Herd Behavior in Consumers' Adoption of Online Reviews

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It has been demonstrated that online consumer reviews are an important source of information that affect individuals' purchase decision making. To understand the influence of online reviews, this study extends prior research on information adoption by incorporating the perspective of herd behavior. We develop and empirically test a research model using data collected from an existing book review site. We report 2 major findings. First, argument quality and source credibility predict information usefulness, which affects the adoption of online reviews. Second, we determine that the adoption of online reviews is also influenced by 2 herd factors, namely, discounting own information and imitating others. We further identify the key determinants of these herd factors, including background homophily and attitude homophily. The theoretical and practical implications are discussed.

Introduction

Recent Internet technologies have provided online users with many opportunities to share information with others. Online communities, including discussion forums and social networking sites, appear to be the most active places where users' information sharing takes place. For some online communities, such as Tripadvisor.com and Yelp.com, the focal information people are interested in is online consumer reviews. These online reviews, also known as electronic word-of-mouth (eWOM), contain consumers' evaluations and opinions of a wide range of products or services. They are often contributed and shared by consumers with prior purchase experience. Hence, other people in online review communities can adopt such information to reduce product and purchase uncertainty in their future decision-making process. A recent industrial survey shows that 78% of online users believe their purchase decisions are influenced by online reviews (eMarketer, 2013).

The business value of online reviews has been attracting increasing attention among scholars (e.g., Chevalier & Mayzlin, 2006; Duan, Gu, & Whinston, 2008; Mudambi, 2010). An important stream of research sheds light on consumers' information adoption of online reviews (Cheung & Thadani, 2012; Zhang, Zhao, Cheung, & Lee, 2014). *Information adoption* considers the internalization phase, in which individuals accept information from external sources to enhance their knowledge or improve their decision making (Sussman & Siegal, 2003). It can be viewed as a form of informational influence because individuals are influenced by information from others and accept it as credible evidence of reality (Eagly & Chaiken, 1993). In this regard, informational factors, including factors related to information itself and information sources, may have primary effects on individuals' assessment of the information (Wathen & Burkell, 2002; Zhang & Watts, 2008). Cheung, Luo, Sia, and Chen (2009) noted that only considering the influence of informational factors may be insufficient because online reviews are socially aggregated in online communities. They added normative factors along with informational factors in their online review adoption model to highlight the influence of group opinions.

In this study, we propose that factors associated with consumers' herd behavior may also be important in understanding consumers' online review adoption process. *Herd behavior* refers to the extent to which "people will be doing what others are doing rather than using their information" (Banerjee, 1992, p. 797). According to Chen, Wang, and Xie (2011), consumers' decisions are often affected by their online social interaction with others. *Online social interaction* may broadly refer to any online actions from a nonmarketer that influence consumers' judgments and valuations of products or services (Godes et al., 2005). Two types of online social interaction are identified in the existing literature: information-based social interaction (e.g., Jansen, Zhang, Sobel, & Chowdury, 2009) and behavior-based social interaction (e.g., Duan, Gu, & Whinston, 2009). *Information-based social interaction* suggests that consumers may draw on others' opinions or information for decision making. *Behavior-based social interaction* highlights that consumers may also learn from others' purchase behavior to make decisions. According to this perspective, informational factors in online review communities may be linked to information-based social interaction. Likewise, we conjecture that herd factors in this context may be associated with behavior-based social interaction. This is consistent with prior research, which posits that herd behavior may take place after individuals learn from many others' behaviors (Chen et al., 2011; Zhang & Liu, 2012). In online review communities, herd behavior often occurs given that consumers can easily identify popular products based on the number of reviews. Research shows that hit products are likely to attract many consumers to purchase and post new reviews (Escalas & Bettman, 2003). Moreover, the number of online reviews for these products tends to peak within a short time (Duan et al., 2008). This positive feedback mechanism indicates that the current volume of online reviews affects many consumers' purchase behavior, which in turn enables them to contribute postconsumption reviews (Godes & Mayzlin, 2004). Although herding is likely to occur in this context, it remains unclear how consumers herd to adopt online reviews of popular products and then make their purchase decisions (Huang & Chen, 2006). It is thus worthwhile to consider both salient informational factors (i.e., information-based social interaction) and herd factors (i.e., behavior-based social interaction) to better understand the adoption of online reviews in online communities. In this study, we accordingly ask the following two research questions:

1. *How do informational factors affect consumers' online review adoption in online communities?*
2. *How do herd factors affect consumers' online review adoption in online communities?*

We expect that the present study can contribute to the existing literature in several ways. First, many studies have shed light on factors that drive consumers' information sharing behavior in online communities (e.g., Chiu, Hsu, & Wang, 2006; Lee, Cheung, Lim, & Sia, 2006). However, much remains unknown regarding how consumers are influenced by receiving information in online communities (Cheung, Lee, & Rabjohn, 2008). The present study adds to existing studies by examining the adoption of online reviews in online communities. Second, we extend prior research on information adoption by considering the role of herd factors. Merely considering informational factors may be insufficient to account for the adoption of online reviews in online communities (Cheung et al., 2009). Third, we further identify the key determinants of herd factors. This will help us understand what factors are conducive to promoting consumers' herd behavior, which leads to a higher tendency of adopting online reviews. Finally, research on herd behavior in the information systems (IS) literature is still limited (Sun, 2013).

The rest of this article is organized as follows. First, we present the theoretical background of this research. Then, we build our research model and develop hypotheses to articulate consumers' online review adoption process. Next, we empirically test the model using an online survey study, followed by analyzing the data with a structural equation modeling approach. Finally, we discuss the findings of this research, note limitations and future research opportunities, and summarize this study with implications for both researchers and practitioners.

Theoretical Background

To develop a research model for this research, we draw on three areas of prior studies: the information adoption model, herd behavior, and the theory of homophily.

Information Adoption Model

The information adoption model was originally proposed by Sussman and Siegal (2003). They applied the model to explain what factors are important in driving individuals to adopt information in an organizational context. The model is built on two bodies of theories: theories of adoption and theories of informational influence. Adoption theories, including the theory of reasoned action (Ajzen & Fishbein, 1980) and the technology acceptance model (Davis, 1989), suggest that beliefs are important determinants of individuals' intention to adopt certain behavior or information technologies. These beliefs may include perceived usefulness and perceived ease of use. In the context of information adoption, perceived usefulness of information is likely to be a salient belief that drives people to adopt the information.

The theories of informational influence explicate the process through which individuals are influenced by the information they receive (Sussman & Siegal, 2003). The elaboration likelihood model (ELM) is one of the most prominent theories of informational influence (Petty & Cacioppo, 1986). ELM posits that information will be processed through two routes in terms of the level of individuals' cognitive elaboration: the central and peripheral

routes. The *central route* indicates that individuals invest high cognitive effort to process information. In contrast, the *peripheral route* suggests that individuals adopt heuristic and simple decision rules to quickly form judgments. Prior research shows that argument quality and source credibility are two major factors that represent the central and peripheral routes, respectively (Sussman & Siegal, 2003; Zhang & Watts, 2008). When individuals follow the central route to process information, they develop perceptions regarding the content of the information. In this respect, *argument quality* refers to the extent to which individuals perceive the received information as complete, consistent, and accurate (Bailey & Pearson, 1983). On the other hand, when individuals use the peripheral route to process information, they develop perceptions of the heuristic and noncontent cues, such as the characteristics of information sources. In this case, *source credibility* is defined as individuals' perceptions regarding the credibility of information sources rather than the content of the information (Petty & Cacioppo, 1986).

Drawing on the two theories, the information adoption model posits that argument quality and source credibility are key determinants of information usefulness, which further leads to information adoption (Sussman & Siegal, 2003). It suggests that individuals will be likely to identify received information as useful if the information has high argument quality and is provided by credible sources. Furthermore, useful information will increase individuals' likelihood of adopting the information. The significance of the information adoption model has been validated in a number of previous studies. For instance, Cheung et al. (2008) applied the model to understand consumers' adoption of online reviews in online communities. Shen, Cheung, and Lee (2013) investigated the determinants of students' information adoption behavior in Wikipedia.

Herd Behavior

Eric Hoffer stated that (1955) "when people are free to do as they please, they usually imitate each other" (p. 21). Prior research has shown that herd behavior occurs in a wide range of circumstances, including imitating others' behavior in financial markets (Choi, Laibson, Madrian, & Metrick, 2003), following others' online auctions in eBay (Simonsohn & Ariely, 2008), downloading popular software products (Duan et al., 2009), and herding to adopt wiki systems (Sun, 2013). Based on Banerjee's (1992) definition, herd behavior is associated with two characteristics, namely, discounting own information and imitating others (Sun, 2013). *Discounting own information* refers to the extent to which individuals disregard their own information or beliefs when making a decision. *Imitating others* denotes that individuals follow others' decisions or behaviors when herding. In this study, we refer to these two factors as herd factors. Prior research shows that herd behavior tends to occur under two primary conditions: decision uncertainty and the observation of others' behavior (Sun, 2013). This is because

when an individual is faced with uncertain circumstances or has incomplete information, he may disregard his own information and then follow many others' behavior (Walden & Browne, 2007). To imitate others' behavior, an individual will need to observe their actions first. In this case, the number and identity of preceding others may be important factors. If preceding others are making the same choice, especially when they are opinion leaders or believed to have made the right decisions, then the individual tends to follow this choice (Bandura, 1986).

Prior research notes that herding may play an important role in individuals' decision-making process (Devenow & Welch, 1996). This is because individuals may try to make decisions based on observing and making inferences from the information or behavior of others during herding (Sun, 2013; Walden & Browne, 2007). For instance, in the context of financial markets, people may herd when they want to reduce uncertainty and avoid information asymmetry (Devenow & Welch, 1996). Lao and Singh (2011) posited that herding occurs when an individual mimics others' behavior and believes that others' decisions are better informed. If the influence of preceding others' behavior is remarkably strong, then the individual may completely rely on the herd's behavior rather than his own information. Prior research contends that herding is likely to occur in online environments because (a) individuals' own information is often limited and inaccurate, (b) many alternative products can be chosen for consumption, and (c) it is easy to identify a vast amount of information about others' purchase decisions and product evaluations on the Internet (Duan et al., 2009). A recent empirical study by Zhang and Liu (2012) examined herding in the context of online microloan markets. They found that lenders tend to justify their herd behavior by actively making inferences and learning from other lenders' behavior. In summary, the herding perspective in the extant literature helps delineate the process where people learn from others' behavior (Chen et al., 2011). It further suggests that herding may be closely related to individuals' decision-making process (Duan et al., 2009).

Theory of Homophily

The homophily principle is viewed as an important social principle in the existing literature (McPherson, Smith-Lovin, & Cook, 2001). *Homophily*, sometimes known as similarity, refers to the degree to which people are similar regarding certain attributes (Rogers, 1983). These attributes may include demographic characteristics, preferences, interests, and psychological traits (Bruyn & Lilien, 2008). The primary implication of homophily theory is that people tend to interact with similar others (McPherson et al., 2001). This view is consistent with the like-me principle proposed by Laumann (1966). Prior research has shown that information flow is likely to be activated among homophilous individuals (Brown & Reingen, 1987). Individuals tend to perceive a strong influence from homophilous others (Rogers, 1983). Brown and Reingen (1987) noted that
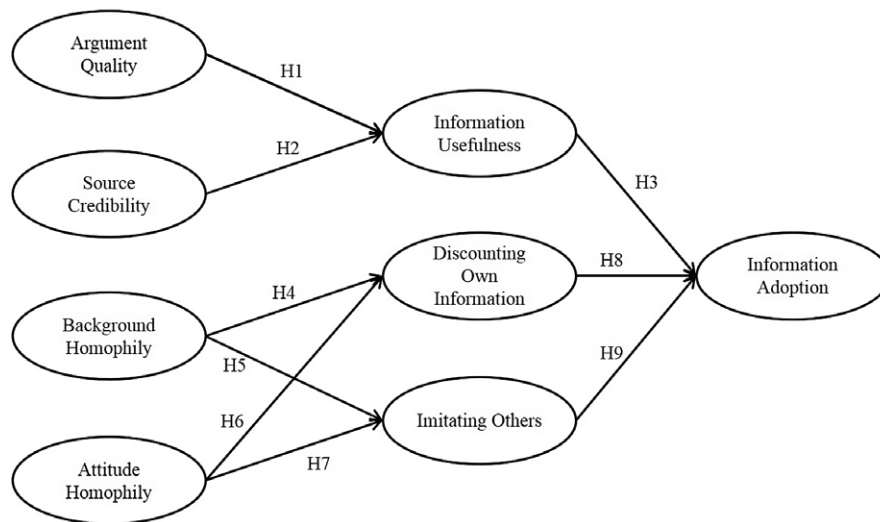
FIG. 1. Research model.

preference for interacting with similar others is a fundamental rule of human social interactions.

To develop the measurement of homophily, prior research contends that perceived homophily or perceived similarity may be more precise and important than objective and real similarities (e.g., gender and race) (McCroskey, Richmond, & Daly, 1975). McCroskey, McCroskey, and Richmond (2006) further posited that perceived homophily should be measured as a multidimensional construct. Based on previous studies, they identified two dimensions of homophily, namely, background homophily and attitude homophily. *Background homophily* highlights social background similarities, and *attitude homophily* emphasizes similar values, preferences, and attitudes between a pair of individuals. The two homophily dimensions are distinct from each other and are nonorthogonal (McCroskey et al., 2006).

Research Model and Hypotheses Development

Building upon the theoretical background, we develop our research model as shown in Figure 1. In the context of online review communities, we hypothesize that argument quality and source credibility may affect information usefulness. Information usefulness will then predict information adoption. Next, we propose that two herd factors, namely, discounting own information and imitating others, will be predicted by background homophily and attitude homophily. We further propose that the two herd factors will also influence information adoption.

Informational Factors and Information Adoption

Argument quality and source credibility are the informational factors we consider in this study. According to the information adoption model, argument quality and source credibility have positive effects on information usefulness, which further affects information adoption (Sussman &

Siegal, 2003). In online review communities, online reviews of high argument quality are beneficial to consumers because they provide complete and accurate product evaluations (Cheung et al., 2008). In this regard, consumers will find the reviews useful and valuable and employ them to reduce uncertainty in their purchase process. We provide the following hypothesis:

H1: *Argument quality is positively associated with information usefulness*

Similarly, credible sources of online reviews indicate that the sources, that is, the review contributors, are expert, knowledgeable, reliable, and trustworthy (Petty & Cacioppo, 1986). Prior research shows that information from credible sources is likely to be useful and easy to transfer (Ko, Kirsch, & King, 2005). In this context, we also expect that consumers will perceive online reviews as useful if they find that these reviews are contributed by credible others. Thus, the following hypothesis is proposed:

H2: *Source credibility is positively associated with information usefulness*

When consumers find online reviews useful, they are likely to use such information to make informed purchase decisions. Given that the relationship between information usefulness and information adoption has been confirmed in previous studies (e.g., Shen et al., 2013; Zhang & Watts, 2008), we accordingly propose the following hypothesis to articulate that consumers are likely to adopt online reviews if they find these reviews useful:

H3: *Information usefulness is positively associated with information adoption*

Antecedents of Herd Factors

In this research, we refer to discounting own information and imitating others as the two herd factors. We employ discounting own information to describe the extent to which

the consumer will be less responsive to his own information but will refer to others when adopting online reviews. Imitating others refers to the degree to which a consumer imitates others' product choices or decisions when adopting online reviews. Drawing upon the homophily theory, we propose that background homophily and attitude homophily may be the key antecedents of the two herd factors. The underlying rationale is that the homophily principle has been found to be a basic principle for people's social interactions (McPherson et al., 2001). It helps explain why people are prone to interact with others similar to themselves and more likely to be influenced by them. Meanwhile, prior research shows that herding can be viewed as a form of behavior-based social interaction (Chen et al., 2011). It depicts how people learn from and follow others' behavior. From this perspective, we expect that significant relationships may exist between homophily factors and herd factors.

In the current research context, we refer to background homophily as consumers' perceived similarities with the social class, background experience, or economic situations of review contributors. A consumer is likely to identify himself in a social group with review contributors who have similar social backgrounds. Prior research has shown that identification in a social group is positively related to trust (Blanchard & Markus, 2004). In this regard, the consumer tends to trust online reviews from similar contributors. The consumer may prefer to rely on the reviews and be less responsive to his own information. This behavior may be more prominent if he finds that many review contributors in the social group consistently post online reviews on a product. Therefore, we propose the following hypothesis:

H4: *Background homophily is positively associated with discounting own information*

We propose that background homophily may also have a significant impact on imitating others. If a consumer finds himself in a social group with review contributors of similar social backgrounds, he is more likely to follow the behavior of many group members. Prior research posits that identification may lead to participating in activities in social groups (Casaló, Flavián, & Guinalíu, 2010). Users who recognize themselves in social groups prefer to behave together with other members (Cheung & Lee, 2010). According to these perspectives, we propose the following hypothesis:

H5: *Background homophily is positively associated with imitating others*

This study defines attitude homophily as consumers' perceived similarities with the preferences, values, or tastes of review contributors. We expect that attitude homophily will positively lead to discounting own information. Prior research shows that people with similar values are more likely to trust each other (Levin & Cross, 2004). In this case, consumers tend to trust online reviews from others with similar values, thus relying on these reviews and being less

responsive to own information. Thus, the following hypothesis is proposed:

H6: *Attitude homophily is positively associated with discounting own information*

Similarly, we expect that after a consumer observes many similar others' behavior, he will infer that these persons have made a right choice that should be followed. Prior research on herd behavior has posited that imitation occurs in a network with homogeneous preferences (Banerjee, 1992; Bikhchandani, Hirshleifer, & Welch, 1992). Goeree, Palfrey, and Rogers (2006) also indicated that people follow many others' behavior if they share identical preferences. Based on these studies, we propose the following hypothesis:

H7: *Attitude homophily is positively associated with imitating others*

Influences of Herd Factors

In this research, we further propose that the two herd factors may be positively associated with consumers' decision to adopt online reviews. This is consistent with the view that herding may influence individuals' decision-making process (Duan et al., 2009). More specifically, we expect that the first herd factor, discounting one's own information, may have a positive effect on information adoption of online reviews. When a consumer discounts his own information, he will need to search for external information to improve the confidence of making a right decision (Chen & Chaiken, 1999). In online review communities, this means the consumer will refer to and even rely on online reviews from others (Zhang et al., 2014). In this case, the influence from external information (i.e., online reviews) may be stronger than the influence from his own information. Thus, the consumer will have a strong tendency to accept what others recommend in their online reviews. Thus, we propose the following hypothesis.

H8: *Discounting one's own information is positively associated with information adoption*

Similarly, we develop a hypothesis that associates imitating others and information adoption. In online review communities, informational cues, including the content and volume of online reviews, are often provided. These cues may contribute to the occurrence of herding and result in a high level of imitating others. In this case, a consumer who has a high tendency to follow others' behavior can use online review cues to infer the quality and popularity of products (Park, Lee, & Han, 2007). The consumer can therefore better follow and learn from others' purchase behavior by examining how others have commented on products in reviews. This is consistent with Zhang and Liu's (2012) view that people tend to justify their imitating behavior by purposely learning from others. Prior research in the IS adoption literature also provides empirical evidence regarding the relationship between imitating others and behavioral adoption (Sun, 2013). From these perspectives, we propose that

TABLE 1. Measures of constructs.

Construct	Item	Reference
Argument quality (AQ)	AQ1: The reviews on Douban are complete. AQ2: The reviews on Douban are accurate. AQ3: The reviews on Douban are objective.	(Park et al., 2007; Sussman & Siegal, 2003)
Source credibility (SC)	SC1: People who left comments are knowledgeable on this topic. SC2: People who left comments are an expert on this topic. SC3: People who left comments are trustworthy. SC4: People who left comments are reliable.	(Sussman & Siegal, 2003)
Information usefulness (IU)	IU1: The reviews on Douban are valuable. IU2: The reviews on Douban are informative. IU3: The reviews on Douban are helpful.	(Sussman & Siegal, 2003)
Background homophily (BH)	BH1: People who left comments are from a social class similar to mine. BH2: The backgrounds of people who left comments are similar to mine.	(Brown & Reingen, 1987; McCroskey et al., 2006)
Attitude homophily (AH)	AH1: People who left comments share my values. AH2: People who left comments have a lot in common with me.	(Brown & Reingen, 1987; McCroskey et al., 2006)
Discounting own information (DOI)	DOI1: I do not rely on my own information about the book in making the decision to buy. DOI2: I choose to buy the book, even though I may have preferred a different one. DOI3: If I don't know the popularity of this book on Douban, I may have chosen a different book to read.	(Huang & Chen, 2006; Sun, 2009)
Imitating others (IO)	IO1: I purchase the book because it appears to be on the list of best sellers. IO2: I choose to buy the book because it has already been read by many people on Douban. IO3: I follow others on Douban in buying the book.	(Huang & Chen, 2006; Sun, 2009)
Information adoption (IA)	IA1: I will consider the shopping experiences of other users on Douban when I want to shop. IA2: I will ask other users on Douban to provide me with their suggestions before I go shopping. IA3: I am willing to buy the products recommended by other users on Douban.	(Liang, Ho, Li, & Turban, 2011; Zhang & Watts, 2008)

imitating others is likely to affect consumers' adoption of online reviews. Thus, the following hypothesis is proposed:

H9: *Imitating others is positively associated with information adoption*

Research Method

To empirically test the research model, we conducted an online survey in the present study. We collected data in an existing online review community to gather real field information for the research context. Detailed information about the research site, measures, and data collection is given as follows.

Research Site

In this study, we chose Douban.com, a Chinese online review community, as the research site. Douban.com was established in 2005 and has become one of the most popular online review communities that allow Chinese users to contribute and share online reviews about books. Millions of

online reviews have been contributed on the website. Douban.com offers various ranking lists to show highly popular items across different categories of books. For instance, popular books include *The Da Vinci Code*, with over 102,000 reviews, and *Le Petit Prince*, with more than 146,000 reviews. We believe Douban.com provides many opportunities for online users to consider their information adoption of online book reviews. The website can also stimulate users' herd behavior by allowing them to identify popular books on the website. Douban.com appears to be an appropriate research site for this study.

Measure

In this study, we adapted well-validated measures from prior research, which were slightly modified to fit our research context. All measures used multiple items to operationalize the constructs in the research model. We applied a 7-point Likert scale for the items, from 1(*strongly disagree*) to 7(*strongly agree*). Table 1 illustrates the measures of the constructs. To collect data in a Chinese online review

TABLE 2. Demographic characteristics.

		Number	Frequency
Gender	Male	178	47.3%
	Female	198	52.7%
Age	Below 20	13	3.5%
	21–25	214	56.9%
	26–30	82	21.8%
	31–35	40	10.6%
	36–40	18	4.8%
	Above 40	9	2.4%
Education	Primary/elementary school	1	0.3%
	High school	6	1.6%
	Vocational/technical school diploma	32	8.5%
	Undergraduate	232	61.7%
	Master or above	105	27.9%
Duration	Below 6 months	45	12.0%
	6–12 months	26	6.9%
	1–2 years	97	25.8%
	3–4 years	96	25.5%
	Above 4 years	112	29.8%

TABLE 3. Descriptive statistics of constructs.

	Item	Loading	Mean	SD
Argument quality (AQ)	AQ1	0.885	4.82	1.39
CR = 0.885; AVE = 0.721	AQ2	0.889	4.84	1.29
	AQ3	0.768	5.11	1.27
Source credibility (SC)	SC1	0.888	4.65	1.43
CR = 0.938; AVE = 0.792	SC2	0.901	4.71	1.34
	SC3	0.921	4.42	1.32
	SC4	0.849	4.22	1.39
Information usefulness (IU)	IU1	0.921	5.06	1.29
CR = 0.945; AVE = 0.852	IU2	0.922	5.12	1.36
	IU3	0.926	5.24	1.41
Background homophily (BH)	BH1	0.951	4.27	1.35
CR = 0.954; AVE = 0.912	BH2	0.959	4.10	1.33
Attitude homophily (AH)	AH1	0.958	4.33	1.27
CR = 0.957; AVE = 0.917	AH2	0.957	4.34	1.29
Discounting own information (DOI)	DOI1	0.832	3.81	1.71
	DOI2	0.896	3.67	1.66
CR = 0.903; AVE = 0.756	DOI3	0.879	3.90	1.69
Imitating others (IO)	IO1	0.917	3.63	1.64
CR = 0.936; AVE = 0.830	IO2	0.932	3.86	1.63
	IO3	0.884	3.61	1.66
Information adoption (IA)	IA1	0.887	4.93	1.53
CR = 0.919; AVE = 0.791	IA2	0.872	4.28	1.67
	IA3	0.909	4.64	1.57

community, this study translated the original English instruments into Chinese with the help of two doctoral students. The students were familiar with Douban.com and were proficient in both English and Chinese. They performed the translation (from English to Chinese) and back-translation (from Chinese to English) processes. Any inconsistencies were solved to ensure that the Chinese instruments have adequate translation quality. Furthermore, we invited a small sample of users ($N = 20$) from Douban.com to provide feedback on the Chinese instruments. The final instruments were therefore improved based on the feedback.

Data Collection

Because no e-mail list was available to reach the registered users of Douban.com, we randomly broadcasted the URL of our online questionnaire through the internal message system of the website. To maximize possible responses, we also posted invitation messages in popular "interest groups" on the website, where many users can interact with others of similar interests. Finally, a total of 376 valid responses were collected for this study. To test possible nonresponse bias, we compared the compositions of the first 50 and last 50 respondents. The result showed that no significant differences were found, indicating that nonresponse bias might not be a serious concern for this study. Table 2 depicts the demographic characteristics of the sample. It shows that 47.3% were males, and 52.7% were females. More than 50% of the respondents were 21 to 25 years of age, 61.6% were undergraduate students, and 81.1% had been using Douban.com for more than 1 year.

Data Analysis and Results

To analyze the data, we used partial least squares (PLS) in this study. PLS is a widely adopted structural equation modeling approach in the IS literature (e.g., Ahuja & Thatcher, 2005; Venkatesh & Morris, 2000). It can accommodate a relatively small sample size and has no restriction on normal distribution of the sample (Chin, Marcolin, & Newsted, 2003). We employed SmartPLS 2.0.M3 to test our research model. The two-step procedure of Hair, Anderson, Tatham, and Black (1998), including the measurement and structural models, was adopted as follows.

Measurement Model

In the measurement model, we examined the convergent and discriminant validity of the measures. Convergent validity assesses the extent to which items of the same construct are highly correlated, as the items have the same conceptual domain. Composite reliability (CR) and average variance extracted (AVE) are two widely adopted indicators to evaluate convergent validity. Convergent validity is deemed acceptable if the CR values are greater than 0.7, and the AVE values are higher than 0.5 (Fornell & Larcker, 1981). As shown in Table 3, the CR and AVE values of all constructs met these requirements. Therefore, the convergent validity of the measures was sufficient in this study.

Discriminant validity examines the differences between constructs that are theoretically distinct. If the square root of the AVE for each construct is greater than the correlations between the construct and others, then discriminant validity can be confirmed (Fornell & Larcker, 1981). As shown in Table 4, the discriminant validity of the measures was also acceptable in this study.

TABLE 4. Correlations of constructs.

	AQ	SC	IU	BH	AH	DOI	IO	IA
AQ	**0.849**							
SC	0.634	**0.890**						
IU	0.723	0.680	**0.923**					
BH	0.414	0.537	0.399	**0.955**				
AH	0.571	0.677	0.536	0.706	**0.957**			
DOI	0.251	0.39	0.297	0.418	0.477	**0.870**		
IO	0.309	0.383	0.308	0.377	0.423	0.625	**0.911**	
IA	0.407	0.526	0.508	0.421	0.570	0.511	0.487	**0.889**

Note. The bold diagonal values refer to the square roots of AVEs.

Structural Model

Before testing the structural model, we examined the common method bias given that a self-reported survey was employed in this study. We addressed this concern by conducting the Harman's one-factor test (Podsakoff & Organ, 1986). The result showed that no single factor accounted for a majority of variances in the items. We also examined the multicollinearity of constructs in this study. The results showed that the variance inflation factors (VIF) ranged from 1.711 to 2.939, which were far below 10 as indicated by prior research (Mason & Perreault, 1991). In summary, common method bias and multicollinearity were unlikely to be serious concerns in this study. Next, we analyzed the structural model of this research (as illustrated in Figure 2). We found that argument quality ($\beta = 0.487$, $t = 9.283$) and source credibility ($\beta = 0.371$, $t = 6.702$) are two key determinants of information usefulness. Information usefulness ($\beta = 0.363$, $t = 8.015$) showed a significant impact on information adoption. Hence, H1, H2, and H3 were supported. The results also showed that background homophily positively affected discounting own information ($\beta = 0.162$, $t = 2.414$) and imitating others ($\beta = 0.155$, $t = 2.241$). Similarly, attitude homophily had significant influences on discounting own information ($\beta = 0.363$, $t = 4.606$) and imitating others ($\beta = 0.314$, $t = 5.095$). Thus, H4, H5, H6, and H7 were supported. Information adoption was additionally predicted by discounting own information ($\beta = 0.277$, $t = 4.743$) and imitating others ($\beta = 0.201$, $t = 3.570$), indicating that H8 and H9 were also supported. Finally, the variances explained in information usefulness, discounting own information, and imitating others were 60.4%, 24.1%, and 19.1%, respectively, and 42.4% of variances in information adoption were explained.

Discussions and Conclusion

To understand the adoption of online reviews in online communities, this study extends prior research by incorporating the influence of herd behavior. Drawing upon the information adoption model, herd behavior, and the theory of homophily, we develop a research model to explicate consumers' process of adopting online reviews. Our findings show that informational factors, including argument quality and source credibility, play positive effects on information usefulness. Information usefulness produces the most significant effect on information adoption. These results confirm the important role of informational factors in affecting consumers' information adoption decision (e.g., Cheung et al., 2008; Sussman & Siegal, 2003). It suggests that consumers are likely to adopt online reviews that have high argument quality and come from credible sources. In addition, our findings provide strong empirical support regarding the influence of herd behavior. Consistent with Sun's (2013) study, we employ imitating others and discounting own information as herd factors to describe consumers' herding behavior. Both herd factors are positively associated with information adoption. Discounting one's own information has a stronger effect on information adoption than imitating others. The significant effects of the two herd factors suggest herding is likely to occur in online review communities. When consumers prefer to discount their own information and imitate others' behavior in this context, they are likely to justify these preferences (i.e., the herding) by adopting others' online reviews. Finally, our findings show that the two herd factors are determined by background homophily and attitude homophily simultaneously. Compared with Sun's study, which examined the impacts of decision uncertainty and observation of others' behavior on herd factors, we find that the two dimensions of homophily explained many more variances in imitating others (19.1%) and discounting own information (24.1%). The important role of homophily suggests that if a consumer perceives similar social backgrounds and attitudes with online review contributors, then he tends to disregard his own product information and imitate these persons' decisions. Such herding propensity will thereafter lead to his adoption of online reviews.

Limitations and Future Research

Before addressing the implications of this research, we have to note several limitations and future research opportunities. First, this study only examines consumers' online review adoption in a Chinese online review community. The cultural differences, characteristics of online review communities, and type of products discussed in the communities may have impacts on the results of the research model. Therefore, future research should replicate the model of this research in other broader settings. Second, compared with the total number of users in online communities, the sample size of this study is relatively small. Thus, similar research may be conducted with an increased sample size to improve the generalizability of the findings. Finally, the variances explained in imitating others, discounting one's own information, and information adoption were 24.1%, 19.1%, and 42.4%, respectively. In this regard, there may be other important factors missing in the model. Future research, for example, may consider the impacts of factors beyond informational and herd perspectives in understanding consumers' online review adoption. Similarly, it will be
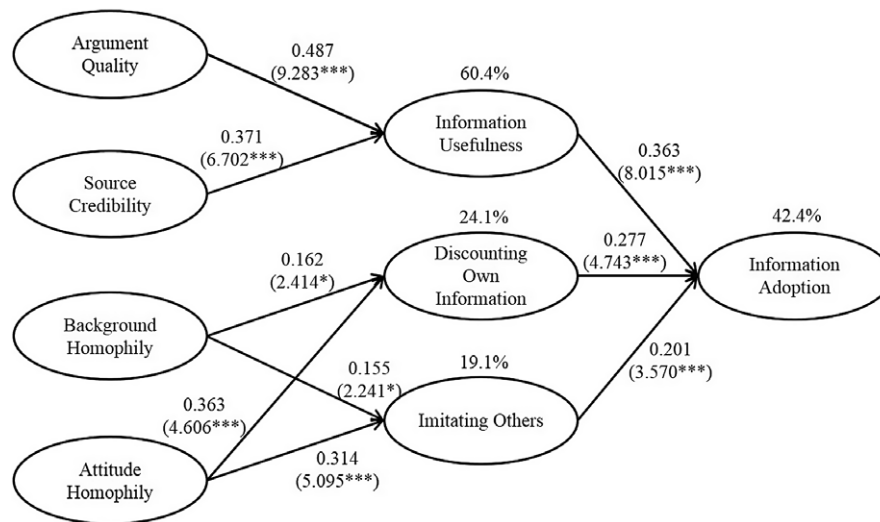
FIG. 2.   Structural model.
Note. Values in brackets are *t* values; * denotes *p* < 0.05, ** denotes *p* <0.01, and *** denotes *p* < 0.001.

relevant and useful for scholars to consider other possible factors that drive consumers' herd behavior in online review communities.

Implications for Research

This research has several important implications for theory and research. First, we enrich the understanding of the influence of online reviews. At the market level, product sales are found to be influenced by the level of review ratings (Zhu & Zhang, 2010), the valence and volume of online reviews (Berger, Sorensen, & Rasmussen, 2010; Chevalier & Mayzlin, 2006; Duan et al., 2008), and the characteristics of review contributors (Forman, Ghose, & Wiesenfeld, 2008). However, this line of studies provides limited insight into individuals' cognitive processes with regard to how informational factors (e.g., factors related to information itself and information sources) may affect ones' decision-making process. To address this concern, some recent research has examined whether the characteristics of online reviews or review contributors may have positive impacts on consumers' perceived helpfulness of these reviews (Connors, Mudambi, & Schuff, 2011; Mudambi, 2010; Wu, van der Heijden, & Korfiatis, 2011). It has also been shown that information adoption is an important concept for understanding the influence of online reviews on individuals' decision making (Cheung & Thadani, 2012). The information adoption model can explain how informational factors, such as argument quality and source credibility, may lead to consumers' perceived usefulness of online reviews, which further affects the adoption of reviews (Zhang & Watts, 2008). However, informational factors alone may not be adequate to account for individuals' online review adoption behavior (Cheung et al., 2009). In this study, we extend the information

adoption model by incorporating two herd factors (i.e., imitating others and discounting one's own information). The informational factors are employed to explain individuals' online review adoption via the process of information-based social interaction. More importantly, we use the two herd factors to empirically show that individuals will also adopt online reviews through the process of behavior-based social interaction.

Second, this study adds to the existing IS literature by empirically examining herd behavior in online review communities. As far as we know, this study is one of the first to address this issue. Research shows that many users herd to download popular software (Duan et al., 2009), bid on low-starting online auctions (Simonsohn & Ariely, 2008), and invest money in the online P2P lending market (Lee & Lee, 2012). We extend these prior studies in two specific areas. On the one hand, prior studies have primarily investigated online herd behavior at the group level; thus, little insight can be obtained to understand the cognitive processes of how individuals herd (Sun, 2013). In this study, we consider consumers' herd behavior at the individual level. We propose and validate a cognitive process to highlight that herding will be determined by homophily and further lead to the adoption of online reviews. On the other hand, compared with recent research on online herding, consumers' herd behavior in online review communities receives little attention from scholars. In this study, we use discounting one's own information and imitating others to characterize consumers' herd behavior. We also empirically examine the antecedents and consequences of these herd factors in online review communities.

Finally, this study provides a new perspective for understanding the antecedents of herd factors. Prior research has shown that decision uncertainty and observation of others' behavior are basic conditions for herding. However, their

effects on herd factors are found to be only marginal (Sun, 2013). It will be important to explore other factors that drive individuals' herd behavior. Consistent with Huang and Chen's (2006) findings, we expect that many online review communities provide basic but insufficient conditions for eliciting herding behavior. Drawing upon the homophily theory from the marketing and sociology literature, we show that background homophily and attitude homophily can exert considerable effects on herd factors, which suggests that a high level of homophily is conducive to herding. In contrast, a low level of homophily may prevent herding. This view is consistent with Goeree et al.'s (2006) study, which showed that individuals with diverse preferences are likely to diverge and act on their own information.

Implications for Practice

The findings of this research also provide insightful implications for practitioners. The important role of informational factors suggests that designers and managers of online review communities should always keep in mind collecting and disseminating high quality online reviews. They should pay attention to online reviews of low quality. That is, they may wish to remove those with inaccurate information, deliberate comments, or explicit advertisements. In addition, they should encourage credible review contributors to post comments on products. They are also recommended to initiate reward programs to motivate these review contributors to provide many high quality online reviews in online communities.

Our findings show that informational factors may not be enough to motivate consumers' adoption of online reviews. Designers and managers of online review communities should consider developing strategies to harness the power of herd behavior. A basic strategy may be to provide cues, such as ranking lists, to show popular products and elicit herding. Thus, consumers can easily identify and imitate the behavior of many preceding others. More importantly, a further strategy should be shedding light on similar attributes, including background homophily and attitude homophily, among community users. One possible approach is to encourage online review contributors to provide their background information (e.g., student, businessman, or traveler) and attitude information (e.g., shopping preferences and interests). These types of information can be displayed in contributors' personal profile pages and labeled alongside their online reviews. In this case, consumers can easily identify online reviews from similar others. A recommendation system can be established to facilitate this process. Thus, consumers can receive or search for online reviews based on their own preferences. Another possible approach is to illustrate ranking lists with different themes. The purpose of this practice is to help consumers identify product choices from *many* similar others. For instance, some themes may include the most popular books for businessmen, the most popular hotels for travelers, or the most popular restaurants for couples. Finally, designers and managers can provide

sharing links in addition to online reviews and ranking lists. Consumers can share this information with friends on social networking sites. This is likely to increase the odds of herding because members in online social networks are expected to have many similar attributes.

Conclusion

It has been found that online reviews have a significant influence on consumers' decision-making processer. Motivated by the need to enrich the understanding of why consumers adopt online reviews, this study extends the information adoption model by considering the role of herd factors. According to our findings, herd factors are important determinants of online review adoption, and homophily factors have positive effects on herd factors. These findings contribute to the literature by showing that informational factors alone may be insufficient to provoke consumers' adoption of online reviews. Practitioners will be more effective if they can also harness the power of herding. A better strategy of eliciting herd behavior will be to help consumers identify online reviews from many homophilous others. In conclusion, we hope this research will trigger further theoretical and practical investigations of online herd behavior with respect to online reviews.

Acknowledgments

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