consumer-understanding-taobao](http://www.channeladvisor.com/blog/?pn=market-places/what-you-need-to-know-about-the-chinese-consumer-understanding-taobao).
- Pai, Pei-Yu, and Hsien-Tung Tsai (2011), "How Virtual Community Participation Influences Consumer Loyalty Intentions in Online Shopping Contexts: An Investigation of Mediating Factors," *Behaviour & Information Technology*, 30 (5), 603–15.
- Palmatier, Robert W. (2008), *Relationship Marketing*. Cambridge, MA: Marketing Science Institute.
- Palmatier, Robert W., Rajiv P. Dant, and Dhruv Grewal (2007), "A Comparative Longitudinal Analysis of Theoretical Perspectives of Interorganizational Relationship Performance," *Journal of Marketing*, 71 (October), 172–94.
- Palmatier, Robert W., Rajiv P. Dant, Dhruv Grewal, and Kenneth R. Evans (2006), "Factors Influencing the Effectiveness of Relationship Marketing: A Meta-Analysis," *Journal of Marketing*, 70 (October), 136–53.
- Palmatier, Robert W., Mark B. Houston, Rajiv P. Dant, and Dhruv Grewal (2013), "Relationship Velocity: Toward a Theory of Relationship Dynamics," *Journal of Marketing*, 77 (January), 13–30.

- Palmatier, Robert W., Cheryl Burke Jarvis, Jennifer R. Bechkoff, and Frank R. Kardes (2009), "The Role of Customer Gratitude in Relationship Marketing," *Journal of Marketing*, 73 (September), 1–18.
- Pavlou, Paul A., Huigang Liang, and Yajiong Xue (2007), "Understanding and Mitigating Uncertainty in Online Environments: A Principal-Agent Perspective," *Management Information Systems Quarterly*, 31 (1), 105–36.
- Porter, Constance E., and Naveen Donthu (2008), "Cultivating Trust and Harvesting Value in Virtual Communities," *Management Science*, 54 (1), 113–28.
- Reich, Dan (2013), "Startup CEO: How to Build a Double Sided Marketplace in the Fashion Industry," *Forbes* (October 25), [www.forbes.com/sites/danreich/2013/10/25/startup-ceo-how-to-build-a-double-sided-marketplace-in-the-fashion-industry](http://www.forbes.com/sites/danreich/2013/10/25/startup-ceo-how-to-build-a-double-sided-marketplace-in-the-fashion-industry).
- Reinartz, Werner, and V. Kumar (2003), "The Impact of Customer Relationship Characteristics on Profitable Lifetime Duration," *Journal of Marketing*, 67 (January), 77–99.
- Reinartz, Werner, Jacquelyn S. Thomas, and V. Kumar (2005), "Balancing Acquisition and Retention Resources to Maximize Customer Profitability," *Journal of Marketing*, 69 (January), 63–79.
- Rotman, Leonard I. (2010), "Trust, Loyalty, and E-Commerce," in *Ethical Issues in E-Business: Models and Frameworks*, Daniel J. Palmer, ed. Hershey, PA: Business Science Reference, 58–80.
- Rovie, Eric M. (2013), "The Anonymity of the Internet: A Problem for E-Commerce and a 'Modified' Hobbesian Solution," in *Examining the Concepts, Issues, and Implications of Internet Trolling*, J. Bishop, ed. Hershey, PA: Information Science Reference, 197–208.
- Rust, Roland T., and Tuck Siong Chung (2006), "Marketing Models of Service and Relationships," *Marketing Science*, 25 (6), 560–80.
- Schaefer, Mark (2013), "Here's Why 100,000 People Unfollowed Me on Twitter," *BusinessGrow.com*, [www.businessgrow.com/2013/04/02/heres-why-100000-people-unfollowed-me-on-twitter/](http://www.businessgrow.com/2013/04/02/heres-why-100000-people-unfollowed-me-on-twitter/).
- Stephen, Andrew T., and Olivier Toubia (2010), "Deriving Value from Social Commerce Networks," *Journal of Marketing Research*, 47 (April), 215–28.
- Thompson, Scott A., and Rajiv K. Sinha (2008), "Brand Communities and New Product Adoption: The Influence and Limits of Oppositional Loyalty," *Journal of Marketing*, 72 (November), 65–80.
- Trier, Matthias, and Alexander Richter (2015), "The Deep Structure of Organizational Online Networking-An Actor-Oriented Case Study," *Information Systems Journal*, 25 (5), 465–88.
- Van den Bulte, Christophe, and Stefan Wuyts (2007), *Social Networks and Marketing*. Cambridge, MA: Marketing Science Institute.
- Verma, Varsha, Dheeraj Sharma, and Jagdish Sheth (2016), "Does Relationship Marketing Matter in Online Retailing? A Meta-Analytic Approach," *Journal of the Academy of Marketing Science*, 44 (2), 206–17.
- Wallace, Kathleen A. (1999), "Anonymity," *Ethics and Information Technology*, 1 (1), 21–31.
- Yaniv, Ilan, Shoham Choshen-Hillel, and Maxim Milyavsky (2011), "Receiving Advice on Matters of Taste: Similarity, Majority Influence, and Taste Discrimination," *Organizational Behavior and Human Decision Processes*, 115 (1), 111–20.
- Yin, Elizabeth (2010), "Social Shop Till You Drop: A Quick Primer," (July 11), <https://gigaom.com/2010/07/11/social-commerce>.
- Yoon, Sung-Joon (2002), "The Antecedents and Consequences of Trust in Online-Purchase Decisions," *Journal of Interactive Marketing*, 16 (2), 47–63.
- Zhu, Rui, Utpal M. Dholakia, Xinlei Chen, and René Algesheimer (2012), "Does Online Community Participation Foster Risky Financial Behavior?" *Journal of Marketing Research*, 49 (June), 394–407.