Dimensions of online community attributes

Examination of online communities hosted by companies in Korea

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Abstract
Purpose – The purpose of this paper is to develop online community attributes based on Preece’s sociability and usability framework to assess how online community attributes hosted by retailers or national brand companies may generate positive outcomes for consumers. Also, this study seeks to examine the effects of attribute dimensions on consumer benefits to verify its predictability.

Design/methodology/approach – An online survey was administered in South Korea. A questionnaire was constructed which contained 26 items measuring online community attributes. These items were developed by the researchers to measure seven dimensions defining Preece’s sociability and usability conceptual framework. The items were based on examples of determinants and measures of successful online communities. The Korean sample consisted of 135 male and 216 female adults in a large metropolitan area in South Korea.

Findings – Results partially supported Preece’s sociability and usability framework. Results show three online community attribute dimensions purpose, people, and policy to be represented by a higher order factor sociability and two attribute dimensions dialogue and social interaction and navigation represented by usability. The structural model testing the relationship between sociability and social benefits and usability and functional benefits was confirmed and proved predictive validity for the online community attribute dimensions and the sociability/usability framework. On the other hand, no evidence of sociability influencing perceptions of functional benefits and usability influencing perceptions of social benefits could be found. Nonetheless, these results provide evidence that Preece’s online community attribute framework measures “success” from a consumer benefits standpoint.

Originality/value – This study provides retailers and companies who host online communities with a practical tool with which they can assess their online communities as well as their online strategy.

Keywords Online operations, Communities, South Korea

Paper type Research paper

Networked computers are revolutionizing how people interact by offering a “virtual space” where people with common interests can communicate with each other electronically. Terms such as “virtual community” and “online community” are commonly used to refer to these groups of people who interact with each other online (Hagel and Armstrong, 1997). Community, along with content and commerce, referred to as the “3Cs,” is one of three fundamentals of online retailing (Calkins et al., 2000). About 85 percent
of more than 300,000 online topic-based discussion boards are operated by commercial
organizations (McWilliam, 2000). The importance of online communities to both
individuals and companies is significant. It benefits their members through offerings of
physical, economic, cognitive, and emotional resources (Sproull and Faraj, 1997) and
serves as an important resource for people with various purpose, goals, and needs.
For example, in the USA, PlayStation® on their internet site hosts a forum where
consumers may share information as well as enthusiasm for PlayStation® products or
related topics on message boards. Similarly, ebay® hosts a wide range of online
community groups on various product categories. Coca-Cola® hosts Mycoke.com, a social
site for people to chat and share common interests such as music, film, and games.

Online communities provide increasing returns to the companies hosting online
communities at several levels. First, online communities accumulate member-generated
content on various products offered by the company as well as competitor companies
that sell similar products. In addition, companies may set up systems to gather
consumer feedback on existing products, or encourage suggestions for new or improved
products (Friesen, 2004). Members are also able to recognize and relate to each other
based on their common interests and develop genuine relationships. This ensures
frequent and regular visits to a site, and further leads to a deep sense of connection and
loyalty to the community. An analysis by McKinsey revealed that community members
account for one-third of all users, but generate two-thirds of all online sales (Brown et al.,
2002). Also users who contribute product reviews or post messages visit sites more than
nine times as often as non-users do, remain twice as loyal and buy almost twice as often
(Brown et al., 2002). Because of this value of online communities, companies try to better
manage their online community web site and maximize its benefits.

However, little information is provided as to the characteristics of successful online
communities by which companies use as a guideline for building and evaluating their
own online communities. To effectively manage an online community, understanding
the various dimensions of online community attributes is an important first step.
Current endeavors toward understanding dimensions that define a successful online
community have only been conceptual or anecdotal (Preece, 2001). While discrete
online community attributes are suggested by various researchers (Cothrel, 2000;
Leimeister et al., 2005), few comprehensive sets of attributes have been examined.
Empirical studies that examine dimensions of online community attributes, especially
within the context of online communities hosted by companies, are even more limited.
Recently, Preece (2001) proposed a conceptual framework of attribute dimensions for
online communities.

For the purpose of establishing a manageable set of evaluation criteria for a firm
hosting an online community, this study develops online community attributes based
on Preece (2001)'s conceptualization and empirically tests it in a South Korean setting.
Further, this study examines the effects of attribute dimensions on consumer benefits
to verify its predictability. Findings of this study provide a set of an online community
evaluation tool with which retailers and companies in Korea and many other countries
can use to evaluate their online communities.

Online communities in the Korean market
This study chose South Korea (from now on referred to as “Korea”) because of its
leading position in internet use, online community participation, and broadband
penetration. Korea is a small country only half-the-size of the state of Florida in the USA. It is a populous country with 46 million people, approximately one-sixths of the US population. This small and populous country leads internet technology in various ways. Korea ranks first in the world in terms of the proportion of households with broadband. About 70 percent of Korean households access internet via broadband from their home computers, compared to 50 percent in Japan, 46 percent in the USA, and 15 percent in the UK (Cho and Cheon, 2005; Ward and Shin, 2003).

An internet statistics report provided by the National Internet Development Agency of Korea (2007), show a very high percentage of internet users in Korea. About 75 percent of the Korean population (over six years of age) are internet users; 82 percent of males and 70 percent of females. In terms of age, 94 percent of Koreans in their 1930s and 78 percent of Koreans in their 1940s were found to be internet users. Also, 96 percent of college graduates are internet users as are 76 percent of high-school graduates. About 99 percent of students and working professionals were found to be internet users. The report states that 85 percent of the Korean internet users used the internet for e-mails, online chats, and other communication.

In terms of internet café or community participation, internet users in their 1920s and 1930s showed the highest participation with 68 and 43 percent of internet users in this age range participating (National Internet Development Agency of Korea, 2007). The National Internet Development Agency of Korea (2007) reports that an average Korean internet user is a member of 2.2 online caféś or communities, visits online caféś or communities at least once a week for 30 minutes, and visits online communities for the purpose of socializing or sharing interests (National Internet Development Agency of Korea, 2007). Also, as of March 2004, Daum.com, one of Korea’s leading portal online communities had 32 million members in 4,426,901 communities covering a whole spectrum of people’s interests; games, economy, politics, religion, culture, entertainment, sports/leisure, health, hobby, social, alumni network, etc. Cyworld.nate.com, a relatively new portal online community, achieved 17 million members since its inception in 1999. Along with several Korean portal online community sites (i.e. daum.com and cyworld.com), quite a few online communities are hosted by companies that sell products online and some of the popularly utilized online communities include Auction (www.auction.co.kr), Inter Park (www.interpark.co.kr), Gmarket (www.gmarket.co.kr), and YES24.com. Korean online communities are particularly unique in that communities in virtual space are transferred to offline settings. That is, it is not unusual for members that belong to cyber social networks to meet in offline contexts (Choi et al., 2005; Park et al., 2000).

The reason why online communities are more popular in Korea than any other countries can be explained by Hofstede (2001)ś individualism versus collectivism dimensions. Korea represents a collectivist country whereas USA is an individualist. Collectivists value their social network as a main source of information, thus putting more belief in collective decisions, compared to the media being the main source of information for individualists. It is accepted practice for people in collectivist cultures to treat in-group members better than others (i.e. particularism), whereas such particular treatment would be considered unethical in individualistic cultures (i.e. universalism) (Hofstede, 2001). These tendencies lead collectivists to rely on more personal information available in cyberspace for their purchase decisions, to form their own group in cyber space and to share information with community members.
Collectivists often show high conformity to their peers in order to belong to the group (Park and Jun, 2003). This also explains the rapid diffusion of online communities among Koreans. Empirical evidence shows members of Korean online communities prefer a collective communication method (i.e. board), compared to US members' preference for personal communication tools (i.e. e-mail or messenger) (Park et al., 2000). Cho and Cheon (2005) discovered that Korean corporate websites facilitate more consumer-consumer interactivity, such as group discussion, compared to companies in the USA and UK.

The above background information serves as a good basis as to why dimensions of online communities need to be studied in Korea where the internet usage and online communities are well established within the country and surpasses the levels of most developed countries. Therefore, examining the consumer group in Korea is of value because it provides insights into how online community activities may evolve for other countries in which internet usage is now growing.

Current research on consumer online communities
The characteristics of online communities may vary based on the quality or depth of their social relationships members form with other individuals within the digital environment, mutual goals of the online community, and shared interests with other community members (Bagozzi and Dholakia, 2002; Wellman and Gulia, 1999). Hagel and Armstrong (1997) refer to online communities that primarily exist for the purposes of commerce as “communities of transactions” and Kozinets (1999) refers to online communities in which consumers explicitly share enthusiasm for and knowledge of a specific consumption related activity as “virtual communities of consumption”. Studies of the online communities within the context of business where social digital networks facilitate interaction between consumers as well as between marketers and consumers have been increasing in the business literature. Because the online community serves as an important reference group for participants in which the community may have an influential role in a member’s life, researchers are actively trying to understand how online communities facilitate consumer behavior (Bagozzi and Dholakia, 2002).

Early research in consumer online communities have been conducted on the role of online communities in forming opinions, purchasing and consuming products and services (Kozinets, 1999; Hagel and Armstrong, 1997). In more recent research efforts, additional research on various aspects of online communities within the context of consumers and business can be found. For example, Farquhar and Rowlley (2006) examine relationship and community building in consumer online communities. Several studies examine the influential role of online communities in relation to specific product types (Kim and Jin, 2006; Cova and Pace, 2006; Thomas et al., 2007). Also, researchers examined in-depth specific online communities of consumption (Hausman and Minor, 2001; Rothaermel and Sugiyama, 2001). Researchers have studied brand communities where members have a shared interest in a particular brand (Cova and Pace, 2006) and brand loyalty (Li and Hung, 2006; Shang et al., 2006; Yiyian and Hung, 2006) within the context of online communities. Consumer participation in firm-hosted commercial online communities (Wiertz and de Ruyter, 2007) and network- and small-group-based online communities (Dholakia et al., 2004) were studied. Finally,
Assessing effectiveness of online communities

As the role of online communities for consumers have become instrumental in achieving business goals and satisfying consumer needs, the effectiveness and usage of interactive technologies have been commonly discussed in the business literature. Examining the effectiveness of online communities is relatively new compared to research that study the effectiveness of e-commerce and general internet sites. For example, a widely accepted and tested model is the Technology Acceptance Model (TAM) (Davis, 1989, 1993, Davis et al., 1989). The TAM model postulates that three determinants of user’s attitudes toward the technology are usefulness, ease of use, and enjoyment. In a retail online shopping environment, Childers et al. (2001) found evidence that the hedonic aspect (e.g. enjoyment) of interactive technology media alone does not influence consumer attitudes; the instrumental characteristics (e.g. navigation, ease of use, convenience) of technology were found to be as important in assessing consumers’ experience.

Another widely applied model is the DeLone and McLean Information Systems Success Model (DeLone and McLean, 1993). An updated model provides a comprehensive framework for measuring the performance of information systems which includes system quality, information quality, service quality, use, user satisfaction, and net benefits (DeLone and McLean, 2004). The revised DeLone and McLean information systems success model has been found to be a parsimonious framework for evaluating e-commerce (DeLone and McLean, 2004).

Although few in number, various online community attributes specifically related to evaluating the performance and success have been discussed in the literature. It is clearly recognized that community members who are active in and passionate about sharing their views on topics, products, and companies are the driving force behind the online community’s value (Cothrel, 2000). Also, fostering personal connections among members and encouraging communication and a supportive environment have been noted as good practices in online communities (Williams and Cothrel, 2000). Similarly, Ridings and Gefen (2004) found information exchange and social support to be the two most popular reasons for joining an online community. Leimeister et al. (2005) discussed web site design factors that may influence the level of trust within an online community such as transparency of goals and sponsors, quality of content, motivation of hosting operators, and accessibility to information. Williams and Cothrel (2000) noted that in order to run a successful online community, the right tools (e.g. e-mail versus groupware) must be employed that fit the community. The most effective communication medium used among members may not be the most technologically sophisticated but the most efficient and commonly used. Also, in a study of online health communities, Maloney-Krichmar and Preece (2005) emphasized the importance of dependable and reliable technology compared to state-of-the-art technology.

Preece (2001) proposed the sociability and usability framework to identify characteristics and measures that describe the success of online communities. Although, several studies have presented information on various online community characteristics that may appeal to its members, Preece (2001) provides a comprehensive listing of online community attributes that cover both functional
and hedonic characteristics which can be used to gauge the effectiveness of online communities. Sociability determinants include purpose, people, and policies. Purpose refers to involvement levels of members within an online community. This, in turn, is indicative of how well the online community serves its purpose for the member. Levels of interactivity, reciprocity, and quality of contribution serve as indicators of the depth of interaction. The determinant people refer to the number of members within the online community. It also refers to various types of members based on their level of participation as well as personal characteristics. Policy involves measures that are implemented to deter uncivil behavior and generate trust among members. Explicit codes of conduct or registration policies are examples.

Dialogue and social interaction support, information design, navigation and access are dimensions that constitute Preece’s usability framework. Dialogue and social interaction support refers to the ease and efficiency in which users are able to execute commands and perform tasks within the web environment. Information design refers to the efficiency in which information can be found and understood. Navigation is the ease with which users can search or locate information. And finally, access is the ease with which users may download, install, and use necessary software or other technical requirements.

Preece (2001) notes that the needs of online communities vary depending on the communities’ goals, purpose, and functions. For example, communities in which membership support is particularly important (e.g. patient support community, bereavement communities) may have a higher need for sociability dimensions compared to educational communities where effective information exchange may have a significant bearing on its success. Thus, determinants and measures of online community should be applied to various communities to gauge how each determinant may individually influence an online community’s success.

Research model
This research examines online communities in Korea that are hosted by companies and in which the membership consists of their consumers. This study provides how online communities can be evaluated from a user’s perspective using Preece’s (2001) sociability and usability framework and provides insight into the effectiveness of brand and company hosted online communities. Researchers determined all dimensions representing sociability and usability in Preece’s conceptual framework to be appropriate in testing the broad attribute dimensions of Korean online communities.

To identify the dimensions of online community attributes, we first examined a hierarchical model of online community attributes containing seven first-order factors which represent two second-order factors (Figure 1). Based on Preece’s (2001) conceptualization of online community dimensions, three first-order factors (purpose, people, and policy) formed a second-order dimension of sociability. Also, a set of four first-order factors (dialogue and social support, information design, navigation, and access) represented another second-order factor of usability. In particular, the sociability construct support findings from separate Korean studies (Lee et al., 2004; Yang and Park, 2005) emphasizing the fundamental role of online communities in offering a social space for online members. Considering the popularity of Korean online communities to the extent that it supports off-line interaction, the sociability second order dimension is expected to strongly exist in Korea. Also, Koreans prefer a
communication system in which the web-based functions should support dynamic group interactions. \(H1a\) and \(H1b\) relate to dimensions explained by sociability and usability of online communities:

**\(H1a\).** Sociability is a higher-order construct composed of three dimensions:
- (1) purpose;
- (2) people; and
- (3) policy.

**\(H1b\).** Usability is a higher-order construct composed of four dimensions:
- (1) dialogue and social support;
- (2) information design;
- (3) navigation; and
- (4) access.

Next, in order to confirm the predictive validity of the two online community attribute dimensions of sociability and usability, we examined sociability and usability in relation to outcome constructs social and functional benefits. Consumers can receive benefits from interpersonal relationships and social interaction (Darden and Dorsch, 1990; McAdams, 1988). Two classifications of benefits (social and functional) were selected based on the conceptualization of benefits defined and applied by various scholars.
Functional benefits of online communities include factors such as convenience, time savings, and usefulness of information. Hedonic benefits include enjoyment, friendships, and personal relational aspects. Within a shopping situation, perceptions of benefits have been found to be directly related to the customer’s satisfaction with the corresponding activity which assisted them in making a purchase decision.

As such, our study expects members to derive social and functional benefits from online communities and have hypothesized benefits to be related to the member’s assessment of the online community attributes of sociability and usability. First, we hypothesize that members’ assessment of the sociability of the web site will have a positive relationship on perceived social benefits (sociability → social benefit). For example, the involvement level of a significant number of community members and meaningful social exchange will positively influence perceived social benefits. Also, because the level of ease in which community members can interact with other members using the web site will influence their ability to interact socially, we hypothesize a positive relationship between usability and social benefits (usability → social benefit). Next, we hypothesize that members’ assessment of usability will have a positive relationship on perceived functional benefits (usability → functional benefit). For example, the ease of using the web site in finding information will positively influence perceived functional benefits. In addition, we expect that interaction that is generated and support perceptions of sociability to facilitate members’ perception of functional benefits as well (sociability → functional benefit). For example, the number of members and quality of interaction may provide members of the online community technical support or assistance in navigating through the web site. The following hypotheses were developed to support the above assumptions:

\[ H2a. \text{ There will be a positive association between sociability and social benefit.} \]

\[ H2b. \text{ There will be a positive association between sociability and functional benefit.} \]

\[ H2c. \text{ There will be a positive association between usability and social benefit.} \]

\[ H2d. \text{ There will be a positive association between usability and functional benefit.} \]

**Methods and data collection**

This research examined online communities that were built and/or hosted by companies and in which the membership consisted of their consumers. An online survey was administered in South Korea. A questionnaire was constructed which contained 26 items measuring online community attributes. These items were developed by the researchers to measure seven dimensions defining Preece’s (2001) sociability and usability conceptual framework. The items were based on examples of determinants and measures of successful online communities. Functional and social benefits of online communities were measured using items adapted from Reynolds and Beatty (1999). In the questionnaire, respondents were specifically asked to answer in reference to “a consumer-based online community hosted by a retailer or national brand company” in which they most actively participated. All items were measured on a 5-point Likert type scale 1 – “strongly disagree”, 5 – “strongly agree.”

The questionnaire which was initially developed in English was translated into Korean and then translated back into English by three researchers who were fluent
in both languages to ensure consistency in meaning. First, the English version was developed jointly by the three scholars, after the translation into the Korean version was completed by the scholar whose primary spoken language was Korean and lived in Korea. Next, the Korean questionnaire was back-translated into English by the scholar whose primary spoken language was English and lived in the USA. The questionnaire was first developed in English to capture the accurate meanings based on Preece’s study conceptualized, written, and published in the English language. During the process, when inconsistencies in meaning between the original and Korean item occurred, the researchers discussed the Korean translation of the item until a consensus was reached.

The Korean sample consisted of 135 male (38 percent) and 216 female (62 percent) adults in a large metropolitan area in South Korea. Data were gathered from respondents enrolled in classes at a university that specializes in lifelong learning and continuing education. This study particularly chose this university to include a wide range of age because the university has higher enrollment of non-traditional students. An invitation to participate in the survey along with the survey URL was e-mailed to respondents. To ensure one response per person, respondents with a valid student identification number were allowed to participate in the study. A URL server hosted by the university allowed access to the survey for two weeks.

The respondents' ages ranged from 18 to 63 with the mean age of 37.5 (ages 18-30, 21.4 percent; ages 31-40, 47.50 percent; ages 41-50, 26.50 percent; ages 51 and over, 4.6 percent). The majority of the respondents held jobs (77 percent) and all of the respondents were high-school graduates with 92 percent of the respondents holding associate degrees. In terms of income, 75 percent of the respondents earned $10,000-49,999. On average, respondents purchased 3.6 times online and spent $19 on each purchase. Based on the personal characteristics of our sample, researchers are only able to draw a general comparison of the research participants to the larger Korean internet population (see summary of the Korean internet population in prior section). The sample corresponds to the findings of the National Internet Development Agency of Korea (2007) in that the highest internet users as well as participants in online communities are in their 1930s and below and 1940s age ranges. Also, we see that our respondents have graduated from high school which corresponds to the findings by the national agency in Korea that a high percentage of users with high school and college degrees are internet users.

Data analysis and results
First-order factor analysis of online community attributes
In order to validate and improve the congeneric measurement properties of the online community attribute scale, an iteration of confirmatory factor analyses was conducted (Anderson and Gerbing, 1988; Gerbing and Anderson, 1988). A 24-item, seven dimension confirmatory factor model was estimated using AMOS 5.0, and inspection of initial fit indices were below acceptable thresholds ($\chi^2 = 1,820.63$, $df = 231$, $p = 0.000$; GFI = 0.83; CFI = 0.82; RSMEA = 0.08). Weak factor loadings, modification indices, and standardized residuals were employed for purposes of item purification. Items with multiple loadings and correlated measurement error were deleted. Also, each item was inspected for domain representativeness.
The respecified model estimated the remaining 12 items and five factors (purpose, people, policy, dialogue and social interaction support, and navigation) with two or three items per factor (Table I). The fit of the respecified model improved considerably: $\chi^2 = 141.28$, df $= 44$, $p = 0.000$; GFI $= 0.93$; CFI $= 0.95$; RSMEA $= 0.07$. Convergent validity of items was confirmed by sufficiently large factor loadings (0.60-0.90) and significant $t$-values (7.14-16.28). Internal reliability was assessed using Cronbach’s $\alpha$. Reliabilities for all factors ranged from 0.62 to 0.88 (Table I). Although reliabilities for factors people and navigation are below the recommended 70 (Cronbach, 1970; Nunnally, 1978) and thus can be considered marginal in reliability, a cut-off of 0.60 is common in exploratory research and acceptable for newly

<table>
<thead>
<tr>
<th>Dimension/items</th>
<th>Cronbach’s $\alpha$</th>
<th>Construct reliability$^b$</th>
<th>Variance extracted$^c$</th>
<th>Item loading</th>
<th>$t$-Value</th>
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</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
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<tr>
<td>PUR2. Many community members participate or are involved in the topics being discussed</td>
<td>0.80</td>
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<tr>
<td>PUR3. Community members actively interact with each other</td>
<td>0.82</td>
<td>0.83</td>
<td>0.62</td>
<td>0.86</td>
<td>15.73</td>
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<td>PUR5. Many relevant topic are discussed</td>
<td>0.68</td>
<td>12.86</td>
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<tr>
<td><strong>People</strong></td>
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<td>PPL1. There are many members in this online community</td>
<td>0.66</td>
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<td>PPL2. Members in this community have knowledge/experience in regards to the discussion topic</td>
<td>0.67</td>
<td>0.68</td>
<td>0.51</td>
<td>0.76</td>
<td>10.12</td>
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<td><strong>Policy</strong></td>
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<td>PLC2. The policies are effective in deterring uncivil behavior</td>
<td>0.71</td>
<td>–</td>
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<td>PLC3. The policies help foster a good relationship with community members</td>
<td>0.88</td>
<td>0.89</td>
<td>0.73</td>
<td>0.90</td>
<td>16.04</td>
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<tr>
<td>PLC4. The policies help foster a trusting relationship with community members</td>
<td>0.93</td>
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<tr>
<td><strong>Dialogue and social interaction support</strong></td>
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<tr>
<td>DSS1. Reading or sending messages in this online community are simple</td>
<td>0.85</td>
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<tr>
<td>DSS2. Learning to read or send messages in this online community was easy</td>
<td>0.87</td>
<td>0.87</td>
<td>0.78</td>
<td>0.90</td>
<td>15.08</td>
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<tr>
<td><strong>Navigation</strong></td>
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<tr>
<td>NVG1. It does not take a long time to navigate through the web site to find something</td>
<td>0.71</td>
<td>–</td>
<td></td>
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</tr>
<tr>
<td>NVG2. I can usually get what I want on this web site in a reasonable time</td>
<td>0.62</td>
<td>0.61</td>
<td>0.44</td>
<td>0.60</td>
<td>7.14</td>
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</table>

Notes: $^a$Measurement based on a five-point Likert scale where 1 – “strongly disagree” and 5 – “strongly agree”; $^b$construct reliability $= (\Sigma \text{Standard loadings})^2/(\Sigma \text{Standard loadings})^2 + \Sigma \text{Measurement error}$; $^c$variance extracted $= (\Sigma \text{Standard loadings})^2/(\Sigma \text{Standard loadings})^2 + \Sigma \text{Measurement error}$
developed scales. In testing for discriminant validity among the factors, we found all squared interfactor correlations between two constructs to be smaller than the calculated average of the variances for the two constructs (Fornell and Larcker, 1981).

**Second-order factor analysis of online community attributes**
The first-order size factor model of online community attributes can be represented by a hierarchical structure related to the framework of sociability and usability (Preece, 2001). It was hypothesized that the sociability dimension would be explained by purpose, people, and policy and usability would be explained by dialogue and social interaction support, information design, navigation, and access.

As shown in Figure 2, the two second-order factor model was accepted with $\chi^2 = 144.70$, df = 48, $p = 0.000$; GFI = 0.93; CFI = 0.95; RSMEA = 0.07. $\chi^2$ differences in comparison to the first-order factor model showed the second-order factor model to be a better model than the first-order factor model ($\Delta \chi^2 = 3.42$, df = 4, $p > 0.1$). Discriminant validity on the second order factors was evaluated by conducting a $\chi^2$ difference test on models in which the relationship between sociability and usability was free and fixed. The model test in which sociability/usability was fixed to unity resulted in $\chi^2 = 155.31$, df = 49, $p = 0.000$. The fit of the model was significantly worse when compared to the fit of the theoretically specified two factor

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**Figure 2.**
Two second-order factor model of online community attributes

**Notes:** Standardized estimates are presented. **p < 0.001"
model ($\Delta \chi^2 = 10.61$, df = 1, $p < 0.001$). Therefore, this test shows support for discriminant validity for the two second-order factors.

The three factors of purpose ($\gamma = 0.76, p < 0.001$), people ($\gamma = 0.91, p < 0.001$), and policy ($\gamma = 0.62, p < 0.001$) significantly explained sociability. Thus, $H1a$ was accepted. For the usability construct, the two factors of dialogue and social support interaction ($\gamma = 0.79, p < 0.001$) and navigation ($\gamma = 0.74, p < 0.001$) significantly explained usability. However, two other factors that were hypothesized to explain usability, information design and access did not contribute to explaining usability and thus was not included in the two factor model. Therefore, in the case of the usability construct, $H1b$ was partially accepted. These results show the factors, information design and access, to explain a separate dimension of compared to dialogue and social support interaction and navigation. Also, the factors may not necessarily serve as a valid indicator of usability. With the exception of these two factors, the results provided support for Preece’s (2001) proposed framework for understanding determinants of successful online community attributes.

Online community attributes and benefits model
To assess whether the confirmed dimensions of online communities attributes were valid and predicted outcomes, the relationship between the five dimensions of online community attributes and perceived benefits was demonstrated by estimating a structural equations model. First, results from the measurement model (Table II) illustrate significant factor loadings for social benefits and functional benefits. Cronbach’s $\alpha$ for the two constructs were 0.84 and 0.92 and construct reliability were 0.85 and 0.93. The discriminant validity of two benefit dimensions were proved using methods by Fornell and Larcker (1981).

This structural model proposed a relationship between the two second order factor model and constructs social benefits and functional benefits. Hypothetical paths were tested for sociability (social benefit, sociability (functional benefit, usability (social benefit and usability (functional benefit (Figure 3). Also, the residuals for the two outcome constructs social benefit and functional benefit were correlated to include relationships among the effects of the constructs (Williams et al., 2003).

All parameter estimates were in the hypothesized direction, that is, there was a positive relationship between sociability and social benefit and usability and social and functional benefit. However, the relationships between sociability and functional benefit and usability and social benefit were not positive. And thus, $H2a$ and $H2d$ were accepted but $H2b$ and $H2c$ were rejected. Also, the correlated residuals between social benefit and functional benefit were not significant. Squared multiple correlations indicated that 32 percent of variance in social benefits was accounted for by the relationship between sociability and social benefit and sociability and functional benefit and 51 percent of variance in functional benefit is accounted for by the relationship between usability and social benefit and usability and functional benefit. The fit statistics ($\chi^2 = 316.94$, df = 124, $p = 0.000$; GFI = 0.91; CFI = 0.95; RSMEA = 0.06; RMR = 0.04) indicate that the overall fit of the model is relatively good. Therefore, $H2$ was partially accepted.

Discussion and implications
This study examining attributes of online communities hosted by companies in Korea partially supported Preece’s (2001) sociability and usability framework. Results show
three online community attribute dimensions purpose, people, and policy to be represented by a higher order factor sociability and two attribute dimensions dialogue and social interaction and navigation represented by usability.

In terms of sociability, results confirm the importance of the size of membership as well as the involvement level of community members. Quality of interaction and communication as well as community members’ level of knowledge or experience in the discussion topics were considered important in regards to the sociability of the online community. In addition, results show rules and regulations that guide positive behavior support the sociability aspect of the online community. The current results that relate to the sociability framework reinforce previous writings about online communities (Cothrel, 2000; Williams and Cothrel, 2000) which emphasize the quality and nature of community members’ participation and interaction. Successful testing of Preece’s sociability framework in a Korean online community setting clearly suggests the basic social role of online communities in terms of offering members with a purposive social space is universal across cultures. Also of interest was that the online

<table>
<thead>
<tr>
<th>Dimension/items</th>
<th>Cronbach’s α</th>
<th>Construct reliability</th>
<th>Variance extracted</th>
<th>Item loading</th>
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Notes: ^Construct reliability = (ΣStandard loadings)^2/[(ΣStandard loadings)^2 + ΣMeasurement error]; ^bvariance extracted = (ΣStandard loadings)^2/[(ΣStandard loadings)^2 + ΣMeasurement error]; ^cSB1. The friendship aspect of my relationship with members of this online community is important to me; SB2. I enjoy spending time with members of this online community; SB3. I value the close, personal relationship I have with members of this online community; ^dFB1. I value the convenience this online community provides me; FB2. I value the time this online community saves me; FB3. I value the advice this online community provides me

Table II. Measurement model results for online community attributes and benefits
Figure 3.
Structural model of attributes and benefits

Notes: Standardized estimates are presented. Numbers in parenthesis are t-value, a – fixed items
community dimension of policy supported sociability providing evidence the need for online communities to develop an active plan to encourage civil and friendly discourse among members in Korean online communities. Although research on online community policies is limited, results from this study provide evidence that formal policies and codes to guide behavior among members to be an important aspect of an online community.

In terms of usability, the ability of members to easily read and send messages and reasonable navigation time was important. This supports prior studies that emphasize the importance of technology’s ease of use and convenience (Davis, 1989; Childers et al., 2001). However, our data did not support the attribute dimensions of information design and access as defining parts of the usability framework of online communities. Information design measures how online communities facilitate efficient information search and understanding. An explanation may be that online communities are now designed in a simple and user-friendly manner (along with search tools) which does not require extensive search efforts to find information. In terms of access, downloading and installing necessary software may no longer be an issue that determines consumer perceptions in Korean online communities. Considering the sophistication and user-friendly software available in today’s market, the required technical knowledge or technical complexities may not be as problematic. In addition, the self-selected members of online communities may already have higher levels of computer knowledge that allows them to incorporate the internet into their everyday activities.

The structural model testing the relationship between sociability and social benefit and usability and functional benefit was confirmed and proved predictive validity for the online community attribute dimensions and the part of the sociability/usability framework that was tested by the researchers. These results provide strong evidence that Preece’s online community attribute framework measures “success” from a consumer benefits standpoint. That is, the dimensions that are broadly defined within the context of sociability and usability positively influence how consumers perceive online communities to add value. However, the current model does not show the sociability aspect of the online community to explain functional benefits and the usability aspect to explain social benefits. Finally, the model we tested offers a view of which dimensions are instrumental in generating positive results within online communities of Korean consumers.

**Academic and managerial implications**

Measures of online communities have been traditionally based on raw numbers such as page view, membership size, number of visits, etc. (Park et al., 2000). This study provides an initial effort to measure its effectiveness conceptually with managerial implications. In this sense, we hope this study contributes to the field by triggering further development of effective measures of online communities that are content-based.

Results of this study provide some basic guidelines for retailers or companies to follow in planning, evaluating and operating online communities. Online communities may not be directly measurable by sales or ROI. However, our current study shows that online communities can add intrinsic value to a consumer’s pre- and post-consumption experience through social and functional benefits. As the current data for this study was collected using a Korean consumer base, some direct implications related to the Korean
online communities can be generated. This study provides evidence that Korean online community members consider the social aspect of online communities to be important, however, the usability issues in terms of the software's role as a facilitator of social interaction is less clear. There is some evidence that software issues may not be as problematic among Korean online community members. Considering more than 70 percent of homes are connected to high-speed internet in Korea (Ward and Shin, 2003), issues related to bandwidth required to run state-of-the-art technology may not be an issue and thus reflected in our results. Korean companies hosting online communities' particular attention in supporting the sociability aspect is highly recommended.

Limitations and future studies
As evidenced in research studies published in Korea and internet usage reports, online communities have a strong presence in the Korean society. Data from a country such as Korea whose consumer usage of the internet and online community surpasses economically developed western nations such as the USA, Canada, and the UK (Ward and Shin, 2003), provides meaningful implications that may parallel online community dynamics in other countries.

Some limitations of this study and directions for future research are discussed. First, because of the unique Korean collectivist cultural background and its leading status of broadband penetration, the results of this study must be cautiously applied in other country settings. Therefore, testing the research framework in other countries with similar internet penetration but different cultural characteristic (e.g. USA) would extend the external validity of this study. Second, our study is based on online community dimensions conceptualized by Preece (2001). Further development and in-depth analysis of scale items are recommended to fully capture each attribute and dimension. Also, further research on 2D not statistically identified within our research (information design and access) is suggested.

References


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