Customer Knowledge Contribution Behavior in Social Shopping Communities

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Abstract

Social shopping communities, a special form of social media, have offered fertile ground for customers to communicate their opinions and exchange product information. Although social shopping communities have the potential to transform the way online customers acquire knowledge in everyday life, research in information systems has paid little attention to this emerging type of social media. Thus, the goal of this paper is to enhance our understanding of user behavior in this new form of community. We propose and empirically test an integrative theoretical model of customer knowledge contribution based on social capital theory. By analyzing panel data collected over two weeks from 2,251 customers in a social shopping community, we found that reputation, reciprocity, network centrality, as well as customer expertise have significant impact on customer knowledge contribution. These results contribute significantly to the literature and provide important implications for future research and practice.

Keywords: social shopping community, customer knowledge contribution, collective action, public goods, social media, knowledge management

1. Introduction

Social shopping communities, a special form of social media, have offered fertile ground for customers to communicate their opinions and exchange product information. Many prior studies have demonstrated that online customer reviews are found to significantly influence customer purchase decisions [9, 15, 39, 57]. A survey by Forrester Research Inc. [18] in 2009 found that 91 percent of respondents mentioned that they consulted online reviews, blogs, and other user-generated content before purchasing a new product/service, of which 46 percent were influenced to purchase. Given that social shopping communities have the potential to transform the way online customers acquire knowledge in everyday life, it is evidently important for academics and practitioners to understand what customers do in these social shopping communities, as well as why they contribute and exchange customer knowledge in these online social platforms.

Some researchers argue that knowledge is an organization’s most valuable resource because it represents intangible assets, operational routines, and creative processes [20, 36]. This argument may also be applied to social shopping communities, in which customer knowledge contribution is a vital resource for communities’ growth and sustainability. Therefore, the goal of this paper is to enhance our understanding of customer knowledge contribution behavior in social shopping community. Specifically, we explore customer knowledge contribution behavior through an empirical analysis of objective panel data collected from a social shopping community.

Social shopping communities allow various relationships among customers. There are two types of social ties in social shopping communities: “following”, and “being followed”. This makes network structure in social shopping communities different from traditional communities. The implications of network structure have been studied in other contexts, such as inter- and intra-firm networks with a formal or an informal nature [47] and collaborative group networks [5, 21]. However, little is understood about whether the new network structure of social shopping communities will provide any economic value to them. Thus, we consider the following questions in relation to social shopping communities:

Why are customers willing to contribute knowledge in social shopping communities?
Which factors will influence customer knowledge contribution behavior?
How does network structure influence customer knowledge contribution behavior?

In recent years, an increasing number of studies has examined the reasons why consumers post their opinions, comments, and reviews of products on weblogs, discussion forums, review websites, e-bulletin board systems, newsgroups, and social networking sites [8]. Most existing studies on knowledge contribution used a subjective approach to explore how and why people contribute knowledge in online communities [10, 23, 54]. In the current study, a different methodological approach is adopted to explore customer knowledge contribution behavior in social shopping communities. We crawled data from a social shopping community and used objective measurements to explore the impact of social capital in social shopping communities. In addition, prior studies on knowledge contribution mostly relied on cross-sectional data [10, 54]. The current study adopts a longitudinal design to empirically illustrate the causal relationship between key antecedents and customer knowledge contribution behaviors.

We have organized the rest of this paper as follows. First, we present the theoretical background. Then, we provide a conceptual model of customer knowledge contribution behavior in social shopping communities. After describing our data source, we explain our empirical strategy and present the results of our data analysis. Finally, we conclude with a discussion of the implications for theory and practice.

2. Theoretical Background

In this section, we introduce the social media being studied and review the related literature on customer knowledge contribution behavior to establish the theoretical foundations of our research model.

2.1. Customer Knowledge Contribution

Numerous studies in the information systems (IS) discipline have sought to understand the factors affecting knowledge contribution [10, 41, 43, 50, 54]. The majority have focused on the psychological factors, which can be classified into two streams: personal and social motives [50]. Personal motives include extrinsic reward, reputation, sense of self-worth, learning and the enjoyment of helping others [10, 53]. Social motives include community advancement, social identity, reciprocity and a sense of belonging [10, 41, 54]. In addition, our review of the IS literature revealed that most existing studies on knowledge contribution used a subjective approach to explore how and why people contribute knowledge in online communities (e.g., through survey or experimental design) [11, 30, 49], with only a few exploring the actual knowledge contribution behavior using an objective approach [40] (See Table 1).

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Related Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td>[4, 10, 14, 16, 22, 24, 25, 28, 29, 31, 33, 34, 35, 41, 53, 54]</td>
</tr>
<tr>
<td>Experiment</td>
<td>[51]</td>
</tr>
<tr>
<td>Case study</td>
<td>[1, 22]</td>
</tr>
<tr>
<td>Objective Approach</td>
<td>[35]</td>
</tr>
</tbody>
</table>

Table 1 Research Method Used in Knowledge Contribution in Virtual Communities

2.2. Social Media and Customer Knowledge Contribution Behavior

Kaplan and Haenlein [32] defined social media as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content. (p. 61)” Enabled by ubiquitously accessible and scalable communication techniques, social media has substantially changed the way organizations, communities, and individuals communicate. Traditionally, individuals are at the end of the information flow. When individuals read USA today, watch CNN news on the television, or browse nytimes.com, for example, they are absorbing information created and filtered by media agencies. The information flows in a hierarchical manner: media agencies are at the upper level, serving as information creator and gatekeeper; and individuals are at the end of the flow, acting as information consumers [3, 55]. By contrast, social media democratically enables every individual to be an information creator. One can post whatever one views as interesting and newsworthy.

Knowledge contribution in social media occurs when users are motivated to take the time and effort to post a response. According to prior knowledge management literature, knowledge sharing is viewed as a public-good phenomenon [54]. A public good is characterized as “a shared resource from which every member of a group may benefit regardless of whether or not they personally contribute to its provision, and whose availability does not diminish with use (p. 693)” [6]. The fundamental problem of a public good is that any individual may consume a public good without contributing to a group. Wasko and Faraj [54]
suggested that though public goods are subjected to social dilemmas, they are created and maintained through collective action.

In the context of social media, anyone can access and consume knowledge without making a direct contribution back to it, and it is very likely that individuals will free-ride [4, 8, 31]. However, theories of collective action help explain why individuals in a collective may instead choose not to free-ride. Having received greater prestige for their contributions to group goals, individuals’ motivation to help the group will be increased, leading to greater subsequent contributions to group efforts and greater feelings of group solidarity. Individuals’ contributions to a group show that individuals’ behavior is socially constructed. Consistent with theories of collective action, public goods are still shared and contributed to voluntarily through cooperation of individuals [13].

2.3. Social Capital Theory and Customer Knowledge Contribution Behavior

Social capital refers to resources embedded in a social structure that are accessed and/or mobilized in purposive action [37]. This term initially appeared in community studies, crosscutting personal relationships developed over time that provide the basis for trust, cooperation, and collective action in such communities [27]. Nahapiet and Ghoshal [42] defined social capital as an integrative framework for understanding knowledge contribution and creation in organizations. Wasko and Faraj [54] further identified three key dimensions of social capital, including cognitive capital, structural capital, and relational capital, and explored their roles in knowledge contribution in electronic networks of practice. Wasko and Faraj’s model focused on individual-level knowledge contribution. They suggested that social capital facilitates a customer’s actions and reflects their access to resources [13, 37, 46].

In this study, we attempted to address the question of why customers contribute knowledge in social shopping communities. Based on the theoretical model proposed by Wasko and Faraj [54], we developed a series of hypotheses to examine how three dimensions of social capital (cognitive, structure, and relational) are related to customer knowledge contribution in a social shopping community.

3. Research Model and Hypotheses

Figure 1 presents our research model. Our proposed model is closely related to the knowledge contribution model in Wasko and Faraj [54], in which customer knowledge contribution is influenced by social capital (i.e., structural capital, cognitive capital, and relational capital).

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**Figure 1. Research Model**

3.1. Relational Dimension of Social Capital: Reputation and Reciprocity

Rational capital exists when customers have a strong identification with the collective. We examine the relational dimension of social capital using reputation and reciprocity.

3.1.1. Reputation. Researchers in psychology, sociology, economics and the political sciences assume that all human actions are ultimately directed toward self-interest. Rewards and avoidance are the most obvious self-benefits driving individuals to act in the public good. As rational beings, humans look for returns (e.g., prizes, reputation and recognition) by maximizing their benefits and minimizing their cost during information exchange processes with others [35]. These personal benefits or “private rewards” are more likely to accrue to customers who actively participate and help others [52]. This perspective has been widely adopted in previous customer knowledge contribution studies [8, 23, 38, 50]. In this study, we focus on the individuals who have already built reputation in the community, and we believe that reputable members, most likely experts, are more willing to keep participating in the community so as to keep their status as well as relationships with other members in the community [7].

**H1:** Reputation has a positive effect on customer knowledge contribution behavior.

3.1.2. Reciprocity. Reciprocity is an internalized social norm [45]. It is also conceived as a benefit for customers to engage in a social exchange. Reciprocity
states that customers often adjust behaviors according to what they receive from others in an exchange relationship. It can be classified into three categories: beliefs in reciprocity, positive reciprocity and negative reciprocity. Beliefs in reciprocity are the attitudinal expectations of others’ reciprocal behavior; and positive reciprocity refers to one’s intention to follow the others’ positive action with positive sanctions, while negative reciprocity captures the willingness to perform negative behaviors when receiving negative behaviors from others [45]. In our study, reciprocity is defined as positive reciprocity. The reciprocity mechanism nurtures relational capital in social shopping communities, and can be used to examine individual activities [54]. Researchers have found that reciprocity is important in relationship building [2, 19]. Relational ties among customers allow them to mutually reinforce each other [26]. A customer who has received appreciation from other customers is more likely to contribute in a community. Customers usually reciprocate the benefits they receive from others so as to ensure ongoing supportive exchanges [48]. Therefore, a customer who received more reciprocity from a social shopping community is likely to contribute more in the community.

H2: Reciprocity has a positive effect on customer knowledge contribution behavior.

3.2. Structural Dimension of Social Capital: Centrality

Social network centrality is the total number of links from other customers that go to a focal customer (the customer being followed) plus the number of links from the focal customer to other customers (the following). This also reflects the structural dimension of social capital. Customers with higher centrality (the number of in-coming and out-going ties) tend to be more attractive than customers with lower centrality because more links suggest a greater popularity in the network. This also means that customers with more links tend to perform better in social shopping communities. Moreover, it has been found that a customer with a high amount of centrality is more likely to benefit from a social network [49]. For instance, a customer with many followers could attract a larger size of audience and has a greater opportunity to access more resources. Building upon this line of argument, we believe that customer knowledge contribution behavior is positively related to the social network centrality.

H3: Social network centrality has a positive effect on customer knowledge contribution behavior.

3.3. Cognitive Dimension of Social Capital: Customer Expertise

The cognitive dimension of social capital refers to those resources that make shared interpretations and meanings within a collective [54]. It is an essential part of social exchange and combination processes. Nahapiet and Ghoshal [42] suggest that the cognitive dimension of social capital may be developed in two main ways: 1) through the existence of shared language and vocabulary, and 2) through the sharing of collective narratives. These two elements facilitate social interaction processes. A certain level of shared language is a method through which customers engage in communication. In online communities, language indicates an individual’s level of expertise. A customer with higher expertise may have a better understanding of the context in which their knowledge is relevant [44]. As a customer’s experience increases over time, s/he has a better assessment of the costs and benefits in the context of social shopping communities. Therefore, we expect that customers with a higher level of expertise are more likely to contribute knowledge in social shopping communities.

H4: Customer expertise has a positive effect on customer knowledge contribution behavior.

4. Research Method

This section presents our data collection method and operationalization of constructs for this study.

4.1. Data Collection

The data for this study were collected from a popular social fashion shopping community in Asia (www.meilishuo.com). Meilishuo.com is one of the most popular websites in mainland of China and currently has more than 15 million members. It is a platform where customers can comment on their favorite products and interact with other customers. For instance, customers can share their favorite products with other customers in the community by providing a brief description. They can also interact by “liking”, replying to and/or forwarding others’ posts. In addition, they can choose to follow other customers in the community. In this sense, every customer is regarded as an actor in the social network. This platform provided rich data that allowed us to investigate how social networking affected customer knowledge contribution behavior in a social fashion shopping community.

4.1.1. User Identities. The unit of analysis in this study was a customer (user) of the social shopping community. To construct a random program based on a list of 3,000 randomly chosen registered customers from the
selected social shopping community. Regarding customers’ tenure, we selected customers who had registered with and contributed to the social shopping community before November 2011. The resulting dataset contained 2,251 customers. For each customer, we crawled the full text of each post s/he wrote and the date when it was written.

4.1.2. Time Window. Our research model was assessed in a longitudinal setting in which customers who shared knowledge in the social shopping community at time t-1 (November 2011) were observed at time t (the first week of April 2012) and their actual use behavior (e.g., knowledge contribution to the social shopping community) was collected directly from the social shopping community at time t+1 (the third week of April 2012) (See Fig. 2).

The observation interval is said to influence the results in a longitudinal setting [12]. In determining the length of the time window, we had to balance two factors. First, the time window could not be too short or it would not truly reflect the user behavior changes. Second, it also could not be too long or it would accumulate too many unrelated activities [56]. The duration of a longitudinal setting (i.e., two weeks) was considered appropriate for examining the causal effects between key antecedents and customer knowledge contribution behavior.

4.2. Operationalization of Constructs

The constructs included in the research model are operationalized as follows.

Reputation (time t). The social shopping community awards customers with social rewards in the form of “medals” based on their performance. Customers who receive more medals are more likely to have higher reputations within the social shopping community. Thus, the independent variable, reputation, will be operationalized as the total number of “medals” a customer has received from the social shopping community.

Reciprocity (time t). The social shopping community provides statistics on the number of “likes” that a customer receives for his/her posts in the community. The number of “likes” received from other customers refers to the reciprocity that a customer has experienced. Therefore, the independent variable, reciprocity, is operationalized as the total number of “likes” a customer has received for his/her posts in the social shopping community.

Centrality (time t). A customer can choose to follow other customers within the social shopping community. The relationship between two customers is established when one follows another. Each customer in the social shopping community has an “ego” social network. A focal customer with his/her following and followers form a social network. Social network centrality is the number of ties from other customers to the focal customer, plus the number of ties from the focal customer out to other customers. Therefore, the independent variable, indegree centrality, is operationalized as the total number of followers and followings.

Customer Expertise (time t). The social shopping community provides recommendation scores for each customer based on their performance. Because a customer who receives a larger number of recommendation scores is more likely to be an expert, customer expertise is operationalized as the total recommendation score a customer has received in the community.

Customer knowledge contribution (time t+1). The social shopping community provides the total number of posts written by each customer (time t+1) and the date when each post was written.
of times a customer has posted in the social shopping community. Thus, the dependent variable, customer knowledge contribution quantity, is operationalized as the total number times a customer has posted in the community until time \( t+1 \) (the third week of April 2012).

5. Data Analysis

Table 2 summarizes the descriptive statistics (mean, standard deviation, minimum, maximum) of the variables used.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Knowledge Contribution</td>
<td>2251</td>
<td>0</td>
<td>7537</td>
<td>82.50</td>
<td>344.46</td>
</tr>
<tr>
<td>Reputation</td>
<td>2251</td>
<td>0</td>
<td>22</td>
<td>1.67</td>
<td>1.77</td>
</tr>
<tr>
<td>Centrality</td>
<td>2251</td>
<td>0</td>
<td>83421</td>
<td>3552.51</td>
<td>1176.25</td>
</tr>
<tr>
<td>Customer Expertise</td>
<td>2251</td>
<td>0</td>
<td>96907</td>
<td>61.90</td>
<td>9733.52</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>2251</td>
<td>0</td>
<td>43625</td>
<td>94.41</td>
<td>1382.09</td>
</tr>
</tbody>
</table>

Customer knowledge contribution behavior was represented using a count variable because it summed together all the sharing messages that are added to a post list. Poisson regression and negative binomial regression are often used to analyze count data. The Poisson regression model makes the very restrictive assumption that the mean of the dependent variable equals the variance [12]. If the variance is greater than the mean, the data is said to be over-dispersed, which can lead to inflation of the goodness of fit chi-square test and the overestimation of the significance of predictors [12]. An approach to over-dispersion is the use of the negative binomial regression model [12]. For customer knowledge contribution behavior, the variance was greater than mean (variance = 1188652.69, mean = 82.05), indicating that the data were over-dispersed. Therefore, in this study, we adopted a negative binomial regression (using SPSS) to test the hypothesized effects.

The results are presented in Table 2. We summarize the Omnibus test results, coefficients, Wald statistic, associated degrees of freedom, and significance level of each of the predictors. A negative binomial regression analysis was performed with customer knowledge contribution behavior as the dependent variable, and reputation, centrality, customer expertise, and reciprocity as independent variables. The Omnibus test revealed that the full model significantly predicted customer knowledge contribution behavior (Likelihood Ratio Chi-Square = 3891.732, df = 4, \( p < 0.0001 \)).

From the perspective of relational capital, the results showed that reputation was significantly related to customer knowledge contribution behavior (\( \beta = 0.837, p < 0.0001 \)), which supports H1. Reciprocity had a significantly positive effect on customer knowledge contribution behavior (\( \beta = 0.467, p < 0.0001 \)), which supports H2. From the perspective of structural capital, centrality was significantly related to customer knowledge contribution behavior (\( \beta = 0.184, p < 0.0001 \)), which supports H3. Centrality does have an influence on customer knowledge contribution behavior in social shopping communities. From the perspective of cognitive capital, customer expertise had a positive and significant effect on customer knowledge contribution behavior (\( \beta = 0.159, p < 0.0001 \)), which supports H4. The support for H4 confirmed the importance of customer expertise in social shopping communities. A comparison of the four \( \beta \) coefficients revealed that relational capital had the strongest impact on customer knowledge contribution.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>( \beta )</th>
<th>Std. Error</th>
<th>Wald Chi-Square</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relational Capital - Reputation</td>
<td>0.837</td>
<td>0.028</td>
<td>869.364</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Relational Capital - Reciprocity</td>
<td>0.467</td>
<td>0.083</td>
<td>31.579</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Structural Capital - Centrality</td>
<td>0.184</td>
<td>0.263</td>
<td>48.807</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Cognitive Capital – Customer Expertise</td>
<td>0.159</td>
<td>0.032</td>
<td>24.642</td>
<td>1</td>
<td>.000</td>
</tr>
</tbody>
</table>

Omnibus Test: Likelihood Ratio Chi-Square = 3891.732 (df = 4, \( p < 0.0001 \))

DV: Customer Knowledge Contribution Behavior

Table 3. Results of Negative Binomial Regression Analysis
6. Discussion and Conclusion

The main purpose of this study was to explore the factors driving customer knowledge contribution behavior in social shopping communities. We identified social capital as the key antecedents that drive customers to contribute knowledge in a social shopping community. We adopted an empirical analysis approach and collected objective behavioral data from a real social shopping community. Our results generally support the theoretical model and our hypotheses.

6.1. General Discussion

Our results provided strong evidence that social capital plays an important role in explaining customer knowledge contribution. All the three dimensions of social capital had significant impacts on customer knowledge contribution. Among the three dimensions, the relational social capital had the strongest impact on customer knowledge contribution. Particularly, reputation was a strong motivator for active participation [17, 54]. Customers in social shopping communities wanted to enhance their reputation by contributing knowledge through posting messages. Our results also showed that customers who were central in a network and connected to a large number of others were more likely to contribute knowledge. Moreover, the cognitive dimension of social capital, customer expertise, was an important predictor of customer knowledge contribution.

6.2. Research Implications

This study makes several important contributions to future research. Firstly, this study provided strong empirical support for existing findings regarding the impact that social capital has on customer knowledge contribution behavior in social shopping communities. In addition, by explicitly comparing the power of structure dimension, cognitive dimension, and relational dimension of social capital, this study empirically illustrated that the relational dimension of social capital had the greatest impact on customer knowledge contribution behavior. Secondly, by identifying the facets of social capital as the determinants of customer knowledge contribution, the network of relationships among customers (network structure) was characterized as a valuable resource for customer knowledge contribution. Moreover, our study has expanded existing research in terms of the methods we adopted in the current investigation. The evidence found in prior studies was primarily derived from data collected in a subjective approach (e.g., through survey or experimental design) [10, 23, 54]. In this study, we crawled data from 2251 customers of a social shopping community over a period of two weeks, and identified the underlying motives behind customer knowledge contribution behavior in social shopping communities. Finally, we empirically illustrated the influence of social capital in a longitudinal study. To the best of our knowledge, this study is one of the very first to demonstrate the longitudinal implications of social capital in the context of social shopping communities. The present study thus enhances our understanding of social media and social shopping communities.

6.3. Managerial Implications

The findings of this study are also useful for social shopping communities, to help them understand their customers’ behavior. The results showed that reputation, reciprocity, network centrality, and customer expertise are the critical factors that encourage customers to share and contribute in social shopping communities. Therefore, we have the following three recommendations:

First, for the relational dimension of social capital, managers can encourage reciprocity by using extrinsic motivations such as rewards for knowledge contribution. In addition, to encourage more customers to share their information, social shopping communities should apply reputation-tracking mechanisms to recognize contributors. Apart from the number of contributions, publicly visible cues such as length of membership and membership status should be incorporated into the platform design. Second, for the structural dimension of social capital, managers should focus on network structure development to enhance information exchange through social network structure. For example, managers should develop strategies that encourage interaction and the development of strong relationships among customers. Finally, for the cognitive dimension of social capital, maintaining a set of core expert customers plays an important role in sustaining a social shopping community.

6.4. Limitations

This study has limitations that must be noted. First, given that our data was collected from an online fashion forum, our samples were primarily female. Thus, a gender bias certainly exists. Future studies could test our model with a data sample that is gender
neutral. Second, the measures for reputation, customer expertise, and reciprocity were quantitative surrogates and not direct measures of these constructs. In addition, we were not able to collect some perception data (e.g., commitment) through panel data study. Future studies could also conduct a study using a subjective approach.

In conclusion, social shopping communities represent new and important marketing phenomena, and we hope that our study triggers additional theorizing and empirical investigation aimed at developing a better understanding of customer knowledge contribution behaviors in social shopping communities.

Acknowledgements

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7. References