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Marketing Science Institute
1000 Massachusetts Avenue
Cambridge, MA
02138-5396

Phone: 617.491.2060
Fax: 617.491.2065
www.msi.org

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Customer Relationship Management in Virtual Communities

Constance Elise Porter and Naveen Donthu

As firms build relationships with customers in online communities, which marketing elements are most important? This study investigates how quality content, member embeddedness, and customer interactions foster customer trust in the firm.

Report Summary

In this study, authors Porter and Donthu investigate how marketers can use virtual communities to build relationships with consumers. Previous scholars have examined the value of virtual communities to customers, but this study investigates how a firm's efforts to cultivate customers' trust through sponsored online communities can lead to a harvest of value for the firm itself. Porter and Donthu hypothesize that customers' perceptions that the firm is attempting to provide quality content, to foster member embeddedness, and to encourage interaction in its virtual community foster favorable beliefs about and trust in the firm. Further, they hypothesize that the resultant trust motivates customers to behave relationally toward the sponsoring firm, manifested by sharing information with, coproducing new products with, and granting loyalty to the sponsoring firm.

Using structural equation modeling techniques to analyze data from 663 customers, they discover that efforts to provide quality content

and to foster member embeddedness do indeed have positive effects on customer beliefs about the sponsor; in fact, fostering member embeddedness has a stronger effect on customer beliefs than does providing quality content. Interestingly, they find that a sponsoring organization's effort to foster embeddedness may be seen by customers as opportunistic, but that a perception of opportunism does not diminish trust in the sponsor, a result that they posit may be due to the fact that customers are aware of the commercial context of firm-sponsored virtual communities and therefore do not reduce trust based solely on signs of opportunistic behavior.

Their results also support the hypotheses that trust increases customers' willingness to share personal information, to be loyal to the company, and to cooperate in new product development. Overall, their findings underscore the importance of using technology, such as virtual communities, to manage relationships with consumers. ■

Constance Elise Porter

is Assistant Professor of Marketing at the Mendoza College of Business, University of Notre Dame.

Naveen Donthu

is Katherine S. Bernhardt Research Professor and Professor of Marketing at the Robinson College of Business, Georgia State University.

Introduction

Many firms that have launched virtual communities for their customers have found that those communities have failed to create value for the firm (Balasubramanian and Mahajan 2001). Virtual communities were supposed to lead to increased sales, positive word-of-mouth, increased information sharing, and richer marketing research data (e.g., Brown, Tilton, and Woodside 2002; Kozinets 2002). Lackluster actual results suggest that managers need a better understanding of how to create value from the virtual communities that they sponsor (Balasubramanian and Mahajan 2001; Dholakia, Bagozzi, and Pearo 2004; Kim 2000).

The efforts of a community sponsor often determine the success of a virtual community (Kim 2000), but there is little guidance regarding which efforts are most effective. First, most scholars focus on explaining the value of virtual communities to customers rather than on how firms might leverage such communities to create value for themselves (e.g., Dholakia, Bagozzi, and Pearo 2004; Muñiz and Schau 2005). Second, although some scholars offer insightful propositions about virtual communities' value to sponsoring firms, few provide empirical evidence that explains how the efforts of a community sponsor might create value (e.g., Armstrong and Hagel 1995). Finally, most of the few studies that do present empirical findings rely on descriptive or qualitative data that do not yield generalizable results (e.g., Brown, Tilton, and Woodside 2002; Kozinets 2002).

We conduct a broad-based empirical study aimed at helping managers understand how to create value for their firms through their efforts as virtual community sponsors. Fostering trust with customers is an essential component of any successful Internet-based marketing strategy (Urban, Sultan, and Qualls 2000; Yakov et al. 2005), and many suggest the need for more research to help explain the complex nature of the trust-building process

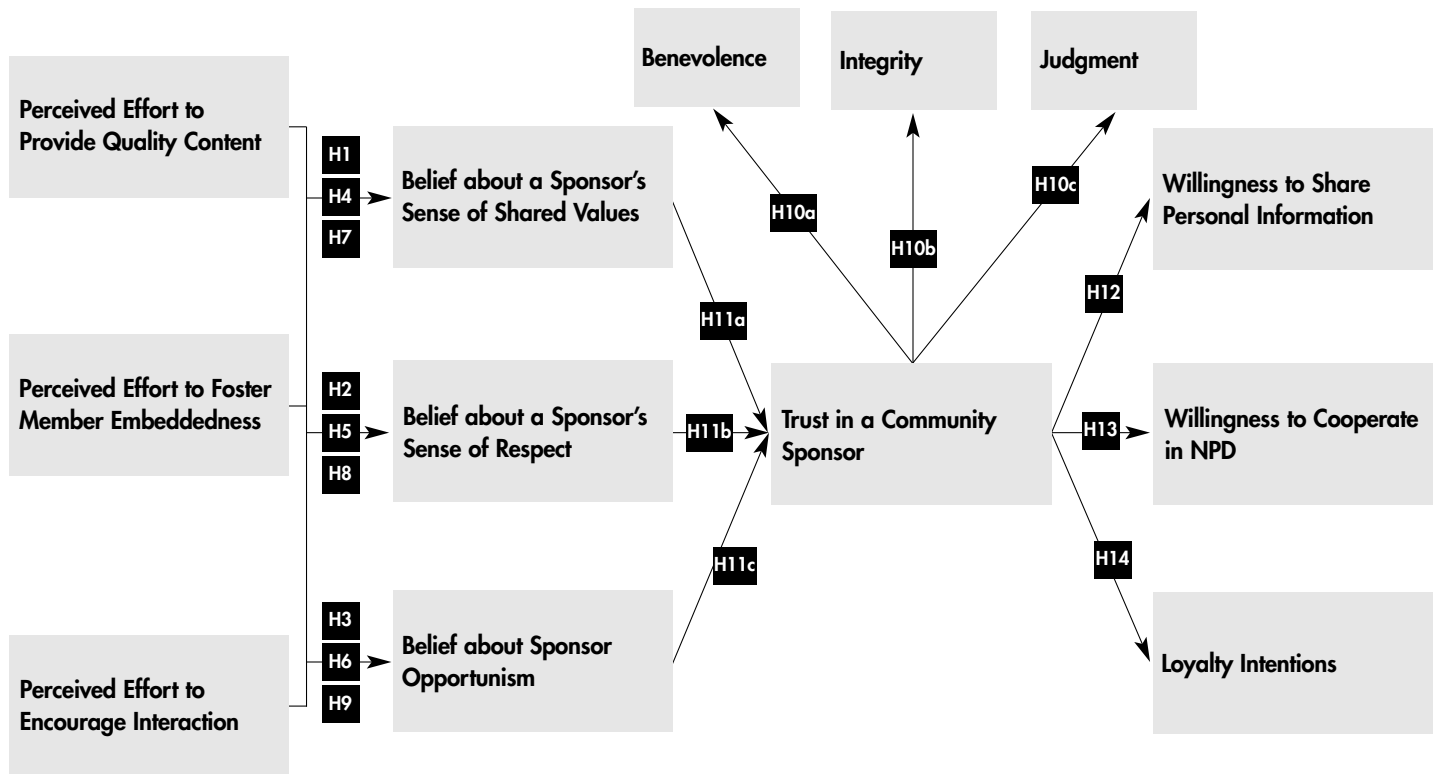
(e.g., Balasubramanian, Konana, and Menon 2003). Thus, our central premise is that a virtual community's value to a sponsoring firm is dependent upon the sponsor's ability to cultivate the trust of the community's members.

In conducting this study, we seek to understand the nature of the trust-building process in firm-sponsored virtual communities by answering the following question: Which efforts are most significant for a community sponsor if they hope to cultivate trust with customers via their virtual community? We cast a community sponsor's efforts as a theoretical set of "Web interventions" that facilitate trust in online environments (McKnight and Chervany 2002). Previous researchers have focused on the trust-building effect of such Web interventions as using third-party seals and privacy policies (Kim and Benbasat 2006). In this study, however, we explore different Web interventions that are likely to cultivate trust with customers who have opportunities to observe the firm's behavior, over time, as members of the firm's virtual community.

Specifically, we explore the influence of a sponsor's efforts to (a) provide access to quality content, (b) foster member embeddedness, and (c) encourage member interaction with regard to beliefs about and trust in a community sponsor (Figure 1). Others have examined the value of content and interaction to members of virtual communities (e.g., Dholakia, Bagozzi, and Pearo 2004). However, we take a different perspective: we focus on how a customer's perception of a sponsor's efforts to provide access to quality content and to encourage interaction influences customer trust and willingness to create value for the sponsoring firm. Further, we explore the influence of a third element of the virtual community environment that is especially relevant for firm-sponsored communities: a sponsor's effort to foster member embeddedness. Through this exploration, we develop a new measurement scale that will be useful to both researchers and practitioners.

Figure 1

Conceptual Model of Customer Relationship Management in Virtual Communities



A second question that motivates our study is: If trust mediates valuable outcomes for a community sponsor, which outcomes can a sponsoring firm expect to achieve? We hypothesize that trust will motivate customers to share information with community sponsors and to exhibit such behaviors as loyalty and willingness to cooperate in new product development. The results of our study should help managers understand how to earn a greater return on their investment in virtual communities through the cultivation of customer trust.

What Is a Virtual Community?

Scholars generally agree on the characteristics that are associated with a virtual community (Stockdale and Borovicka 2006). For example, a virtual community is composed of members who share an interest, interact repeatedly, gen-

erate shared resources, develop governance policies, demonstrate reciprocity, and share cultural norms (Preece 2000). However, the actual definition of the term “virtual community” often differs depending on the context in which individuals join or visit a community (Lee, Vogel, and Moez 2003; Preece 2000). For example, while the earliest virtual communities tended to focus on members’ social interests (e.g., see The Well at <http://www.well.com/>), many more recent virtual communities focus on members’ commercial interests (Kannan, Chang, and Whinston 2000).

In the case of commercially oriented virtual communities, researchers and practitioners are increasingly interested in the firm’s role in driving valuable outcomes from its sponsorship of such communities (e.g., Brown, Tilton, and Woodside 2002). For this study, we conceptualize a virtual community as an aggregation of individuals or business partners who interact

based on a shared interest, where the interaction is at least partially supported and/or mediated by technology and guided by certain protocols and norms (Porter 2004). Furthermore, in this study, we focus on commercially oriented virtual communities.

Among the three types of commercially oriented virtual communities described by Kannan, Chang, and Whinston (2000), we focus solely on virtual communities that are organized and controlled by a commercial firm. Two dimensions characterize the firm-sponsored virtual community. First, firm-sponsored virtual communities may be hosted internally (i.e., on the firm's website) or externally (i.e., via a link to a separate website), but regardless of whether the virtual community is hosted internally or externally, the sponsoring firm identifies itself as a sponsor by using its name and/or logos on the community's home page. Second, in firm-sponsored virtual communities, the firm that organizes and controls the community also pursues commercially oriented goals within that community (Kannan, Chang, and Whinston 2000).

Cultivating Trust in Virtual Communities

There is no consensus regarding the concept of trust (Gefen, Karahanna, and Straub 2003), but most agree that it is based on a belief that certain attributes, such as benevolence, integrity, competency, and/or good judgment reflect another's trustworthiness (Doney and Cannon 1997; Leimeister, Ebner, and Krcmar 2005; Smith and Barclay 1997). In a firm-sponsored community, customers interact with a sponsor, and direct experience has a greater influence on their formation of trust than information provided via others, such as community members (Doney and Cannon 1997; Mayer, Davis, and Schoorman 1995).

We conceptualize trust as a belief that is based on another's behavioral demonstration of

benevolence, integrity, and judgment.

Benevolence is the willingness of a party, beyond profit-seeking motivations, to benefit another. Integrity is a party's reliance on acceptable principles of behavior (Jarvenpaa, Knoll, and Leidner 1998; Mayer, Davis, and Schoorman 1995). Finally, judgment is a party's willingness to make decisions that further the interests of both parties in a relationship (Smith and Barclay 1997).

In conceptualizing benevolence, integrity, and judgment, as well as the outcomes of trust, we integrate the social and rational perspectives of trust (Jarvenpaa, Knoll, and Leidner 1998). The social perspective suggests that a firm's benevolent acts toward a customer foster a sense of moral obligation in the customer such that benevolence-based trust motivates that customer to perform acts of reciprocity in order to restore equity in his or her relationship with the firm (De Wulf, Odekerken-Schröder, and Iacobucci 2001; Jarvenpaa, Knoll, and Leidner 1998; Morales 2005). Thus, we posit that benevolence-based trust motivates a customer to cooperate in new product development and to behave in a loyal manner, reflecting his or her moral obligation to support the sponsor via acts of reciprocity.

The rational perspective of trust suggests that trust reduces a customer's need to act in a self-protective manner with firms and facilitates risk-taking behavior (Jarvenpaa, Knoll, and Leidner 1998; Mayer, Davis, and Schoorman 1995). The commercial context of a firm-sponsored virtual community may create a barrier to the formation of trust; in such contexts, however, perceptions of the firm's integrity and judgment may help break down that barrier (Jarvenpaa, Knoll, and Leidner 1998). Thus, via our conceptual model, we suggest that trust based on a belief in a sponsor's integrity and judgment motivates customers to take risks, such as sharing personal information with the firm.

Quality content

Firms need to manage purpose, policies and/or people in order to achieve successful relationship outcomes, such as trust, with members of their virtual communities (Preece 2000). For example, because the opportunity to exchange information motivates customers to participate in virtual communities, a sponsor can reinforce the purpose of a community by effectively managing content (Ridings, Gefen, and Arinze 2002). Thus, providing access to quality content—particularly content that is unbiased and controllable by customers—may make a virtual community more successful (Brown, Tilton, and Woodside 2002).

Embeddedness

Embeddedness is the “process by which social relationships shape economic action” (Uzzi 1996, p. 674). It helps customers perceive themselves as organizational insiders (Bhattacharaya and Sen 2003). Conceptually, embeddedness reinforces the shared values of community members by enhancing the perception of goal alignment between members and the community sponsor. Although embeddedness often is associated with consumer identification, it is a distinct construct. Indeed, while consumer identification reflects a perceived alignment between a consumer’s self-concept and a firm (Bhattacharaya and Sen 2003), embeddedness actually facilitates identification by motivating a consumer to identify with a firm and to participate in that firm’s virtual community. By fostering member embeddedness, the firm creates a platform for relationship building and value creation in its virtual community. Sponsors can manage the policy element by making efforts to foster member embeddedness, for example, by granting members access to sponsor representatives, facilitating contact between the sponsor and members, providing customers with legitimate roles, and allowing members to influence community policies (Bhattacharaya, Rao, and Glynn 1995; Bhattacharaya and Sen 2003; McAlexander, Schouten, and Koenig 2002; Preece 2000).

Interaction

Finally, interaction is essential for communities and is a key motivator for customer participation (Dholakia, Bagozzi, and Pearo 2004). By effectively facilitating interaction among community members (e.g., hosting moderated discussions), sponsors can manage the “people” element of communities (Preece 2000). In sum, by making efforts to provide access to quality content, to foster member embeddedness, and to encourage interaction, sponsoring firms can support relationship development and drive favorable outcomes from virtual communities. For this reason, customer perceptions regarding these management efforts, or Web interventions, are the key exogenous variables in our model (Figure 1).

Model

In our model, three constructs conceptualize customers’ perceptions of a sponsor’s efforts to cultivate customers’ trust: perceived effort to provide quality content; perceived effort to foster member embeddedness; and perceived effort to encourage interaction. Because attribution theory suggests that customer beliefs are based on causal inferences about the behavior of others (Jones and Davis 1965), we posit that a sponsor’s efforts serve as perceptual cues that evoke customer beliefs about the sponsor’s trustworthiness. In that respect, our model is consistent with other theories of trust formation. For example, interaction with customers is an example of a Web intervention that may cultivate trust (McKnight and Chervany 2002). Also, relationship investments trigger customers’ trusting beliefs about a firm and motivate customers to behave relationally toward a trusted firm (Jarvenpaa, Shaw, and Staples 2004; De Wulf, Odekerken-Schröder, and Iacobucci 2001).

The sponsor’s influence on customer beliefs

Customers’ perception that the sponsor is trying to provide quality content is conceptualized as a belief that the sponsor is making efforts to

provide access to quality information. The concept of content quality is consistent with Wang and Strong's (1996) perspective on data quality, where quality dimensions include believability, accessibility, relevancy and level of value added. However, because virtual communities revolve around interaction, and hence around communication, we draw upon the concept of communication quality in the marketing literature and suggest that content quality refers to the credibility, accessibility, relevance, and importance of the information provided by the sponsor (Mohr and Sohi 1995).

Customers respond favorably to quality content, and these perceptions lead to positive attitudes toward the firm that provides it (Chen and Wells 1999; Urban, Sultan, and Qualls 2000). Quality content also reinforces the members' shared values and interests (Balasubramanian and Mahajan 2001; Ridings, Gefen, and Arinze 2002). Thus, customers are likely to view a sponsor's efforts to provide quality content as a sign that the sponsor has a sense of shared values with community members.

H1: The stronger a member's perception that a sponsor makes efforts to provide quality content, the stronger is that member's belief about the sponsor's sense of shared values with community members.

Access to new information motivates participation in virtual communities (Ridings, Gefen, and Arinze 2002). Indeed, the uses-and-gratifications paradigm suggests that individuals use Internet-based media, such as virtual communities, to meet informational needs (Dholakia, Bagozzi, and Pearo 2004; Ko, Cho, and Roberts 2005). Because paying attention to another's needs is a sign of respect (Dillon 1992), when a sponsor makes efforts to provide access to quality content, it is acting in a way that shows respect for members.

H2: The stronger a member's perception that a sponsor makes efforts to provide quality con-

tent, the stronger is that member's belief that the sponsor respects community members.

Opportunistic behavior is behavior that reflects seeking self-interest with guile (Williamson 1975). A classic example of opportunistic behavior is attempting to control or distort valuable information (Mohr and Sohi 1995). In virtual markets, the fact that one signals credibility by providing access to quality content tends to reduce opportunism (Ba and Pavlou 2002). For example, Web interventions that create trusting beliefs include providing links to reputable sites (Kim and Benbasat 2006). Thus, we posit that individuals who perceive that a sponsor makes efforts to provide members with access to quality information—particularly when the information is not controlled by and potentially harmful to the sponsoring firm—will believe that the sponsor will act less opportunistically in relation to members.

H3: The stronger a member's perception that a sponsor makes efforts to provide quality content, the weaker is that member's belief that the sponsor will act opportunistically in its relationships with community members.

Because virtual communities are socially embedded business environments in which customers perceive themselves as organizational insiders (Balasubramanian and Mahajan 2001; Bhattacharya and Sen 2003), we conceptualize perceived effort to foster member embeddedness as a customer's belief that their sponsor makes efforts to make customers feel a part of the sponsor's organization via the virtual community. Efforts that foster embeddedness include providing customers with specialized roles and allowing them to develop community policies (McAlexander, Schouten, and Koenig 2002; Preece 2000). These efforts align the sponsor's values with customer values and signal respect for customers (Landry, Arnould, and Stark 2005).

H4: The stronger a member's perception that a sponsor makes efforts to foster member embeddedness, the stronger is that member's belief about the sponsor's sense of shared values with community members.

H5: The stronger a member's perception that a sponsor makes efforts to foster member embeddedness, the stronger is that member's belief that the sponsor respects community members.

Virtual communities also have been conceptualized as social networks (Wellman et al. 1996). Social networks give rise to embeddedness and suppress opportunism because embedded parties monitor and sanction one another's behaviors (Granovetter 1985). Thus, if a sponsoring firm makes efforts to foster embeddedness within the community network, we expect community members to view such efforts as a signal that the sponsor will not act opportunistically toward community members.

H6: The stronger a member's perception that a sponsor makes efforts to foster member embeddedness, the weaker is that member's belief that the sponsor will act opportunistically in its relationships with community members.

Facilitating interaction among members is essential to community building (Balasubramanian and Mahajan 2001). When the sponsor of a virtual community facilitates interaction, it motivates customers to participate, enhances customers' sense of connection with others, and enables customers to achieve higher social status with others (Dholakia, Bagozzi, and Pearo 2004; Yoo, Suh, and Lee 2002). In this study, perceived effort to encourage interaction is conceptualized as a customer's belief that his or her sponsor promotes interaction among members of the virtual community. These efforts demonstrate a sense of shared values with members and signal respect for members by taking seriously

their desire to interact. Further, encouraging interaction signals that a sponsor is less likely to act opportunistically toward community members due to the monitoring and sanctioning opportunities made available via interaction in social networks (Granovetter 1985).

H7: The stronger a member's perception that a sponsor makes efforts to encourage interaction, the stronger is that member's belief about the sponsor's sense of shared values with community members.

H8: The stronger a member's perception that a sponsor makes efforts to encourage interaction, the stronger is that member's belief that the sponsor respects community members.

H9: The stronger a member's perception that a sponsor makes efforts to encourage interaction, the weaker is that member's belief that the sponsor will act opportunistically in its relationships with community members.

The influence of customer beliefs on trust

As suggested earlier, most scholars would agree that certain beliefs about the potential target of trust, known as trusting beliefs, are essential to understanding how trust emerges (McKnight and Chervany 2002). Thus, we conceptualize trust as a multidimensional belief (Butler 1999), based on another party's behavioral demonstration of benevolence, integrity, and good judgment (Doney and Canon 1997; Smith and Barclay 1997).

H10: A member's trust in the sponsor is reflected in that member's belief in the sponsor's benevolence, integrity, and judgment.

Trust entails expectations of another party's future behavior (Jarvenpaa, Knoll, and Leidner 1998; Sirdeshmuhk et al. 2002). We conceptualize trust as a behavioral intention that involves risk, where risk is associated with future behavior (Mayer, Davis, and Schoorman 1995). In firm-sponsored virtual communities, trust in a sponsor reflects expectations regard-

ing the sponsor's future behavior (Schubert and Ginsberg 2000), and we posit that the actions of the community sponsor will demonstrate a sponsor's shared values with, respect for, and lack of opportunism toward community members. Empirically, shared values, respect, and lack of opportunism are antecedent to trust in marketing relationships (Brashear et al. 2003; Morgan and Hunt 1994).

H11a: The stronger a member's belief about a sponsor's sense of shared values with community members, the higher is the community member's trust in the sponsor.

H11b: The stronger a member's belief that the sponsor respects community members, the higher the member's trust in the sponsor.

H11c: The weaker the member's belief that the sponsor will act opportunistically, the higher the member's trust in the sponsor.

Outcomes of trust: Relational customer behaviors

A trustor is willing to rely on a trustee and, as trust increases, an individual exhibits risk-taking behavior in relationships (Mayer et al. 1995; Morgan and Hunt 1994). In this study, willingness to share personal information is conceptualized as a customer's propensity for revealing personal information to a sponsor. Because revealing information is a risky action, trust increases the willingness of an individual to reveal accurate information to a trusted party. Indeed, trust motivates a member's desire to exchange information in virtual communities and there is a positive relationship between trust and a customer's willingness to provide information to a firm (Ridings, Gefen, and Arinze 2002; Schoenbachler and Gordon 2002).

H12: In a virtual community, a member's trust in the sponsor is positively associated with a member's willingness to share personal information.

We posit that members perceive the support-

ive efforts that a community sponsor makes (i.e., efforts related to content, embeddedness and interaction) as organizational citizenship behavior (OCB) on the part of the sponsor. OCB is behavior that is supportive and not directly rewarded (McAllister 1995).

Individuals who develop trust based on OCB often express reciprocal OCB (McAllister 1995). Reciprocal OCB reflects a customer's individual initiative to engage in "voluntary acts of creativity and innovation" (Podsakoff et al. 2000, citing George and Jones 1997, p. 523). Thus, we conceptualize a customer's willingness to cooperate in new product development as evidence of reciprocal OCB toward a sponsor. Empirically, trust encourages cooperation, and firms have engaged members of virtual communities in new product development activities (Flavián and Guinalíu 2005; Morgan and Hunt 1994).

In this study, willingness to cooperate in new product development is conceptualized as a customer's propensity for joint participation with a sponsor in new product development activities. Firms can use virtual communities to grant customers "quasi-membership" roles in the organization, where customers can act as co-producers in the new product development process (Nambisan 2002; Stump et al. 2002).

H13: In a virtual community, a member's trust in the sponsor is positively associated with a member's willingness to cooperate in new product development efforts.

In this study, loyalty is conceptualized as a customer's current actions and future intentions regarding doing business with and engaging in positive word-of-mouth about the sponsor. There is empirical evidence of a positive relationship between customer trust and loyalty (Sirdeshmukh, Singh, and Sabol 2002). Trust reduces a customer's perception of a risk of negative outcomes associated with loyalty to a firm (Mayer, Davis, and Schoorman 1995;

Morgan and Hunt 1994). Further, the social norm of reciprocity creates in the customer a sense of obligation to return the gift, received from the firm, of supportive acts, and that sense of obligation manifests itself as loyal behavior (De Wulf, Odekerken-Schröder, and Iacobucci 2001). Therefore, we expect that a member would be willing to grant loyalty to a trusted sponsor in an attempt to reciprocate the sponsor's efforts to support members of the virtual community.

H14: In a virtual community, a member's trust in the sponsor is positively associated with a member's loyalty.

Methodology

Members of an online consumer panel served as respondents to our online survey for both Pretest 1 and the main study. Respondents were real consumers who self-identified as either members, ex-members, or recently inactive members of real virtual communities that are sponsored by consumer marketers (e.g., Ford Motor Company, Samsung, and smaller firms that sell consumer products). They were sourced from a general panel of consumers that is managed by a professional marketing research firm. (See the appendix for additional information about the research firm and its panel.)

At the beginning of the online survey, we provided both a description and the following examples of real virtual communities to respondents: Dell Community Forum, PalmOne Inc., Customer Community, HP/Compaq Customer Community, and REI's Online Community. Next, respondents were asked to self-identify as current or past members of virtual communities and to voluntarily provide the actual name of the virtual community that they would reference during the survey. If a respondent indicated that they were both a current and a past (or recently inactive) member of two different communities, the survey was programmed to randomly

distribute questions based on either the community to which the respondent was currently a member or the community in which the respondent terminated membership (or recently became inactive).

We anticipated that members of virtual communities might be positively biased toward having high levels of trust in their sponsor and designed our study to minimize this potential effect. First, we designed our sampling process, as described above, to ensure that our respondent pool included both active members and terminated or recently inactive members of virtual communities because we anticipated that recently terminated or inactive members would have lower levels of trust than active members.

Second, because respondents were asked to voluntarily provide the specific name of their reference sponsor, we were able to verify that a particular firm sponsored a community and that the community could be classified as firm sponsored and consumer oriented—making it appropriate for inclusion in our study. We visited each virtual community that was named specifically by a respondent in order to validate its existence and to verify that the community should be included in our final sample.

Finally, the fact that only 50% of our final sample of respondents was willing to voluntarily provide personal information to their community sponsor reduces our concern about potential bias of respondents toward trusting their community sponsors. (See the appendix for additional information about the sampling procedures and data quality.)

Measures

We used multi-item, seven-point, Likert-type scale items (Nunnally and Bernstein 1994) to measure the constructs in the proposed model. Although we used preexisting scales and items where appropriate, some items were changed or added in order to suit the context of the study. Perceived effort to foster member

embeddedness is a new measure that was developed in accordance with prescribed methods offered in the literature (e.g., Churchill 1979). For example, in order to validate the conceptualization and operationalization of the construct, we conducted informal interviews with experts in online community design, reviewed the literature on consumer embeddedness and related literature (e.g., Rao, Davis, and Ward 2000), observed the behavior of sponsoring firms in actual virtual communities to further validate the content validity of the items, and pretested the scale twice before using it in the main study (see Table 1 for a list of constructs and sources).

Initially, we used exploratory factor analysis (EFA) to purify the original measures (total of 64 items), and the measures showed evidence of validity and reliability once items with low loadings and high cross-loadings were eliminated. This process resulted in the retention of 46 of the original 64 items (see Table 1). We conducted confirmatory factor analysis (CFA) by means of LISREL 8.54 (Jöreskog and Sörbom 1996) to further validate the measures. All 46 items from the EFA remain in the final measurement model, which demonstrates good fit ($\chi^2 = 2494.44$, degrees of freedom [d.f.] = 923, $p < .001$; comparative fit index [CFI] = .99; root mean square error of approximation [RMSEA] = .053; standardized root mean square residual [SRMR] = .034). Squared-multiple correlations (SMCs) for all items range from .67 to .89.

Although a chi-square/d.f. ratio of less than 2.0 is a commonly used benchmark measure for a good-fitting model, a statistically significant chi-square goodness-of-fit measure of greater than 2.0 is not unusual with large sample sizes (see Rigdon 1998). Thus, researchers are encouraged to provide other measures, such as the RMSEA, which attempt to “correct the tendency of the chi-square statistic to reject any specified model with a sufficiently large sample” (Hair et al. 1992, p. 656). Excellent-fitting models have an RMSEA of

approximately .06 or less and a CFI of approximately .95 or better (Hu and Bentler 1999).

We confirmed the reliability of the measures using several criteria (e.g., Fornell and Larcker 1981; Nunnally and Bernstein 1994). Cronbach's alpha values for the scales indicate uniformly high reliabilities ranging between .90 and .96. Composite reliability ranges from .83 to .93. Finally, the average variance extracted for the constructs in the measurement model ranges from .52 to .76, exceeding the recommended level of .50 (see Table 1 for measurement properties).

The measures also show strong evidence of validity. The high composite reliabilities (Fornell and Larcker 1981) and standardized loadings (ranging from .82 to .95) (Anderson and Gerbing 1988) suggest convergent validity. We assessed and confirmed discriminant validity using several criteria. First, the EFA shows clean factors, and a scree test indicates that the first 10 factors extracted are meaningful. Second, the confidence interval (two times standard error) for construct correlations does not include 1.0 (see Table 2 for construct correlations). Finally, the Anderson and Gerbing (1988) test of chi-square differences when every pair of construct correlations is constrained to 1.0 is performed for all pairs of constructs, one at a time, and the results provide strong evidence for discriminant validity among all constructs in the hypothesized model. The results of the tests of measures described above (i.e., EFA, CFA) show that benevolence, integrity, and judgment are reliable first-order constructs, and in the structural equation model (SEM) discussed below, a second-order factor for the trust construct also is supported.

Data collection and analysis

Pretest 1. Pretest 1 was conducted using an online survey distributed to a panel of 103 customers. With the exception of the construct regarding belief about sponsor opportunism, the measure for each construct showed

Table 1

Measurement Item Properties

| Construct /Items^a (Source of scale items) | Loading^b | t-value | SMC |
|---|----------------------------|----------------|------------|
| Belief about Sponsor's Sense of Shared Values [SV] (.94, .90, .76) | | | |
| (Maxham III and Netemeyer 2003) | | | |
| ... Hold very similar values to my own | .94 | 31.84 | .88 |
| ... Has values that are a good fit with my personal values | .95 | 32.34 | .89 |
| ... Promotes the shared values of this community | .87 | 28.07 | .76 |
| Belief about Sponsor's Sense of Respect [RESP] (.90, .83, .62) | | | |
| (Tyler 1994) | | | |
| ... Treats members with respect | .87 | 27.83 | .76 |
| ... Takes time to acknowledge community members | .85 | 27.07 | .73 |
| ... Is concerned with the rights of community members | .88 | 28.27 | .77 |
| Belief about Sponsor Opportunism [OPP] (.95, .86, .60) | | | |
| (John 1984; Morgan and Hunt 1994; Rokkan, Heide, and Wathne 2003) | | | |
| ... Holds back information that is important to members | .91 | 30.06 | .82 |
| ... Breaches formal or informal agreements for its own benefit | .92 | 30.56 | .84 |
| ... Uses unexpected events to gain unfair advantages | .91 | 30.11 | .82 |
| ... Alters the facts slightly to get what it wants | .91 | 30.42 | .83 |
| Benevolence [BEN] (.93, .88, .71) | | | |
| (Doney and Cannon 1997; Ganesan and Hess 1997) | | | |
| ... Considers the welfare of members, as well as its own, when making important decisions | .90 | 29.76 | .81 |
| ... Keeps the members' best interests in mind | .91 | 30.08 | .82 |
| ... Considers members' interests when problems arise | .90 | 29.61 | .81 |
| Integrity [INTEG] (.94, .89, .72) | | | |
| (Doney and Cannon 1997; Morgan and Hunt 1994) | | | |
| ... Keeps promises it makes to its members | .90 | 29.86 | .81 |
| ... Is perfectly honest and truthful | .90 | 29.91 | .82 |
| ... Can be counted on to do what is right | .92 | 31.03 | .85 |
| Judgment [JUDGE] (.93, .88, .71) | | | |
| (Smith and Barclay 1997) | | | |
| ... Makes appropriate decisions | .94 | 32.18 | .89 |
| ... Seldom makes judgments that are way off | .88 | 28.39 | .77 |
| ... Makes business judgments that I rarely question | .90 | 29.43 | .80 |

Table 1 continued

evidence of validity and reliability after two items were eliminated (one from each of two different scales). An EFA showed clean loadings and low crossloadings. The Cronbach's alpha for these measures exceeded the mini-

mum standard of .70 (see Hair et al. 1992; Nunnally and Bernstein 1994), with a majority of scales having alphas exceeding .90. Some items were edited or reworded to improve reliabilities (e.g., removed reverse-coded items,

Table 1 continued

| Construct /Items ^a (Source of scale items) | Loading ^b | t-value | SMC |
|---|----------------------|---------|-----|
| Willingness to Share Personal Information [INFO] (.92, .86, .60) (Schoenbachler and Gordon 2002) | | | |
| ... Willing to provide information | .85 | 26.80 | .72 |
| ... Willing to provide information if the company assures me it will not share the information | .85 | 26.79 | .72 |
| ... Happy to provide information about my product needs | .90 | 29.32 | .81 |
| ... Willing to complete a survey | .83 | 26.05 | .70 |
| Willingness to Cooperate in NPD [NPD] (.96, .91, .73) (Stump, Athaide, and Joshi 2002) | | | |
| ... Willing to work with this sponsor to design new products/services | .94 | 32.08 | .88 |
| ... Willing to codevelop products/services with this sponsor | .93 | 31.36 | .86 |
| ... Willing to codesign products/services with this sponsor | .91 | 30.59 | .84 |
| Overall, ... willing to cooperate with this sponsor in developing new products/services | .90 | 29.62 | .81 |
| Loyalty Intentions [LOYAL] (.95, .90, .70) (Zeithaml, Berry, and Parasuraman 1996) | | | |
| ... Willing to say positive things about this sponsor to others | .94 | 31.87 | .88 |
| ... Willing to encourage close others to do business with this sponsor | .93 | 31.71 | .87 |
| ... Plan to do more business with this sponsor in the next few years | .87 | 28.27 | .76 |
| ... Would consider this sponsor as my first choice to buy particular products or services | .90 | 29.49 | .80 |
| Perceived Effort to Provide Quality Content [CONTENT] (.95, .93, .69) (Mishra, Umesh, and Stem 1993; Mohr and Sohi 1995) | | | |
| ... Makes frequents updates to community content | .82 | 25.42 | .67 |
| ... Provides content that is relevant | .91 | 30.47 | .83 |
| ... Provides important information | .90 | 29.85 | .81 |
| ... Provides credible information | .86 | 27.73 | .74 |
| ... Provides access to valuable information | .90 | 29.84 | .81 |
| ... Provides content that is useful | .90 | 29.92 | .81 |
| Perceived Effort to Foster Member Embeddedness [EMBED] (.92, .84, .52) | | | |
| ... Seeks the opinion of members regarding community policies | .86 | 27.53 | .74 |
| ... Encourages members to take leadership roles in the community | .82 | 25.42 | .67 |
| ... Allows members to have direct contact with their representatives | .82 | 25.32 | .67 |
| ... Asks members for help in establishing community policies | .84 | 26.54 | .71 |
| ... Makes an effort to make members feel a part of the community | .84 | 26.51 | .71 |

Table 1 continued

made grammatical changes). Since the scale for belief about sponsor opportunism had an alpha of .52, we conducted a second pretest.

Pretest 2. Pretest 2 was conducted in order to develop a valid measure for the construct regarding belief about sponsor opportunism,

Table 1 continued

| Construct /Items ^a (Source of scale items) | Loading ^b | t-value | SMC |
|---|----------------------|---------|-----|
| Perceived Effort to Encourage Interaction [INTER] (.94, .90, .68) (Fisher, Maltz, and Jaworski 1997) | | | |
| . . . Encourages interaction among members | .91 | 30.22 | .83 |
| . . . Strongly encourages information sharing among members | .90 | 29.66 | .81 |
| . . . Encourages different members to share information | .90 | 29.85 | .82 |
| Overall, . . . facilitates a lot of interaction among members | .87 | 28.17 | .76 |

^aScale items were based on seven-point Likert-type scales. The scale ranged from 1 = strongly disagree to 7 = strongly agree. Numbers in parentheses represent the following list of reliability measures, respectively: Cronbach's alpha, composite reliability, and average variance extracted.

^bAll loadings are standardized and significant at $p < .001$ levels.

but it also provided an opportunity to retest the reliability of the construct regarding the perceived effort to foster member embeddedness. Pretest 2 was paper based; thus, we were validating the reliability of the measures using a traditional method rather than an online method. It was distributed to 42 business students of two different graduate classes at a large state university. The respondents were self-identified members of university-based nonprofit alumni associations. Using the nonprofit context solely for Pretest 2 was acceptable given that our primary objective was to develop a measure related to opportunism. Alumni organizations are affinity marketing groups that are associated with relationship marketing efforts (see Macchiette and Roy 1992), and nonprofits are subject to perceptions of opportunism (Herzlinger 1996). The results showed that belief about sponsor opportunism and perceived effort to foster member embeddedness have Cronbach's alphas of .82 and .85, respectively. Also, item-to-total correlations for both scales were above acceptable threshold levels.

Main Study. We analyzed a total of 663 cases (a 27% response rate) for the main study. Based on a test of early versus late responders, we find no evidence of nonresponse bias (Armstrong and Overton 1977). A limited number of surveys were distributed daily until

we collected 1,000 completed surveys. Although the final measurement model and structural model fit the data obtained from all 1,000 cases, the total number of cases used in the analysis of data was reduced such that the final usable sample includes only responses from members of virtual communities that are sponsored by consumer marketers.

The demographics of the sample are similar to existing Internet users in that most were white (80%), well educated (89% with at least some college years), wealthier (54% earn at least \$60,000 per year), and younger (89% are 50 years old or younger) than the general population. Most respondents had used the Internet for at least five years, and over half considered virtual communities their primary use of the Internet. The sample is of real consumers who, in the survey, reference their membership in a real virtual community that is sponsored by a consumer marketer.

Most respondents had been members of their community for more than six months. However, approximately 39% had been members for six months or less, and 15% reported membership for less than three months. Of the 663 cases, almost two-thirds of respondents identified themselves as current members while the remainder identified themselves as recently inactive or terminated members. In response

Table 2
Construct Correlations and Variance Statistics¹

| Construct | Mean | Standard Deviation | Skewness ² | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-------------|------|--------------------|-----------------------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| SV | 5.10 | 1.24 | -.28 | 1.00 | | | | | | | | | | | |
| RESP | 5.16 | 1.23 | -.43 | .81** | 1.00 | | | | | | | | | | |
| OPP | 3.67 | 1.69 | .15 | -.01 | -.09* | 1.00 | | | | | | | | | |
| BEN | 4.92 | 1.26 | -.20 | .79** | .82** | -.03 | 1.00 | | | | | | | | |
| INTEG | 4.96 | 1.27 | -.17 | .79** | .78** | -.07 | .86** | 1.00 | | | | | | | |
| JUDGE | 5.01 | 1.26 | -.21 | .76** | .76** | -.04 | .81** | .85** | 1.00 | | | | | | |
| INFO | 5.62 | 1.22 | -.96 | .55** | .56** | -.13** | .50** | .54** | .56** | 1.00 | | | | | |
| NPD | 5.51 | 1.35 | -.84 | .46** | .46** | -.03 | .40** | .41** | .42** | .69** | 1.00 | | | | |
| LOYAL | 5.40 | 1.34 | -.70 | .64** | .62** | -.10** | .61** | .65** | .67** | .76** | .66** | 1.00 | | | |
| 10. CONTENT | 5.57 | 1.14 | -.65 | .68** | .70** | -.14** | .65** | .68** | .66** | .62** | .48** | .65** | 1.00 | | |
| 11. EMBED | 4.95 | 1.29 | -.31 | .75** | .79** | -.07 | .77** | .73** | .72** | .47** | .41** | .56** | .70** | 1.00 | |
| 12. INTER | 5.27 | 1.29 | -.52 | .66** | .70** | .00 | .65** | .61** | .63** | .46** | .36** | .36** | .70** | .74** | 1.00 |

* $p < .05$, ** $p < .01$

¹ Pearson correlations statistics are two-tailed and based on summed scales of average scores on seven-point Likert-type items.

² Statistically normal data have a skewness statistic with an absolute value of less than 1.

to the question “How active are you in the online community?” approximately 12% responded with “very active” while 14% considered themselves “inactive.” Between the two extremes, 74% considered themselves either “somewhat active” or “not very active”—the scale’s two middle categories.

Results

Overall, the data support the theoretical framework of the model, as estimated using LISREL 8.54 (Jöreskog and Sörbom 1996). The results show a good fit between the model and the observed data ($\chi^2 = 3500.80$, d.f. = 968, $p < .001$; CFI = .99; RMSEA = .069; SRMR = .079). Also, the SMCs for the structural equations indicate that the modified model explains 87%, 44%, 27%, and 57% of the variance in trust, willingness to share personal information, willingness to cooperate in new product development, and loyalty intentions, respectively.

The majority of hypotheses are supported, with some notable exceptions (see Table 3). Hypotheses 7–9 are not supported, suggesting no significant relationship exists between perceived effort to encourage interaction and any of the three belief variables. Further, using regression analyses, we find that perceived effort to foster member embeddedness explains a greater amount of variance in consumer beliefs regarding the sponsor’s sense of shared values with and sense of respect for consumers than does perceived effort to provide quality content.

We conducted an empirical test for assessing factor structure in order to test H10 and found that our second-order factor structure for the trust construct is superior to both a one-factor model and a group-factor model (Rindskopf and Rose 1988). The results of this test lead us to conclude that our hypothesized second-order factor structure is superior to the alternative models on both statistical and substantive grounds (Anderson and Gerbing 1988). Thus,

Table 3

Parameter Estimates and Hypotheses Tests

| Path | Standardized | | | Result |
|--|--------------|----------|---------|-----------------|
| | Hypothesis | Estimate | t-value | |
| Perceived Effort to Provide Quality Content → Shared Values | H1 | .26 | 6.19 | Significant |
| Perceived Effort to Provide Quality Content → Respect | H2 | .23 | 5.97 | Significant |
| Perceived Effort to Provide Quality Content → Opportunism | H3 | -.45 | -6.64 | Significant |
| Perceived Effort to Foster Member Embeddedness → Shared Values | H4 | .63 | 11.96 | Significant |
| Perceived Effort to Foster Member Embeddedness → Respect | H5 | .69 | 13.74 | Significant |
| Perceived Effort to Foster Member Embeddedness → Opportunism | H6 | .32 | 4.02 | Significant |
| Perceived Effort to Encourage Interaction → Shared Values | H7 | -.00 | -.03 | Not Significant |
| Perceived Effort to Encourage Interaction → Respect | H8 | .05 | 1.12 | Not Significant |
| Perceived Effort to Encourage Interaction → Opportunism | H9 | .08 | 1.00 | Not Significant |
| Trust → Benevolence | H10a | .94 | 18.78 | Significant |
| Trust → Integrity | H10b | .96 | 19.01 | Significant |
| Trust → Judgment | H10c | .93 | 19.25 | Significant |
| Belief about Sponsor's Sense of Shared Values → Trust | H11a | .42 | 11.39 | Significant |
| Belief about Sponsor's Sense of Respect → Trust | H11b | .57 | 12.07 | Significant |
| Belief about Sponsor Opportunism → Trust | H11c | -.03 | -1.65 | Not Significant |
| Trust → Willingness to Share Personal Information | H12 | .66 | 14.20 | Significant |
| Trust → Willingness to Cooperate in NPD | H13 | .52 | 11.97 | Significant |
| Trust → Loyalty Intentions | H14 | .75 | 16.30 | Significant |

our measure of trust is valid, empirically parsimonious, and reflective of the abundance of literature that suggests that trust is multidimensional.

Unexpectedly, we found no significant relationship between belief about sponsor opportunism and trust in a sponsor (H11c). We also found a positive rather than a negative relationship between perceived effort to foster member embeddedness and belief about sponsor opportunism (H6).

We tested for mediating effects in two ways. First, using the method suggested by Baron and Kenny (1986), we find that trust is a significant partial mediator and that both belief about sense of shared values and belief about sense of respect have significant mediating effects. Also,

we used LISREL 8.54 to empirically compare our theoretical model to alternative models that challenge the implied mediation; the results of the comparison indicate that the implied mediation effects are substantial and significant.

Discussion

In conducting this study, we wanted to understand which efforts would be most significant for a community sponsor, if they hope to cultivate trust with customers via their virtual communities. We found that efforts to foster member embeddedness and to provide access to quality content have significant trust-building effects. Although in our model efforts to encourage interaction had no significant effect, our results should not dissuade sponsors from encouraging member interaction. Indeed, prior

research suggests that interaction helps to attract and retain virtual community members. More importantly, however, our findings suggest that firms must do more than simply encourage interaction if they seek to create their own source of value from virtual communities: they also need to make efforts to provide access to quality content and foster member embeddedness.

Interestingly, while many recognize the importance of managing content online, our findings reveal that efforts to foster member embeddedness have a greater impact on customer beliefs than do efforts to provide quality content. Yet efforts to foster member embeddedness are a double-edged sword for sponsors. We find that such efforts facilitate stronger member beliefs regarding the sponsor's sense of shared values and respect for community members, but also result in stronger member beliefs about sponsor opportunism.

Findings from recent studies might explain the two-sided effect of fostering member embeddedness. First, "attribution-oriented" customers often ascribe mixed motives to a firm's behaviors (Webb and Mohr 1998, p. 234). In that context, our finding suggests that members attribute a firm's efforts to foster member embeddedness not only to the firm's altruistic motivations (i.e., sense of shared values and respect), but also to the firm's selfish motivations (i.e., opportunism). Second, a moderately high level of relationship closeness often increases opportunism due to decreased monitoring of partners (Wuyts and Geykens 2005). Thus, we posit that relationship closeness serves as a nomological proxy for perceived effort to foster member embeddedness in that both constructs should correlate similarly with constructs that measure opportunism. Because the mean rating for perceived effort to foster member embeddedness among our respondents is moderately high (see Table 2), we feel that only moderately high relationship closeness between members and sponsors helps to explain our findings.

Regarding the direct antecedents of trust, we find an unexpected result. Despite the fact that a customer's trust is based on his or her belief about the sponsor's sense of shared values with and respect for community members, we find in our model that belief about a sponsor's opportunism has no effect on trust. While Brashear et al. (2003) obtain a similar result, both their results and our own contrast with the results of numerous other studies, which show a significant negative relationship between these constructs.

The insignificant relationship between opportunism and trust might be due to the fact that trust is related to both the target and the context (Leimeister et al. 2005). As stated above, customers attribute mixed motives to a firm's behaviors, such that they expect firms to have self-serving motivations when dealing with customers (Webb and Mohr 1998). Thus, consumers may accept a certain degree of opportunism on the part of firms because when untrustworthy behavior is limited to a specific context (e.g., a commercial context), a party often can avoid the destruction of trust (Jarvenpaa, Shaw, and Staples 2004; Sitkin and Roth 1993). We posit that customers are aware of the commercial context of firm-sponsored virtual communities and do not reduce trust in a sponsor based solely on signs of opportunistic behavior.

In conducting this study, we also wanted to understand what outcomes a sponsoring firm could expect to achieve if it successfully cultivated customers' trust. First, we find that trust increases customers' willingness to share personal information. Although many believe that members of firm-sponsored virtual communities are predisposed to trusting their community sponsor, we find that only 50% are willing to share nonrequired information with their sponsor upon joining the community. However, we find that trust is significantly associated with customers' willingness to share information with their community sponsor. Thus, even in firm-sponsored virtual commu-

nities, where members voluntarily join the community, firms must be vigilant about cultivating trust if they hope to gain access to valuable customer information.

We also find that trust motivates deeper forms of relational behaviors among members of firm-sponsored virtual communities: loyalty and willingness to cooperate in new product development. These behaviors demonstrate greater forms of reciprocity on the part of customers. Overall, our findings suggest that firms have an opportunity to achieve valuable outcomes from virtual communities by cultivating trust-based relationships with customers.

Contributions, Limitations, and Future Research Directions

Theoretical contributions

We examined virtual community sponsors' efforts at building trust through Web interventions that trigger customers' attributions about a sponsoring firm's trustworthiness. While past studies have conceptualized interaction with customers as a trust-building Web intervention, few have explored this type of Web intervention, and even fewer have done so in the context of firm-sponsored virtual communities. Rather, previous models of trust in online environments have focused on Web interventions such as privacy policies and third-party seals. In our study, the Web intervention we focus on is a sponsor's effort to cultivate members' trust through firm-sponsored virtual communities. Attribution theory enables us to generate new insights regarding the process of trust formation.

For example, while previous research has focused on the positive effects of interaction among virtual community members, we find that the mere facilitation of interaction does not produce favorable consumer beliefs about a sponsor. Indeed, we find that a sponsor's efforts related to content and embeddedness

are more significant in facilitating a customer's trust than are a sponsor's efforts related to interaction. This is an important theoretical and practical finding because it suggests that we should be measuring customers' perceptions regarding a sponsor's efforts rather than focusing on previously measured elements of the virtual community environment, such as thread length, thread interrelatedness, or other measures of interactivity.

Also, regarding perceived effort to foster member embeddedness, we make three additional contributions toward understanding the complex nature of the trust-building process. First, our measure is newly developed, reliable, and valid. It also shows that perceived effort to foster member embeddedness in firm-sponsored virtual communities does play a significant role in cultivating customer trust, more so than efforts to provide access to quality content.

Second, our finding regarding efforts to foster member embeddedness and perceptions of opportunism highlights the complexity of the trust-formation process. On one hand, relying on the theory of mixed attributional processing, we understand that fostering embeddedness is a double-edged sword, with both favorable and unfavorable effects on a customer's beliefs about the community sponsor. On the other hand, we find that although fostering embeddedness may cause customers to perceive the sponsor as opportunistic, that perception has no significant effect on trust. These results speak to the theoretical importance of understanding how mixed attributions can have unexpected effects on customer beliefs and should encourage researchers who rely upon attribution theory to design studies that test for such an effect.

Finally, our findings reveal associations between trust and three relevant but lesser-studied measures of relational customer behavior: willingness to share personal information, willingness to cooperate in new product development, and

loyalty. Previous researchers have considered broad-based outcomes of trust such as cooperation and commitment. The outcome variables of our theoretical model, by contrast, are inspired by practical needs: we explore variables that are meaningful to business practitioners. While previous studies focus on understanding why individuals join virtual communities, we show why commercial organizations might want to sponsor such communities.

Contributions to management practice

First, our model suggests practicable Web interventions that engender customer trust. For example, managers can aim to select or approve high-quality content for their community (e.g., links to useful and unbiased third-party websites) and be proactive in fostering member embeddedness by involving members in supporting management of the community. It is possible that customers might view a firm's efforts as attempts to manipulate them, and our results suggest that a strategy based on manipulation would be unwise for managers to pursue. Indeed, if a sponsoring firm were to link customers only to favorable information about the firm, we would expect that skeptical consumers would have lower trust. Thus, our findings guide managers to be forthright in providing access to credible content as a part of their trust-building efforts.

Interestingly, we find that beliefs about sponsor opportunism do not have a significant effect on trust. This finding should alleviate the concerns of managers who hesitate to sponsor virtual communities for fear of destroying trust with customers by appearing to be manipulative. We find that consumers appear to tolerate a certain degree of opportunism in commercial relationships.

Second, our results make clear the value of fostering member embeddedness. Indeed, we find these efforts have a greater effect on customer beliefs than do perceptions about a sponsor's efforts to provide access to quality content. Although the phrase "content is king"

fueled Internet strategy in the 1990s, our findings suggest that the phrase "embeddedness is emperor" could become the new guiding mantra for developing interactive marketing strategies in the future.

Third, our findings underscore the importance of using technology to manage relationships with customers rather than simply to generate transactions. Indeed, many customers use the Internet for activities other than shopping. In an era where customers increasingly demonstrate willingness to use social media (e.g., social networking websites, blogs, virtual communities) to build online relationships, more research on the value of using technology to facilitate customer relationships is warranted.

The limitations of our study provide a starting point for future research. For example, our results do not directly address the potential for trust production or destruction via other influential elements, such as member-generated information (i.e., word-of-mouth information) shared among community members or the effect of preexisting perceptions of brand value. It is unclear which would have a greater effect on a customer's trust in the sponsoring firm—favorable member-generated information about a sponsor or the sponsor's own efforts to manage content and embeddedness. Also, if member-generated content were to be of low quality, would this impact members' trust in other members, or would it influence trust in community sponsor (Geng, Whinston, and Zhang 2005)? Future investigations should examine the influence of member-generated information and other trust-building variables relative to the influence of the sponsor's efforts in firm-sponsored virtual communities. The findings of such studies could help managers to integrate efforts to manage virtual communities with other marketing strategies, such as word-of-mouth/viral marketing campaigns, brand building, etc.

Finally, we collected cross-sectional data, and our sample is limited to respondents who are

members of firm-sponsored virtual communities in the United States. Future research should include longitudinal studies not only to validate the causality hypothesized in our model, but also to reveal how trust develops and changes over time in virtual communities (Ba 2001). Also, testing for cross-national and cross-cultural effects and testing across different types of firm-sponsored virtual communities would enhance the external validity of our results.

In sum, our study shows that firms can extract value from their virtual communities by cultivating trust. Managers should be encouraged to take an active role in community sponsorship by providing access to quality content and fostering member embeddedness. We show that such efforts help to cultivate trust among community members and lead to valuable outcomes. If virtual communities “are like cultivated fields” (Matei 2005), our research shows

that, by cultivating trust, firms can harvest significant value.

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Appendix

Additional Notations Regarding Survey, Sampling Procedures, and Data Quality

1. The research firm that supported our data collection effort manages multiple panels that, collectively, included over 8 million registered users at the time of our survey. The firm provided access to several of its panels for our study and, as part of the firm’s regular “opt-in” process for panelists, our respondents had already provided contact and profiling information to the firm. We had access to all of the members of the firm’s general panel of consumers, and although we provided funding for the incentive fee (\$3 per respondent), the firm transmitted the fee to respondents on our behalf. Consistent with their established procedures, the firm also provided us expert consultation about survey programming, distribution, and collection.

2. Using an online survey had several advantages. Our respondents were comfortable with online survey techniques and likely were familiar with the concept of virtual communities, and we were able to obtain a large sample size in a cost-effective manner. We also were able to add design features to enhance the reliability of our results. For example, we automatically randomized items within constructs, inserted the actual name of the sponsor in item wording (when voluntarily provided), and provided continuous notification to respondents of the percentage of the survey completed during the administration of the survey.

3. Our final sample included 663 members of no fewer than 61 different virtual communities. No single community sponsor represented more than 5% of the total number of 663 cases, with the exception of HP and Dell. We conducted our SEM test on a sample that excluded respondents that referenced Dell or HP ($N = 405$ individual respondents). The results of our final SEM remain consistent with those achieved with the full sample.

4. We allowed respondents to volunteer the name of the firm that sponsored their virtual community and feel that, because respondents were given a choice, the information obtained is of higher quality than if the request for a name had been mandatory. However, to test for the impact of this decision on our final results, we conducted our SEM test on two subsamples to address the potential impact of included data regarding unnamed sponsors in our sample and found no evidence of bias in our results.

For the first test, we used a sample that included only those respondents who named a specific sponsor of their virtual community ($N = 434$). The results of the hypotheses are consistent with those from our full sample. In other words, the same parameter estimates are significant and insignificant in the model, and the fit statistics are consistently sufficient (e.g., CFI = .98, SRMR = .089, RMSEA = .076).

For the second test, we used a sample that included only those responses that named a specific community spon-

sor and that excluded respondents that named Dell or HP. This sample had 176 respondents (obtained by subtracting the 258 responses that named Dell or HP from the total of 434 responses that named a specific sponsor). Again, the results are consistent with those from our full sample. Indeed, the same parameter estimates are significant and insignificant in the model, and the fit statistics are consistently sufficient (e.g., CFI = .97, SRMR = .097, RMSEA = .092).

5. As is noted in existing literature, online communities have different formats, purposes, etc., particularly since online business communities tailor characteristics to match the business strategy of the community sponsor (Stockdale and Borovicka 2006). As part of our data

quality assessment process, we visited each community that was mentioned by name and observed differences in format purpose and operations. For example, some virtual communities focus only on a single bulletin board, while others focus on combinations of live chat forums, bulletin boards, etc. Indeed, one of our survey questions asks respondents about the various features of their virtual communities. In response to a question regarding what features their virtual community offered, our 663 respondents answered as follows: bulletin board (e.g., threaded posts, listservs, etc.)—74%; chat forums—53%; live events sponsored by the sponsoring marketer—38%; links to other websites—64%; advertising for the sponsor—69%; and advertising for other firms—45%.

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